

**LIVING INDIVIDUALS: SELF, BODY, AND MEANING IN THE  
CONSTITUTION OF THE ORGANISM AND ITS WORLD**

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*To my family: my past and my future*

*Ad Maiorem Dei Gloriam*

“And I will give you a new heart, and put a new spirit within you: and I will take away the stony heart out of your flesh, and will give you a heart of flesh.”

Ezekiel 36:26

"in via vitae non progredi regredi est, cum nihil adhuc in eodem statu permaneat"

(In the way of life, not to advance is to recede, for nothing in life remains static)

St. Bernard of Clairvaux

## Summary

Cognition presupposes a relationship between a living individual and its physical environment. According to this, I intend to show in this thesis that the individuality of the living being, though it remains independent of the outside and identical through time, is dynamically constituted in the dialectical relationship with its surrounding world. Individuality here means not the definite object of our phenomenological experience but the very lived experience of being an individual that underlies every phenomenological act: my aim is not giving a theory of how we individuate the objects in our surrounding world or, more specifically, the subset of those objects that correspond to what we know as living beings – though I will have to say something general about it – but rather how I am myself a living individual and how my being individual is the condition for all further experience. I will approach this problem by exploring four basic characteristics of what defines something as an individual and will divide the thesis according to these characteristics: In the first chapter, I explore the uniqueness of the living individual, the fact that, as a living individual, I am what I am and nothing else can be me; this leads me to explore the self-referential aspects of experience and the radical distinction between me as a subject and the world as a phenomenon; by exploring uniqueness I also recognize the essentially material nature of living organisms and include the problem of wholeness as part of this chapter; in this sense, I explore the idea of complex material composition and self-caused unity and also study critically some proposals such as the Kantian theory of natural ends and the theory of autopoiesis. In the second chapter, I explore the differentiation of the individual from other beings in its surrounding world and focus particularly on the dialectical relationship between the organism and its environment, that is, the particular semi-paradox between need and freedom that gives the identity to the organism as independent and, at the same time, dependent on its environment; I also explore the idea of space and how it grounds the cognitive relationship that the organism has with its environment. In the last chapter, I explore the temporal identity of the living individual that remains the same, not only in spite of change but thanks to it; I propose that the basis for a continuous identity through time is the normative relation that I constitute with my environment, a relation in which the world is for me, not only because it appears to me, but because I can appraise my interactions with it depending on how convenient or inconvenient they are for my own life; it is by this appraisal that I constitute the habits that make my surrounding world familiar for me, that make it my habitat. I finish with some reflections on the possible developments of this theory and on the work that remains to be done, especially with respect to topics like language and intersubjectivity.

## Resumen

La cognición presupone una relación entre un individuo vivo y su entorno físico. De acuerdo con esto, mi intención es mostrar en esta tesis que la individualidad del ser vivo, aunque permanece independiente del exterior e idéntica a través del tiempo, se constituye dinámicamente en la relación dialéctica con su mundo circundante. Individualidad no significa aquí el objeto definido de nuestra experiencia fenomenológica sino la misma experiencia vivida de ser un individuo que subyace a todo acto fenomenológico: mi objetivo no es ofrecer a teoría de cómo individuamos los objetos en nuestro mundo circundante o, más específicamente, el subconjunto de esos objetos que corresponden a lo que conocemos como seres vivos (aunque tendré que decir algo general al respecto) sino más bien cómo soy yo mismo un individuo viviente y cómo ser individuo es la condición para todas mis experiencias subsiguientes. Voy a acercarme a este problema explorando cuatro características básicas de lo que define algo como un individuo y voy a dividir la tesis de acuerdo con estas características: En el primer capítulo, explore la unicidad del individuo vivo, el hecho de que, como individuo vivo, yo soy lo que soy y nada más puede ser yo; esto me lleva a explorar los aspectos autorreferenciales de la experiencia y la distinción radical entre mí como sujeto y el mundo como fenómeno; explorando la unicidad, también reconozco la naturaleza esencialmente material de los organismos e incluyo el problema de la totalidad como parte de este capítulo; en este sentido, exploro la idea de la composición material compleja y la unidad auto-causada y también estudio críticamente algunas propuestas tales como la teoría Kantiana de los fines naturales y la teoría de la autopoiesis. En el segundo capítulo, explore la diferenciación del individuo con otros seres en su mundo circundante y me enfoco particularmente en la relación dialéctica entre el organismo y su entorno, esto es, la semi-paradoja particular entre la necesidad y la libertad que le da la identidad al organismo como independiente y, al mismo tiempo, dependiente de su entorno; también exploro la idea de espacio y cómo esta fundamenta la relación cognitiva que tiene el organismo con su entorno. En el último capítulo, exploro la identidad temporal del individuo vivo que sigue siendo el mismo, no sólo a pesar del cambio sino gracias a él; propongo que la base para una identidad continua a través del tiempo es la relación normativa que constituyo con mi ambiente, una relación en la cual el mundo es para mí, no sólo porque se me aparece sino porque puedo evaluar mis interacciones con él dependiendo de qué tan convenientes o inconvenientes son para mi propia vida; es con esta evaluación que yo constituyo los hábitos que me hacen familiar a mi mundo circundante, que crean mi hábitat. Termino con algunas reflexiones sobre los posibles desarrollos de esta teoría y sobre el trabajo que queda por hacerse, especialmente con respecto a temas como el lenguaje y la intersubjetividad.

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## INTRODUCTION

It is surprising that, in spite of the advanced state of biological sciences, there does not seem to be a firm consensus about what exactly is life. I think one of the problems that must be solved in this discussion is whether the technical definition should have any consideration whatsoever to what we, the people, think about the issue at stake. Unlike other concepts such as “heat” or “force,” the concept of “life” has not still traced a firm boundary between the manifest and the scientific image and it is not clear that it will ever do so. When studying the galaxies or the atoms, the scientist can easily ignore her own place in the studied phenomena but, can the biologist do the same? Can there be a theory of life that ignores the fact that we are ourselves living beings (in the same way that there is a theory of heat that can easily ignore our experiences of hotness or coldness)? My interest is not to solve these interrogations. This is not a thesis on philosophy of biology as a part of philosophy of science. However, I do intend to address the problem at the basis of these and other related questions. I want to take seriously the inquiry of defining life. Furthermore, my intention here is to reformulate the question of what is life in terms of what it is to be alive.

Irrespective of whether scientific biology can ignore our experience of being alive, it is true that the difficulty for generalization resides in that very experience. To pose the question of life in terms of what it is to be alive forces us to take a subjective point of view into consideration. In this context, life is not just a general property, or an abstract function but a lived experience of a particular individual. That is why, ultimately, my problem is that of defining what is it to be a living individual. That, I think is what makes the study of life so distinctively complex. If biology ever gets rid of the necessity of studying individuals *qua* individuals – that is, *qua* organized autonomous unities – then it will lose, for good or for worse, its special character among the sciences. Unlike other physical events, biological processes are part of the development of a living individual. They just do not come and go but are phases in the constitution of an organism. Moreover, “it is not that living things are the subjects of events falling into a certain form of process, but that they are subjects of a certain form of *agency*” (Thompson, 2008: 43)

It is this agentic character what makes the problem of life a perennial problem in philosophy. If biology loses its character as a special science and becomes an uninteresting region of the general physical sciences, the problem of living individuality would still remain philosophically relevant as the basis of all transcendental and constitutive analysis. I began saying that it is surprising that biological sciences have not solved the problem of defining life. But knowing that modern science describes general laws and assuming that it is difficult – if not impossible – to ignore the subjective-individual character of life, it is easy to understand the impediments to get to a satisfactory definition. What is even more surprising is that so many philosophical approaches have ignored the problem of life altogether. Hans Jonas identified this negligence of life in modern science and found in dualism its roots. By dividing the world into material and mental and then by trying to reduce one to the other either with materialism or idealism, modern philosophy excluded life from the field of philosophy:

“Only a world objectified to pure extensive outwardness, as materialism conceived it, leaves opposite itself a pure consciousness which has no share in it, in its dimension

and its function – which no longer acts but merely beholds. And vice versa, it is this bodiless, merely beholding consciousness for which reality must turn into series of points juxtaposed in space and succeeding in time: points of extensity necessarily as external to one another as they all together are to consciousness, and therefore offering no other rules of order than those of extraneous collocation and sequence” (Jonas, 2001: 20)

Life is excluded because it involves both materiality and consciousness. Materialism and idealism are but two extremes of the same coin of lifeless metaphysics. The *res cogitans* and the *res extensa*, by excluding each other transform the idea of conscious matter into an oxymoron. But idealism and materialism also coincide in renouncing to any consideration about individuality. If there is a point where mind and matter can coincide – as Descartes pointed out in his Fourth Meditation – is in the mathematical model that describes general formal processes: both the world and the mind are governed by the laws of the geometric model (replaced later by the more general logical model).

The return of the first-person perspective might have solved, to some extent, the problem of the individuality of consciousness, but not the problem of material consciousness. Authors like Saul Kripke or David Chalmers vindicate mental terms but, in the end, it means a return to dualism where consciousness and matter just happen to coincide in our reality but may live apart in other possible worlds where zombies and bodiless pains exist. But the illusion of the separation of mind and body is more difficult to defend when we talk about particular lived experiences: Can a bodiless being have an experience of movement? Can a disembodied mind navigate its environment and have a perspective of the world around it? Moreover, if the stubborn dualism invites us to think in a world where that is possible, would that world be the same as ours? In what sense the experience of that bodiless creature is the same as my own living experience? Irrespective of how extravagant they may appear to the modern mind, the medieval disputations about angels and spiritual creatures had an interesting point because they precisely addressed these questions. Understanding our life as terrestrial beings is understanding our material existence and our environmental situation. A purely spiritual being with no situation – like an angel or any other disembodied mind<sup>1</sup> – cannot be said to share our experiences.

Given that I begin by rejecting dualism and, consequently, by rejecting what Jonas called the “partial monisms” that derive from it – namely idealism and materialism – I do not only have the possibility of “circulating” between theories of both matter and mind but I have the necessity of doing so. Neither the thinking mind or the material world alone can ground life. The enabling conditions life go far beyond the figments of our imagination and the desires of our will and also the subjectivity of life cannot be addressed by the general laws of descriptive science. In the living individual both the material and the mental coincide in a primordial unity, that is, not in a juxtaposition of two realities that are separated, but in an essential totality that can only be distinguished theoretically. But what do we mean with these

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<sup>1</sup> I do not include God because there are some people, such as myself, who happen to believe that God was incarnated at some point in history. But even for us it is extremely difficult to fathom this idea of an incarnate God and we must humbly accept that much of it depends on a faithful assertion.

concepts of “individuality” or “totality”? I will expose briefly some theories about those and other related concepts and will show how I will apply them in my work.

## 1. What is an individual

The starting point for our research is to define what conditions should meet an entity in order to count as an individual. In metaphysics, to single out the conditions of an entity doesn't imply that there actually exists something fulfilling those requirements. For example, describing the conditions that would make something an extra-terrestrial living being does not compromise us to accept the existence of extra-terrestrial life (see Hoffman & Rosenkrantz, 1994). This distinction was known in Mediaeval times as that of essence and being or essence and existence. It is possible to know the essence without there being any existent that instantiates it. However, in my own research, I will “prove” that the concept of individuality has an extension – that is, there exist individuals – by describing the existence of living individuals of which I have myself absolute certainty in my own experience as a living being. This means that the way I will interpret the conditions for individuality is not a semantic-metaphysical analysis of general conditions but rather an existential analysis of the transcendental grounds of the concept of individual. The conditions of individuality that I will enumerate in what follows are not formal properties but they are primarily existential qualities that can be corroborated in existence. In other words, these conditions are not hypothetical properties about possible entities but descriptions of what is evident to our natural experience. I hope this distinction is clearer in the following chapters.

### 1.1. The problem of individuality

Jorge Gracia (1983) has pointed out five aspects related to the problem of individuality: a) the intension of individuality; b) the extension of individuality (or lack thereof); c) the ontological status of individuality; d) the principle of individuation; and e) the discernibility of individuals. I will use the introduction to talk about the first aspect, intension, and will let the aspects b, c, and d for the rest of the thesis. I will not address the problem of discernibility directly.

#### 1.1.1. Intension

The intension of individuality refers to the characteristics that define something as an individual. It might be that nothing in the universe is able to meet those characteristics (we will see more of that in the next section), but there exists a logical possibility that something eventually could effectively meet them. Intensionality has to be strictly defined so that all individuals and only individuals meet the requirements listed. There is no consensus on the list of these characteristics and the items listed usually depend on some vague intuition. Nevertheless, we will expose some of the aspects that have been considered as definitory for individuality so that we can use them in the next chapters

#### 1.1.1.1. Van Inwagen's negative definition

Peter van Inwagen (1990) has pointed out the problem of individuality negatively, that is, he has defined individuality according to the characteristics that prevent something from being an individual. He has listed five of these characteristics:

1. A mere modification of something else is not an individual: wrinkles, cracks, shadows, changes, etc., are not individuals for they depend on the presupposed existence of individuals they are modifications of.
2. A mere collection of things is not an individual: heaps, piles, agglomerations, etc., are not individuals.
3. Stuff or parts of stuff are not individuals: mass terms like wood, water, sand, etc., are not individuals.
4. Universals are not individuals: species and genera are not individuals.
5. Events or processes are not individuals: a war, a project, a performance, etc., are not individuals.

I will translate these conditions into positive ones in order to offer a more exact characterization and in order to relate it to other accounts of individuality:

1. Independence: *An individual is the thing on which the modifications or proper features depend for their existence.* The crack on the floor is not an individual distinct from the floor itself, the wrinkle in the carpet cannot exist independently of the carpet, and so on. Apart from modifications, we can extend van Inwagen's definition and also include tropes, that is, individual properties like the baldness of Socrates or the beauty of Helena. The baldness of Socrates depends on Socrates, but Socrates himself, if he is an individual, is not a modification or a trope of something else. Philosophers who deny substantiality or individuality affirm that there is nothing beyond the concrete properties or modifications that can be identified in a given entity, but this objection is based on the idea that it is possible to think about properties without individuals but not individuals without properties.

2. Wholeness: *An individual must be a whole that is more than the aggregate of its parts; aggregates can be of homogeneous or heterogeneous unities.* Let's define aggregation very broadly as spatial vicinity. If we counted as individual any aggregate of heterogeneous unities, practically every set of neighbouring objects would count as an individual; for example, the set containing the books, notebooks and the bottle of water on my desk would be an individual. In the end, we would have no criterion to say what counts as individual and what does not. It is more intuitive to say that only aggregates of homogeneous objects constitute an individual, but we have, among others, the problem of sorites that we will mention later; another more important problem is that, if we accepted aggregation as a criterion of individuation and if we restricted it to aggregation of homogeneous elements, then we could not have individuals composed by diverse parts, which would lead us to deny the individuality of practically every macroscopic object, and very particularly, of living entities, whose composition is extremely diverse.

3. Difference: An individual must be something that can be counted and sorted out as different from other individuals. There is a grammatical aspect in this definition. In English we have the distinction between countable and uncountable nouns. We know that we can talk about many trees, but not of many sugars or teas. Of course, the grammatical criterion is not exact and may vary from language to language: in Spanish we have ‘consejos’ [‘advices’] or ‘muebles’ [‘furnitures’] and in German ‘Gemüse’ is a mass noun unlike ‘vegetables’ which is countable. However, the point of this grammatical distinction is that it reflects a difference between masses or stuff and individual things. When we can sort out something from its context it means that we have a criterion for identifying it, or rather a criterion for differentiating it clearly from its surroundings, and that criterion belongs to the individual itself, not to some accidental delimitation.

4. Uniqueness: An individual is unique and is not instantiable in further individuals. This is perhaps the most important characteristic of individuality and it is akin to the mediaeval principle of incommunicability of individual substances (Gracia, 1983). This principle states that universals are different from individuals because they can communicate their essence to a potentially infinite number of entities. “Communicate” here means that they can be common to various individuals, they can be shared or participated. For example, there are many objects that have in common the features of “dogness” because they all belong to the species dog and these features can be shared by more individuals as long as reproduction continues. Individuality, on the other hand, cannot be communicated, it is unique. Socrates’s ‘socratesness’ cannot belong to any other being. Were that possible, Socrates would not be an individual but a species. Now, the interesting problem is to describe in what consists this individuality that cannot be ‘communicated’: Is there a specific property that Socrates has and Plato cannot have that makes him an individual though he shares his humanity with Plato? Or is it the case that no property or description can account for the individuality of Socrates? This latter option is what Duns Scotus called the ‘haecceitas’, that is the concreteness of individuals. As we will see later, my concept of individuality depends – to some extent – on the idea of haecceity because it resists any reduction to a set of properties or functions and it depends on the present situation, the here and now of substances<sup>2</sup>.

5. Persistence: Finally, an individual is the subject of a process or an event that endures while the events or processes take place. This is a very fruitful point for debate and elaboration. It seems relatively easy to imagine static entities that can be characterized by the conditions already stated. However, if we want to affirm the existence of individuals in the natural world, we have to recognize that nature is dynamic and that everything is subject to temporal change. In other words, if there are natural individuals and if nature is always changing, then natural individuals are subject to change. This seems to lead to a paradox, because individuals are at the same time identical and changing. Some philosophers have been tempted to say that individuality is actually an abstraction from regular processes. The observer would have to postulate the existence of an underlying principle that remains unaltered in spite of the variations it suffers. The challenge for a theory of real natural

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<sup>2</sup> Unlike Scotus, however, I do not think that a haecceity is a complete individual independent of its essential properties. However, this discussion will lead me into philosophical terrains that I do not intend to address in this work.

individuals is to prove that there is a false dilemma between change and identity or process and individuality.

#### 1.1.1.2. Gracia's thesis of the prevalence of non instantiability

Gracia (1983, 1984) has recognised five features that define individuality according to medieval theories on the subject: a) *indivisibility*: individuals cannot be divided in parts without losing their fundamental character; b) *distinction*: individuals are different from other individuals of the same kind and from other things; c) *multiplication*: an individual is a member of a species that has (in act or potentially) more individuals of the same kind; d) *continuity*: individuals remain the same through time; and e) non predicability: individuals cannot be the predicate of a proposition unless it is a proposition of identity (eg. "Octavian is Augustus") f) non-instantiability: individuals are instances but they cannot themselves be instantiated.

The feature of continuity (d) is identical to the fifth item mentioned in the previous section. Indivisibility (a) is related to wholeness (2) in the sense that an individual is more than the sum of its parts: to divide a heap of 10 stones into two heaps of 5 stones each does not change the nature of the original aggregate (both remain essentially heaps though they have a difference of degree) but to cut the leg of Blas de Lezo, for example, does not leave us with two individuals of the same nature (the removed leg is and Blas do not have a mere difference of degree but a qualitative difference insofar as the former is not alive and the latter is). Distinction (b) is related to difference (3) in the sense that the existence of an individual is independent from the events that take place outside of it and this makes possible to sort out an individual from its surroundings and from other individuals of the same kind. Non predicability (e) is more a logical than an ontological feature and depends on the power of conceptualising what is already recognised as individual; it can be related to independence (1) in the sense that properties or accidental features are recognised only as predicated of an individual that they depend on for their existence.

The feature of multiplication (c) is somehow related to uniqueness (4) in the sense that it involves the possibility of having two or more entities that are identical in some of their characteristics but differ in others. However, Gracia has proposed a sixth feature that he considers is the most important in the definition of individuality: f) non instantiability. This one is also similar to uniqueness, but Gracia wants to defend that it is the necessary and sufficient condition for individuality. Unlike non instantiability, the other five features, he says, are not enough to define individuality and consequently, this last feature is presupposed by the other five. Let us develop a little bit further this argument:

According to Gracia, the first four features of his list are based on presumptions about the world where the individual exists and thus cannot be the defining features of individuality. So, distinction and multiplication (b, c) presuppose a world with more than one individual; non divisibility (a) presupposes a spatially composite world; and continuity (d) presupposes a temporarily composite world. Moreover, non-predicability (e) presupposes the existence of

a conceptual system that, unless we advocate a form of ontological logicism, refers to a non-conceptual world of objects already individualized.

This objection against considering these the definitive features of individuality seems strange at face value. Is not the world we live in composed by various individuals? Is not it spatio-temporally complex? Is not there a conceptual system to describe it? Does this objection mean that individuals are defined in essence only when we can conceive of a world with a single individual that is nothing but a logical figment? Gracia responds by establishing that extreme examples of universes with a single individual do not prove anything indeed, but they show us logical possibilities. In the case of the definition of individuality, I think it is important to have in mind these logical refinements at least to some extent, because they will allow us to trace the limits and possibilities of a purely phenomenological or conceptual research.

Furthermore, it is important to remember the classical metaphysical distinction between intrinsic and extrinsic features: David Lewis states that “A sentence or statement or proposition that ascribes intrinsic properties to something is entirely about that thing; whereas an ascription of extrinsic properties to something is not entirely about that thing, though it may well be about some larger whole which includes that thing as part” (Lewis, 1983: 197). A typical example is mass vs. weight: the former is an intrinsic property of a body whereas the latter is an extrinsic one because it depends on the gravitational qualities of the space where the body is in. Keeping this in mind will help us not only to have a defined notion of individual but a clearer comprehension of the relations it establishes with its surroundings. As we will see later, there are some aspects of biological individuality that can only be defined by reference to the way the physical world works and that leads us to avoid a view of individuality that ignores the concrete features of the material surroundings to which it belongs.

Another important point in Gracia’s search of “pure” individuality is that the features that usually work as defining of individuality are rather elaborations on a primitive concept. So, for example, if an individual is that what disappears when it is divided into parts, are we not presupposing individuality before division? Is it not the same case with continuity? What is it that remains the same through time, and what it is to be “the same” in the first place? The same can be said for the other features. So, before entering in the topic of the way the individual relates to its context, it is important at least to begin with asking ourselves what the individual is.

So, let us elaborate on the definition of this sixth feature that Gracia considers as the only sufficient and necessary condition for individuality and the only intrinsic property that defines an individual. First of all, this feature is defined in opposition to instantiability, that is, in opposition to the possibility of being common to many instances of the same universal. Whereas “man” can have multiple instances, “Socrates” cannot. Independently of the world it lives in, an individual is something that cannot be instantiated. Even if we have two individuals with identical properties, each remains an individual since both are instances of a universal. If there are individuals at all, there also must be something that is impossible to communicate from one individual to the other, a property, or quality, or some existential condition that is the basis of all other defining features of individuality. To understand



individuality as persistence, as difference, as wholeness, etc., presupposes that “something” persists, that “something” is different from other entities, that “something” has parts. This “something” necessarily is not identical to others and cannot “bestow” its individuality upon others.

Unfortunately, Gracia does not offer examples of what actual entities count as individuals in this primordial manner, and it is possible that the extension of individuality is empty as ontological nihilists argue. So, in order to understand non trivially what does non instantiability consist in, we will have to give some examples of objects having this feature, or we would have to offer an argument against the very possibility of something being like that. My contention is that mechanistic metaphysics and representationalist psychology rule out any possibility that individuals exist as such since these theories reduce individuality to a cognitive fiction that might be useful for practical transactions with the world. However, if we start from a phenomenological-ontological point of view, it is possible to affirm the existence of one individual with a non-instantiable property, with something that no one else can have instantiated. I am myself that individual and my experiences - and ultimately, my habits - are the elements of my existence that no one else can share. In other words, my thesis intends to prove that living beings do meet the conditions of individuality, starting from non-instantiability.

Though I affirm that the ultimate basis of individuality resides in first-person lived experience, this thesis is not about *myself* (at least not directly). I will describe individuality as a general existential condition and will focus particularly on living individuality as something that we all share as living beings but that each one of us has a distinct experience of. However, though I will try to evade all reference to my own personal experience and will restrict the description to pre-conceptual and exclusively organic or bodily individuality, I will focus on the experience of animals - particularly mammals - understood as complex entities with a central nervous system and capacity for self-movement and sophisticated perceptual abilities.

I think that even if I “silence” my own personal experience (nothing about my being a Colombian philosopher struggling to write his thesis will be part of the general argument), it is impossible to understand the world of other individuals and especially individuals of other species without starting with my own particular phenomenological structure. As Christian Lotz puts it following Husserl, to understand the experiential faculties of other animals is a modification [Abwandlung] of my own faculties. Anthropomorphism in the description of animal experiences is inevitable: “Every modification of my experience through an animal is still a modification of *my own Ego* [...] we must define the animal as an a-normal experience of our own experience given that we encounter in interaction with animals our own experience in *other* possibilities.” (Lotz, 2006: 199)

Though non-instantiability can be thought independently from other features of individuality, if my idea is to study living entities and my starting point is the study of my own human experience, it is inevitable to refer to other features that are intrinsically connected to the fact that animals exist as material individuals. In this sense, considerations about material composition, space, and time are necessary for a complete picture of animal individuality. From this consideration, I will divide my thesis into three main chapters that will reflect four

aspects of individuality, namely, non-instantiability, wholeness, differentiation, and persistence.

## 2. Outline

Throughout the thesis, I will show the limitations of mechanistic and intellectualistic models of individuality. But I will also challenge theses derived from phenomenological and systemic premises, such as the thesis of transcendental idealism, the idea of the extended mind and the essentially intentional nature of consciousness. My idea is to account for individuality and the self without ignoring the physical background in which this individuality emerges. As I pointed out before, a purely descriptivist language – such as the language of science – cannot address the problem of the self if not by dismissing it as an “illusion”; also, a purely idealistic-transcendental language cannot account for the reality of the world in which the individual lives and cannot either ignore the background of scientific theories at our disposal in order to address the problem of subjectivity. I do not pretend to offer a complete theoretical analysis of the self, let alone a complete description of the physical background of our material existence. However, my approach – which has many points in common with the “philosophy of the organism” (see Chapter 1) – includes a consideration of both the material and the subjective aspects of individuality. It is only by theoretical abstractions that we can think the subject as separated from its material conditions and vice-versa. Since my idea is to offer a description of the existential starting point of individuality, there is no place for such distinctions.

My thesis will be divided into three chapters. These chapters correspond to a definite characteristic of individuality. I have chosen four characteristics that are particularly relevant for an ontological description of the living being, namely, uniqueness, wholeness, difference, and permanence. Let us see how do they appear in the structure of this work.

### 2.1. First chapter

The first chapter comprises the two intrinsic aspects of individuality: uniqueness and wholeness. As I mentioned earlier, uniqueness must be the starting point of any theory of individuality because all other aspects presuppose it. However, since we are describing living material beings, it is impossible to talk about uniqueness without talking about the essential unity of the material composite. The incommunicable unity of the living individual is “instantiated” or rather “lived” in a body with parts that are coordinated within a whole. These two aspects cannot be thought separately in a material unity.

In the first part of this chapter, I begin with the problem of the self and my starting point is a critical analysis of two representative atomistic theories of the self: the Humean theory of the bundle and the Strawson’s theory of the SESMET. Then, I introduce the Kantian distinction between transcendental and transcendent and show that atomism describes the self as an object of reflection but not as the reflective subject that grounds objectivity. Since Kant does

not develop a complete theory of this transcendental subjectivity, I examine the notions of the minimal self, given by contemporary phenomenology, particularly the theory of Zahavi of the minimal self as a general sense of “mineness” that accompanies all subjective representations. Finally, I go one step further and introduce the theory of radical subjectivity proposed by Michel Henry according to which the self is not merely the sense of subjectivity of my mundane experience but rather the power of being self-affected. *It is this radical self-reference what constitutes a genuine uniqueness because, by definition, it is impossible to communicate my self-referential experience with other individuals.* Here I present the Henryan distinction between sensation and affection, the former being the capacity of responding to the variations in the environment and the latter being the radical possibility of recognizing oneself in the subjective experience, be it by passive affection or by active self-movement.

In the second part of this chapter, I begin by pointing out the material nature of the living self and how from this materiality follows an openness to the world that structures subjective experience. After that, I examine the problem of material individuality by examining critically the mechanistic metaphysical background of modern science and then by exposing a contemporary view that recognizes the historical and structural character of individuality. Then, I pose the problem of structural complexity and how it has been addressed by theories of external intervention such as intelligent design and natural selection. At this point, I introduce Kant’s theory of the organism in order to show the problem of self-production and self-organization and how these ideas also introduce the problem of an intrinsic normativity. I follow by exposing critically the theory of autopoiesis; it pretends to be an explanation of intrinsic self-organization but, as I point out, it has many problems of internal consistency – due to its confusing terminology – and ends up being an incomplete description of living self-organization and intrinsic normativity. Finally, I re-introduce the problem of subjectivity and self-movement as the criterion for complex unity of the living being.

## 2.2. Second chapter

In this chapter, I want to address the problem of difference and to show how living individuality is constituted in a dialectical relationship with the surrounding environment that works both as a threatening factor and an enabling condition for life. This is where I introduce the idea of needful freedom, understood as the quasi-paradoxical situation in which the individual organism has to resist the environmental tendency to thermodynamic equilibrium (which means death) by taking the resources that the environment itself offers. The tension here is expressed by saying that the organism needs the environment to be free, it needs the other that threatens its existence in order to affirm itself as different from this other.

In the second section, I go deeper into this dialectical relation by analysing the constitution of space by the living being. I begin with Hans Jonas’s theory of individuality in which local movement plays a crucial role. Thereafter, I introduce some problematic remarks about this

theory by using mental experiments in which it is possible for an organism to meet Jonas's requirements for individuality and yet fail to be a genuine living individual. I focus particularly in the idea of a "cyber-bat" because it helps me to introduce the topic of the constitution of space and also allows me to criticize theories of extended mind.

In order to expose my theory of the constitution of space, I explore some general ideas of perception. But first, I introduce the idea of kinesis and wandering in order to offer a minimalistic starting point for spatial constitution that does not presuppose an already given space of objects and values. Then I emphasize on the idea of distance and difference in order to show that the organism is in relationship with its environment but yet conserves its own individuality and its own differentiation with it. Then I go fully into the theory of perception – focused on tactile and visual perception – in order to show how the essential difference between the organism and its environment is reflected in the independence of bodily movement and object constitution. I then introduce the idea of peripersonal space in which tactile and visual perception are integrated. Finally, I introduce the ideas of self-change and continuity over time – related also to my criticism of Jonas's theory of individuality – in order not to lose from sight the subjective character of individuality and to make the transition to the last part of my thesis which is concerned with temporal permanence.

### 2.3. Third chapter

My intention in this chapter is to describe the temporal continuity of the living individual. Before going full into that description, I begin with a brief critical analysis of the classical mechanistic theories of time and why, in this context, the continuity of an individual is impossible unless some external ground is introduced *ad hoc*. Then I begin with the description of circadian time and how the natural cycles of nature ground the cyclical processes of life itself. I also expose the theory of Thomas Fuchs who recognizes this cyclical temporality as the essential temporality of the living body. While I agree in general, I also point out at some possible misunderstandings related to the idea of homeostasis and pre-established order; then I propose that cyclical time needs to be understood in a much wider context than that of homeostasis and that the equilibrium of life is better understood as homeodynamic.

By amplifying the idea of homeostasis, I can now study the temporality of the living subject as it is thrown into its environment and as it moves therein. Before that, however, I present a theory of meaning that does not depend on the truth conditions of a descriptive-objective language but rather on the conditions that guide an organism as it moves in its environment and also the conditions of normal temporal succession that give some stability to animal movement. At this point I examine again the perceptual relation of the organism with its environment but this time, focused on the sense of hearing; it is in hearing that the structures of retention and protention appear clearly and thereby it is shown that the temporal experience of the subject is structured as an immediate present that presupposes an antecedent past and a projected future, that is, the experience of the individual is that of a specious present. Here I emphasize the phenomenological prevalence of the present but also its

fundamental connection with the experience of the past and the future. In our experience only the present exists properly, but it also exists as a reference to the absence of the past and the future: it exists *historically*.

In the next section, I focus on an aspect that I have been suggesting through all the thesis, namely normativity. I assert that it is by assessing the environment, by giving it certain value, that we can give meaning to our history and, consequently, give unity to ourselves. It is by normative assessment that our movements become practices with a purpose and it is in our practical relation with the world that we constitute our environment by taking care of it. This normative assessment also allows us to anticipate safely the world around us and adapt to it. However, these anticipations are not completely certain and risk is always a factor to take into consideration. In fact, it is possible that the risk is very high and yet we decide to gamble because there is no other way to grow. This is what the concept of antifragility describes: there must be something in us that is susceptible to change or reformulation in order to make ourselves better in anticipating possible outcomes. Change is not only possible or necessary, it is enhancing and gives place to growth. However, antifragility has its limits and, in any case, the organism is in a constant search for stability. This is where the normative assessments and the safe anticipations become sedimented in habits that ultimately constitute a stable identity.

Finally, by taking this concept of habit into account, I return to the importance of thinking about the identity of the organism as a dialectical quasi-paradoxical process. This is why I introduce again the idea of materiality but now from the point of view of a meaningful field of potentialities and limits. First, I introduce the concept of affordance as the particular composition of the physical world understood as an environment. Then, I return to habits and how they work as “proto-abductions” in which the organism anticipates the possible outcomes of its present situation according to the norms of the situations it is used to. In the end, I study the in-habitation of the world as a kind of “normalization” of the material surrounding world and emphasize the continuously open process of subjective self-constitution that emerges in the dialectical relation with the environment. It is by “imprinting” my habits in the material world around me that I transform it into my habitat and that the objects around me become the ends of my purposeful actions. It is thus that the subject recognizes itself in a familiar world and can be said that it is the agent and also the product of a particular history that is not written or thought in a narrative but that is engraved in the marks that it has left in the material surroundings and also in the marks that these interactions have left in its own body.

## I. NON-INSTANTIABILITY AND WHOLENESS: SELF-AFFECTION AND COMPLEX UNITY

### 1. Difference between Objective (Transcendent) and Subjective (Transcendental) Self

#### 1.1. Psychological atomism

##### 1.1.1 Hume's Bundle Theory

An important aspect of modern philosophy, at least in its empiricist variant, is that it is based on a psychologistic assumption that takes human understanding as the foundation of the laws of nature. In this sense, the study of the mind would give us the basis for the study of nature. If there are individuals, then they must exist as a datum of our experience, and this is true even for our own individuality as cognitive subjects. The world is a world of representations and individuality is to be found as a product of our cognitive operations. Given this background, David Hume has built a case for rejecting the real existence of individuality at the very basis of any conception of the world and ourselves. Let's see some of the main aspects of the arguments he exposes to defend this idea.

In the first place, Hume describes the structure of understanding as composed by impressions and ideas, depending on how directly and "vivid" is a given experience. These can be simple or complex and their nature depends on their simplicity or their composition according to some kinds of relations that can be established among them. In the concrete case of individuality, if it exists, it must be either a simple or a complex idea or impression. Since there is in principle no clear-cut distinction between mind and world in Hume's theory, he establishes that the conditions that constitute our notion of individuality for external objects must be the same principle for the individuality of selves.

Hume's conception is explicit from the beginning of his *Treatise of Human Nature* where he states that "The idea of a substance is nothing but a collection of simple ideas that are united by the imagination and have a particular name assigned them by which we are able to recall, either to ourselves or to others, that collection." (THN, I. v., 6)<sup>3</sup> From this it is clear that Hume doesn't conceive individuals as anything beyond the collection of their elements and it would directly violate the principle of wholeness for individuality. However, he recognizes that the idea of individuality is intuitively powerful and needs to elaborate on his point that this idea is nothing but a fiction.

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<sup>3</sup> I am using the Oxford 11th Re-impression (Hume, 1960))

Hume begins with his argument by defining what would count as an individual if there existed one. The main characteristic that an individual should possess is invariability. The property of individuality must be “apply’d in its strictest sense to constant and unchangeable objects.” (THN, 14) So, if we were acquainted by individuality via an impression, this impression would have to “continue invariably the same, thro’ the whole course of our lives.” (THN, 251) However, no such impression exists, because there are mostly, if not always, changes and disruptions in my experience of objects.

If we have no impression of invariability and, therefore, of individuality, it is then an idea that arises from associating closely related objects. When we see a succession of different objects that are closely related, “The thought slides along the succession with equal facility, as if it consider’d only one object; and therefore confounds the succession with the identity.” (THN, 204) These thoughts emerge from the resemblance between an imaginary act of considering an object invariable, and a succession of related objects. That resemblance leads us to deny empirical evidence and to imagine something underlying succession and binding elements together: “we are apt to imagine something unknown and mysterious, connecting the parts, beside their relation.” This is why we confuse related impressions with identical objects (THN, 253-4) The idea of identity is then not justifiable by our perceptions and emerges as a mental construction.

These very same principles apply to the notion of the self as a unity. It is common to think that “we are every moment intimately conscious of what we call our SELF; that we feel its existence and its continuance in existence; and are certain, beyond the evidence of a demonstration, both of its perfect identity and simplicity” (THN, 251). However, in consonance with the principles already established, the self is an illusory idea that has no basis in any impression. If we had an impression of the self it would have to “continue invariably the same, thro’ the whole course of our lives” (THN, 251) But “there is no impression constant and invariable” (THN, 251) neither of any object in the world nor of our own self.

How do we come to get this idea? First of all, there is no self-independent from perceptions. “For my part, when I enter most intimately into what I call *myself*, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch *myself* at any time without a perception, and never can observe any thing but the perception.” (THN, 252) Without perceptions, I “may truly be said not to exist” (THN, 252) This leads Hume to affirm the idea of the self as a “heap” (THN, 207) or “bundle” (THN, 252) of perceptions. Now, given that every distinct perception has distinct existence and that we never perceive any real connection among objects (THN, 259-60), identity is nothing but an added quality that emerges from relations of cause and resemblance. By means of memory we relate past and present events, and this allows that “the frequent placing of these resembling perceptions in the chain of thought, convey the imagination more easily from one link to another, and make the whole seem like the continuance of one object.” (THN, 261)

The Humean self is not an individual for obvious reasons: first of all, as is readily apparent, it is a mere collection of different perceptions that are connected by means of artificial relations of causality. There is nothing intrinsic to the perceptions themselves that unify them,

so if we conceive them as a unity, it is because our tendency to create regular connections lead us to do so. But these memories are contingent and so are the connections that they constitute. The illusion of a unified self comes from an arbitrary attribution that depends on our habits of mind, external to the phenomena themselves. It is not clear, however, why does that tendency to unity exists and whether is it possible to think about our perceptions without presupposing some unitary self. If we look carefully at the language used to express Hume's ideas on the self, it is inevitable to state that "something" acquires a habit and "something" establishes an artificial connection. It seems that the distinction and the connection of perceptions presupposes a unity without which it would be impossible to give any meaning to the theory defended here. Hume seems to recognize this problem, but he offers no solution to it. Kant identified this gap and built part of his theory filling it. But let us see first a contemporary version of Hume's theory.

### 1.1.2. Galen Strawson's theory of the self

Galen Strawson has consistently defended over time a 'Pearl view' of subjectivity based on his theory of SESMET (Subjects of Experiences that are Single MENTAL Things) (Strawson, 1999). According to this theory, the self is the minimal unity of experience. It has its own irreducible, particular first-person nature and it is not exclusive of human or even living beings but is everywhere in nature. Now, it is important to understand that the self, as defined by Strawson, is not identical to the human person. Persons are narrative constructions that survive over time and about which it is possible to tell a coherent story. In the case of human beings, the self as SESMET has a very small duration and does not need to be coherent with its past or its future: "the basic form of our consciousness is that of a gappy series of eruptions of consciousness from a substrate of apparent non-consciousness." (Strawson, 1999: 20-21)

According to this theory, the only intrinsic criterion of individuation for a self is the unified immediate experience, that is, the fact that various qualitative data are integrated into a single unity. This integration is ephemeral and it is replaced by similar unities over time. If we want to attribute some continuity to the multitude of SESMET that take place in human experience, we would have to build a narrative and impose it externally to this multitude of selves in order to capture them: "Dennett's account of the self as an 'abstraction', a 'Center of Narrative Gravity' may be the best one can do if one is determined to conceive the self as something that has long-term continuity." (Strawson, 1999: 21 n.30)

In this case, resemblance and contiguity do offer a criterion to give some unity to a bundle of experiences but what they cannot guarantee is the continuity of that bundle. For Strawson – and contrary to Hume's view – the self can unify synchronically diverse experiences as having one single subject. However, what Strawson seems to share with Hume's theory is the idea that persistence depends on invariability. Accordingly, nothing guarantees that it will remain the same through time. Every time I have a new experience, I become a new self and this generation and destruction of selves occur millions of times through the day. For some cultural reasons, people have obsessed with creating narratives to keep the bundle of experiences together in a fictional "I", but there is no essential reason for this fictitious historical integration.



The ethical implications of this theory are huge and I am not going to go into detail in this respect. Regarding the phenomenological point of view, it is very difficult to conceive of how anyone would actually believe this theory as a genuine description of his or her own experience. If thoughts or perceptions are abstracted away from real life as theoretical entities, the theory seems to make some sense. But if we take into account the need for a continuing experience in order to build projects, achieve tasks or even make the most basic movements, the theory then does not seem to fit. There emerges a contradiction between what we believe of ourselves in common experience and the conclusion of the accepted background of an atomistic theory of consciousness.

This contradiction leads to some to the rejection of their own mundane experience in order to save consciousness atomism. But it is important to make a deeper revision into the other horn of the dilemma about the very nature of our thoughts and our perceptions. Can we really detach our experience from our dealings with the natural world? Can we really live in the world without having some sense of continuity, without an awareness of being the same individual that begun and is executing some definite task? And, furthermore, is the narrative the only way of keeping the bundle of experiences together? It seems that the very possibility of such a counter-intuitive theory is given by the basic way in which we understand our experience. The idea of qualia, in the first place, as the protagonists of the theatre that we ourselves are the spectators of, gives us a weird idea of separation between the self and what it experiences, between “I” and “my experience”. The self remains as an external force that integrates many manifestations of mineness into a unity. It is true that, if we accept this idea of the self as an “integrator”, there is no a priori reason to believe that there must be a continuum of the self through time. But the question about how this supposed integration takes place and how the experience becomes meaningful for a subject remains open and does not necessarily need to be answered in a Humean-Strawsonian way.

Let us examine Kant’s ideas in order to view an alternative to this “bundle” theory of the self.

## 1.2. Confusion between transcendental and transcendent

As we have seen, ontological nominalism has reduced the extension of individuality to atomic particles of sense-data or impressions in which complex individuals are just ideal associations or causal connections of simple impressions. These ideas can be found, as we have seen, in Hume, who talks about complex ideas and also in other authors who refer to complex individuals as logical fictions that emerge from relations between sense data. Beyond the confusion regarding the criteria that govern the association of impressions or the relations between sense-data, there seems to be a tacit assumption that underlies these processes of constitution of complex individuality.

One of the authors that have made a significant contribution to solving this discussion is Immanuel Kant. He traces a distinction between what is constitutive or condition (transcendental) and what is constituted (transcendent) and thereby criticises the idea that complex unities are merely arbitrary. As we will see, every constituted unity presupposes a transcendental unity of the cognizing subject. As Tobias Schlicht points out (2017), even

nowadays there are conceptions of the self that rest on a confusion between the transcendental (subjective) and the transcendent (objective) notion of the self and that is the reason why some authors consider that the self is nothing more than a useful illusion. This confusion is also behind some narrativist and eliminativist theories of the self.

The point with emphasizing the distinction between transcendental and transcendent is to avoid mistaking the self as a represented object (an image, a history, a projection) and the self as the thinking subject that makes all representations possible. Although Kant is right in pointing out this distinction, he leaves the problem of the ontology of the subject unsolved.

### 1.2.1. Kantian transcendental apperception

In his critical work, Kant wants to ground scientific knowledge and for him, this means legitimizing the necessity of synthetic a priori judgments. In order to accomplish his task, he will need to find the conditions, not only for sensory experience but especially for the necessary relations between representations that we find in nature and that constitute scientific knowledge. In other words, he is looking for the fundamental structures that make possible scientific judgments and thereby allow us to understand nature. These conditions are called *transcendental*.

According, to Kant, the transcendental conditions for having empirical experience are space and time. Nonetheless, Kant understands that the kind of intuition that science is built upon requires a *synthesis* of the manifold of sensations that are present to us in space and time. This synthesis cannot be a mere contingent association of impressions. It needs to have a stronger basis, so it can make categorization and necessary anticipation of experience possible.

He explains his theory of synthesis in three steps: “[1] The first thing that must be given to us *a priori* for the cognition of all objects is the **manifold** of pure intuition; [2] the **synthesis** of this manifold by means of the imagination is the second thing, but it still does not yield cognition. [3] The concepts that give this pure synthesis **unity**, and that consist solely in the representation of this necessary synthetic unity, are the third thing necessary for cognition of an object that comes before us, and they depend on the understanding.” (B104)<sup>4</sup> He calls the first the synthesis of apprehension; the second, the synthesis of reproduction; and the third, the synthesis of recognition.

Scientific knowledge requires these syntheses because they allow for a coherent and stable relationship between the objects of perception. The synthesis of apprehension allows us to recognize diverse impressions as part of the same cognitive unity and give therefore *a priori* structuring for the transcendental conditions of space and time. The synthesis of reproduction makes associations of succeeding representations possible and thereby constitutes the basis for the rules of temporal succession and imagination. The synthesis of recognition consists of conceptualizing the objects of our perception, that is, imposing rules for possible appearances and anticipations of experience.

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<sup>4</sup> I am using the Cambridge Edition of the Works of Immanuel Kant (Kant, 1998)

The rules of synthesis, association and anticipation in experience need to enable our cognition to form necessary judgments. Necessity cannot find its grounds in the things as they roughly appear in experience, because bare appearances are always contingent and, as Hume had discovered, they have no essential connections among themselves. Hence, the transcendental condition of necessary judgments does not belong to the world but to the observer. The arbitrary and contingent experiences that appear to us can be organized in a coherent picture of nature thanks to the pure structure of our own cognition that precedes those appearances and establishes necessary laws for their association. Consequently, the synthetic coherence of the observed world is rooted in the synthetic unity of the observing subject. This means that *the individuality of the objects of perception depends on the individuality of the perceiving subject.*

However, there are two ways in which subjectivity can be understood. First, there is an empirical subjectivity or inner sense whose unity is constituted by the same syntheses that unify the external world. Since this subjectivity itself depends on transcendental conditions, it cannot be the ultimate ground of natural cognition that we are looking for: “The consciousness of oneself in accordance with the determinations of our state in internal perception is merely empirical, forever variable; it can provide no standing or abiding self in this stream of inner appearances” (A106). Therefore, there must be another, more basic sense of subjectivity. “This pure, original, unchanging consciousness I will now name transcendental apperception.” (A107)

Transcendental apperception is, therefore, the constituent condition of transcendent objects. Even we ourselves as psychical unities are the product of this basic condition. Self-reflection is then a study of a constituted object that presupposes a more primitive, active subjectivity that is not captured by conceptualization because it makes the very concepts of analysis possible. Our transcendental subject underlies every reflection, including self-reflection.

Regarding the problem of this thesis, how is the analysis of transcendental subjectivity related to the problem of individuality? For Kant, the individuality of our representations depends on their belonging to a concept, and concepts are sets of rules that impose conditions to the particulars that fall under them. In fact, the conditions that we put forward in the introduction of this work can be seen as a set of rules to constitute the concept of “individual.” This leads us to a paradox because, in order to apply the concept of “individual” to an entity, we need to have an individuated entity - an entity capable of thoughts and concepts - from which the very concepts we are using to describe individuality emerge. However, I do not think this has to be necessarily so. My ambition – and I will insist many times on this – is ontological, not epistemological. I am not mainly interested in the cognitive processes and conditions that make possible for our cognition to identify individual objects. My inquiry is about the ontological conditions of individuality, what does it mean to be an individual, what can count as an individual, and whether individuals exist at all. The conditions that we set out for individuality are not epistemic conditions that allow a cognitive system to recognize an individual, but constitutive conditions that make an entity an individual. If something lacks

those conditions, it is not an individual; if something meets them, it is, even if its individuality is cognitively inaccessible and can only be inferred indirectly.

In this sense, we could legitimately ask about the transcendental unity of apperception that makes every other unity possible. Certainly, it is not the same kind of unity of the constituted objects of perception. As Kant himself asserts, “[t]his unity [of transcendental apperception] which precedes all concepts of combination a priori, *is not the former category of unity*; for all categories are grounded on logical functions in judgments, but in these combinations, thus the unity of given concepts, is already thought. The category therefore already presupposes combination. We must, therefore, seek this unity *someplace higher, namely in that which itself contains the ground of the unity of different concepts in judgments, and hence of the possibility of the understanding, even in its logical use.*” (B131, my emphasis). However, Kant believes that every attempt at conceptualizing the transcendental individual is doomed to failure and opts for a formalistic conception of the soul or the self: “At the ground of the [transcendental doctrine of the soul] we can place nothing but the simple and in content for itself wholly empty representation **I**, of which one cannot even say that it is a concept, but a mere consciousness that accompanies every concept.” (B404) As a consequence, not only appearances need transcendental subjectivity in order to be coherent, but transcendental subjectivity is also dependent on the appearances that it accompanies. Subjectivity only exists as an aspect of the phenomenal world that is impossible to grasp neither as a phenomenon nor as a thing in itself.

If this work pretends to account for ontological individuality, and not only for the epistemic conditions under which we can cognitively identify and sort out individual objects, then I will preferably enquire about transcendental, not transcendent individuality. This means that the kind of individuality relevant for my analysis is precisely that one about which Kant decided to remain somewhat silent. There is a pre-conceptual individuality from which the parameters and rules to make sense of the outside world emerge and the analysis of how we understand the unity of worldly objects may shed some light on the understanding of this basic transcendental individual that I am looking for.

### 1.2.2. Transcendental self and the experience of “mineness”

Since the transcendental subject is impossible to represent as an object of my experience, when I am representing myself in an image or in a narrative, I am not actually thinking about transcendental subjectivity. The “self” that actively thinks about the “self” that is represented is still outside the representational field. It is the same with my sensory capacities: I can see the whole world, I can even see my own eyes when I look in the mirror, but I cannot see my own seeing: my faculty of vision is not itself visible. However, according to the defendants of the “minimal self” from a phenomenological perspective - particularly Dan Zahavi - the transcendental is not a mere empty form.

Zahavi engages in a discussion with those who deny the existence of the self, especially those who do so without denying the subjective aspect of experience. According to these authors, the existence of subjective experience does not need a substrate that keeps all objects of consciousness together in order to make that very experience possible. Most of them take the idea of the self as synonymous with the idea of a Cartesian ego, that is, an underlying substance that cannot be found in any concrete experience and that should be, therefore, rejected. Others think that the self is a general property that all my experiences have in common, but the variety of experiences is so diverse that it seems impossible to find any particular property that they share.

Answering to the “Cartesian ego” objection, Zahavi follows Husserl in distinguishing the “self” as the object of self-reflection and the self as the quality of subjectivity: “When Husserl claims that subjectivity is *per se* self-aware, he is not advocating a strong Cartesian thesis concerning total and infallible self-transparency, but simply calling the attention to the intimate link between experiential phenomena and first-person givenness.” (Zahavi, 2010: 325). Again, we found here the distinction between the transcendent and the transcendental subject. The former is the object of my self-reflective consciousness and the latter is the subject of that consciousness. With respect to the second objection, the answer is also that we are not looking for an “objective” (in the sense of “intentional object”) content but rather a mode of givenness:

“The for-me-ness or mineness in question is not a quality like scarlet, sour, or soft. It doesn’t refer to a specific experiential content, to a specific *what*, nor does it refer to the diachronic sum of such content, or to some other relation that might obtain between the contents in question. Rather, it refers to the distinct givenness or *how* of experience [...] It could consequently be claimed that anybody who denies the for-me-ness or mineness of experience simply fails to recognize an essential constitutive aspect of experience. Such a denial would be tantamount to a denial of the first-person perspective. It would entail the view that my own mind is either not given to me at all – I would be mind – or self-blind – or present to me in exactly the same way as the minds of others.” (Zahavi, 2011: 59)

The self is, thus, neither a quality nor an object that I think about. Irrespective of whether the representation of myself as an objective unity is useful or not, the variety of experiential life still is characteristically subjective, it is a perspective that I live in the first person. “If I compare two experiences, say the perception of a green apple and the recollection of a yellow lemon, I can focus on the difference between the two, namely the respective object and mode of presentation, but I can also attend to that which remains the same, namely the first personal self-givenness of both experiences. To put it differently, we can distinguish a multitude of changing experiences from a *ubiquitous* dimension of first-personal self-givenness, and the proposal is that we identify the latter with the experiential core self.” (Zahavi, 2011: 59-60) Transcendental subjectivity is not an empty formal representation, but the essential mode in which experience is presented to me. It is what makes the experience of the world *my* experience. This aspect is not a unitary object but a lived evidence. But it still seems that my self is therefore reduced to the totality of *my* experiences, to the totality of my experienced world. A step further needs to be taken if we are to understand the self as an individual without objectifying it as an object of representation.

## 2. The self-referential subject

### 2.1. Radical Subjectivity

The purely formalistic conception of transcendental apperception as an “empty representation” makes the problem of transcendental individuality impossible to address. The option of defining subjectivity as that which confers the aspect of “mineness” to experience is problematic to define the inner individuality of the self. The individual transcendental subject remains essentially silent and the individuality of the subject is reduced to the individuality of the world. These are the statements against which Michel Henry protests in his philosophy of life and which will base my own analysis of subjectivity. In the first place, Kant’s philosophy establishes that the essence of being is representation (*Vorstellung*) and, thereby, he creates a paradox: he conceives the subject as the essence of being – as origin of the representation – but his philosophy of the subject ends up rejecting the subject itself as impossible to represent: “It is in applying his own presuppositions to the essence of the subject, to the essence of being, that the philosophy of the subject do not find any subject, any being.” (Henry, 2011: 13) The subject is the origin of all representations but it cannot be represented: representation cannot find its own origins, being cannot represent being because it cannot be represented.

On the other hand, as we saw, phenomenology – especially in its later stages – proposed an alternative to Kantian representationalism by generalizing subjective consciousness as intentional or even by addressing directly the question of being. However, according to Henry, the intentionalist generalization of phenomenology still is incapable of finding the transcendental subject and it reduces it to the openness of worldly horizons. Intentional reduction, the last step in phenomenological analysis, “implies nothing less than the confusion of subjective experience with the experience of the world.” (Henry, 2011: 36) Phenomenological reductions still conceive being as appearance, as intentional object, and the subject is then defined as the totality of phenomena, as a contingent fact that is ever open to new possibilities but that does not have the necessary character of lived experience: “The transcendental experience is not only homogeneous to the experience of the world, it is ultimately identical to it and actually grounds it.” (Henry, 2011, 39) However, the conditions that make the manifestation of the world even possible still remain silent in phenomenological analysis and reduced to the totality of appearances. If we reduce the world to what is seen (or heard, or touched), we are silencing the very faculty of vision that cannot itself appear visible to us and that Henry understands as the subjectivity itself: “That it [the subjectivity] is never seen, that the principle of all phenomenality is never phenomenalized in itself and remains, on the contrary, alien to itself, is the paradox of phenomenology, that which is designated modestly as the “anonymity” of the transcendental life.” ((Henry, 2011: 43)

In this context, Henry is interested in what he calls the “essence of manifestation”, the ground of all intentionality and all representation. He believes that Descartes almost made the discovery of this ground of manifestation in his meditations. However, the problem with

Descartes is that he reduced subjectivity to a geometric structure of deduction and did not take affectivity and living experience seriously. What Descartes did accomplish was a conception of radical subjectivity that denies all exteriority and that still remains as a self-referent thought. In sum, phenomenology goes beyond Kantian representationalism because it understands subjectivity as something more than a formal condition and recognizes a character of “mineness” that accompanies all experiences, a pre-reflective self-awareness that is an essential part of every experience of the external world (see Zahavi, 2005). However, Descartes saw something that phenomenology forgot, which is the possibility of a purely self-referential experience, the conception of the self not merely as an “essential element” in worldly experiences but first and foremostly an absolute and self-sufficient quality of interiority. The step further that Henry wants to take is to understand this radical subjectivity from the point of view of affectivity. Let us see.

## 2.2. Self-referentiality and self-affection

If a theory of radical subjectivity wants to go beyond phenomenological “first-person qualities,” it is important first to distinguish between sensibility and affectivity. The former is defined as “the power of feeling any object, that it, of receiving it and of being affected by it notwithstanding this affection being accomplished by a sense as intermediary and, finally, by an inner sense”. The latter “on the contrary is the form of the essence through which it is affected, not by other thing but by itself, so that this original affection – as self-affection, as feeling of itself - constitutes it and defines it.” In other words, sensibility is that character of “mineness” that defines first-person experience and that is a part of the experience among others, particularly the qualities of the objects, while affectivity is not dependent on the experience of external objects but on the self-referential capacity of being both the subject and the object of my affections: “Affectivity is that which relates all things with themselves and thus opposes them to all other things, through the absolute sufficiency of its radical interiority. Affectivity is the essence of ipseity.” (Henry, 2011, 581)

So, in self-affection I do not put my own subjectivity outside myself as the object of my consciousness. I do not think myself in the same way in which I look myself in the mirror, as an external object that I associate with my own experience. On the contrary, both the act and the object are one and the same, it is an experience of myself. When I have a feeling, there is a sense in which I am directed towards the object, but the radical sense of subjectivity is when I refer to myself, when I feel that I feel and when I recognize myself as a passive subject capable of being affected, independently of the world around me. My feeling pain is also my – immediate, non-intellectual – awareness of being a “painful subject,” and the same goes with all my feelings: “it is the feeling itself that is itself received and experienced so that this capacity of receiving itself, of experiencing itself, of being affected by itself, constitutes precisely that which is affective in itself, that which makes it a feeling.” (Henry, 2011, 580) Unlike Cartesian “cogito” in which self-reflection is intellectual, self-affection is a pre-intellectual, even pre-phenomenological state because it is not defined by its “being directed-to.” It is the awareness of myself that is permanent in my own existence and that even grounds every other kind of consciousness of the world.

In the next chapters, I will explore subjectivity as self-transcending and how it relates to the world around it. However, it is important to keep in mind that all transactions with the world, all sensibility, even all relations of spatiality and temporality are grounded in a basic sense of self-referential affectivity: “Affectivity is the condition of sensibility in such manner that sensation [le sentir], as a sensation of a sensible content and as its reception is only possible on the background of it being self-felt,” sensation of the world is always and principally self-affectation of the subject. One aspect in which self-referentiality is also expressed is in the sense of being the agent of my own movements. It is in this capacity of agency that my existence as a living body is more apparent.

### 2.3. Self-movement as the constituent factor of subjective individuality

Not only by self-referentially feeling myself in my sensations but also by moving myself do I recognize my own subjectivity in act. It is important here, as Henry advises following Maine de Biran, not to confound sensations, which are transcendent objects of my consciousness, with the original transcendental power of self-movement. To have and exercise that power of self-movement is not reduced to feeling particular proprioceptive or kinaesthetic sensations as when I have a *quale* that appears in the theatre of my experience. The transcendental knowledge of my own body is immediate and self-referential because I know my own moving body by moving it. My agency is not an object of sensation but a faculty that I exercise in moving myself.

It is this capacity for movement what grounds the experience of the external world by unifying the senses and by allowing an exploration of the world. If we examine all sensory modalities separately, there is no intrinsic way in which we could unify them. The postulation of an encompassing “unified state” of consciousness that embraces the diversity of all my sensations is arbitrary. On the other hand, to give priority to tactile or to kinaesthetic sensations means to propose simply a “translation” of visual sensation into kinaesthetic or tactile one which does not correspond to our experience and leads us to a weird model in which every sensation is ultimately a sensation of movement, or touch. What integrates sensory modalities is my own agentive capacity of acting upon them, of making them the source and the target of my own actions, and this presupposes a knowledge of the powers of our own body. “We must place ourselves interior to the powers which [bodily knowledge] unfolds in order to understand the nature of the world which our body knows.” (Henry, 1975: 94)

In later chapters, however, I will also emphasize the importance of complementing this inner knowledge with the material possibilities of the world that I get to discover in my interactions with it. Even if there is a theoretical possibility of a purely self-affective and self-moving body, the fact is that we exist as material bodies in a material environment and, as I pointed out in the introduction, our self-referential, incommunicable individuality is necessarily complemented with the complex material unity of our living bodies.

## 3. Subjectivity is material and relational



The conception of the subject as a self-referential auto-affective individual and the criticism of an “intentionalistic” conception of transcendental subjectivity might lead us to believe that subjective self-reference is a phenomenon essentially unrelated to anything external to it, which implies that the living individual exists detached from its external conditions. If that were true, we would be able to describe adequately the individuality of a living being without mentioning anything about its relations with the world around it. The thesis of an isolated subject is very well known in the philosophical tradition, at least since Avicenna and is mainly attributed to Descartes<sup>5</sup>: given that it is possible to think reflectively about my own thoughts in isolation of any external relation with the external world, I can conclude that I exist independently of it. As a matter of fact, I happen to interact with the world outside of me but these interactions are accidental and do not constitute me as the self that I essentially am. My “true self” is different from my external transactions with the world which are merely accidental.

Despite this conception of an isolated subject being widely rejected in contemporary philosophical literature, we can ask why does it sound so persuasive at face value. According to Plessner (quoted by Fuchs, 2018: ch. 3), one of the fundamental characteristics of human nature is that it is “eccentric,” opposed to the “centric” positionality of other living entities. In this context, eccentricity “means the capacity of human beings to relate to themselves and their bodily existence, to perceive themselves “from the outside”, that is, from the possible perspective of others, and finally, to confront themselves through reflection.” (Fuchs, 2018: 75-76) The cognitive capacity for mentally “de-centring” ourselves from our surrounding conditions of existence can give rise to the idea that we actually exist independently from those conditions - including the material conditions of our very own bodies - as a separate entity. This is one of the origins of the dualistic conception of human existence: “on the one hand, the lived body is a medium and unobserved center of the enactment of life; on the other hand, the body becomes a consciously used instrument or even an obstacle. At one time, the body is a state of being and existing, at another time, it again becomes an object.” (Fuchs, 2018: 76)

However, the conceivability of an isolated, disembodied existence does not imply that we actually exist as complete closed monads with no relation to any other being. The mental experiments that argue for the thesis of an isolated subject have at least one main problem:

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<sup>5</sup> Unlike Descartes’s cogito, Avicenna’s “Flying Man” experiment is not intended to demonstrate the metaphysical isolation of the subject. As Deborah Black points out, Avicenna’s mental experiments “cannot reach substantive metaphysical conclusions - the Flying Man argument is not sufficient to prove demonstratively the immateriality of the rational soul - but they provide valuable information about the epistemological status of different types of cognition.” (2013: 138 my emphasis) I want to remark this because it is connected with the difference between a cognitively formulated possibility and an ontological statement demonstrated by means of a mental experiment. Furthermore, it is also problematic to attribute to Descartes the idea that the human individual is an isolated mind: particularly, in his answers to Hobbes’s objections to the Meditations (Descartes, 2005), Descartes clearly states that he is not talking about concrete entities (which he consider as a compose of mind and body in the sixth meditation), but about abstract definitions of the mental and the corporeal. It is impossible for me to make justice to the detailed ingenuity of these arguments here, but suffice it to say that I am not willing to attribute to these authors things that they have not actually said. The argument that follows is extremely oversimplified and corresponds better to contemporary formulations than to classical ones

they presuppose an adult mind with sophisticated conceptual abilities that might have their genesis in basic forms of existence that necessarily involve certain interactions with the external world. In other words, our cognitive ability for detachment is originated in a necessarily previous state of “attached” subjectivity that is essential to our existence: we are not, and have never been disembodied minds, and the conceiver of those experiments is always a living body that is neglecting something about his or herself while making these reflections and this very negligence is made possible by some mental training in philosophical reflections that take for granted the concrete life that makes them possible. As Zahavi points out in his analysis of Husserl’s phenomenology:

“Prior to reflection one perceives the intentional object, but one experiences [erlebt] the intentional act. Although I am not intentionally directed at the act (this only happens in the subsequent reflection, where the act is thematized), it is not unconscious but conscious, that is, given in an implicit and pre-reflective manner. Indeed, reflection is often taken to be a thematic, articulated, and intensified self-awareness, initiated in order to bring the primary intentional act into focus. However, in order to explain the occurrence of reflection it is necessary that that which is to be disclosed and thematized is (unthematically) present, otherwise there would be nothing to motivate and call forth the act of reflection. As Husserl points out, it is in the nature of reflection to grasp something which was already given prior to the grasping.” (Zahavi, 2010: 326)

If we accept that thinking of ourselves as purely mental entities presupposes our factual existence as living bodies, only by a gradual process of cognitive independence from our environment can we entertain such thoughts of disembodied minds and that is what leads us to consider them plausible. As organisms with cognitive abilities for “eccentric” positionality, we tend to forget that our individuality is made possible by material relations among our constituent parts and between us as individual organisms and our surrounding environment.

Even if there is something intrinsic in us that remains independent of any connection with other entities, our existence is material and that implies that it is constituted by our relations with our surrounding world. There is always an aspect of uniqueness and self-referentiality that remains as the basis of our agent movement and our capacity of affecting ourselves immediately, but this uniqueness actualizes all its potentialities by opening itself to the outside world and depends, for its own survival, on the particular material structure of the world we live in. Our self-affective subjectivity is not in itself the primeval condition for the external world but, on the contrary (and here I am perhaps going against the transcendental project of Husserl and the phenomenologists) it exists as part of the processes of the natural world. This is what defines a philosophy of the organism as opposed to an idealistic approach. In terms of A. N. Whitehead: “The philosophy of the organism is the inversion of Kant’s philosophy. *The Critique of Pure Reason* describes the process by which subjective data pass into the appearance of an objective world. The philosophy of organism seeks to describe how objective data pass into subjective satisfaction, and how order in the objective data provides intensity in the subjective satisfaction.” (Whitehead, 1978: 106)

#### **4. The problem of individual materiality**

The material and relational existence of the self leaves us with many problems to solve regarding its ontology. On the one hand, the material world is mostly independent of the individual self in the way it works and in the laws that govern it; living things can modify the objects in their environment, and that is crucial for their existence, but the physical laws under which lifeless matter is determined are not intrinsically a function of living beings. Lifeless nature is indifferent to life. In fact, the individual organism exists insofar as it resists some natural tendencies of its environment, particularly the thermodynamic inclination to disorganization; when the body succumbs in this struggle, it becomes undifferentiated with its environment and its individuality dissolves. Furthermore, the organism does not only resist but also depends on the elements of its environment for its survival; if the organism had no contact with the external world, it would not survive for much time. This seemingly paradoxical relation in which something depends on the very factor that threatens its own existence is precisely what defines the living being: there is a dialectical process between an “inside” of the organism whose autonomy is defined by resisting the external world and by incorporating the nutrient elements from it; and an “outside” that threatens the existence of the individual organism and, simultaneously, makes that very existence possible.

But this dialectical relation is not one between the non-physical and the physical, between the external world of natural laws and the internal world of immaterial subjectivity. These dialectics take place inside the material world itself. The organism is not outside the laws of physics, it is ultimately a physical entity that belongs with the rest of the physical entities in the universe. So, in order to understand the aforementioned paradoxical element of self-constitution we have to say something about the nature of the world to which the individual belongs. The organism is a physical unity that is included and yet is different from the world around it. This particular aspect of differentiation seems problematic in a unitary notion of the physical world, which is the standard view in contemporary naturalistic metaphysics. How can there be individual organisms, different and even resisting to their surrounding world, if the universe as a whole is a causally closed unity? How should the universe be conceived in order to allow for the existence of organisms that are part of the material world and yet possess individuality and interiority? As we will see in the following paragraphs, the standard naturalistic view of the universe is inconsistent with a strict view of material individuality and this would lead us to adopt a broader concept of nature if we want to harmonize experience and worldly existence.

##### 4.1. Materiality: from a-temporal to historical nature

###### 4.1.1. The mechanist picture of the world

The bedrock of modern science is the formalization of observed events which leads to the mathematical description of the material world and thereby to the unification of physics (the study of nature) under a coherent system of laws. In this framework, materiality and physicality are usually conceived as synonym terms, as two expressions of the general

description of observable nature: Matter is understood as subject to laws that can be expressed in mathematical formulae and this is why matter itself is usually reduced to the equation that describes its behaviour in a deterministic manner

C. D. Broad has summarized the mechanistic view of modern physics in four basic presuppositions: a) “there is only one fundamental kind of stuff out of which every material object is made”; b) there is only one fundamental kind of change - of relative position - of which other changes - velocity, acceleration, etc. - are just higher-order manifestations; c) there is a fundamental law that governs the interaction of two particles; d) there is only one principle of composition that constitutes, by aggregation, the interactions at higher levels (Broad, 1928: 44-45). Generalization is then possible given the homogeneity of stuff that composes material entities and the simplicity and compositionality of the laws that govern interactions among the constituents of matter. In this framework, the laws that apply to one chunk of matter are exactly the same that apply to any other chunk. As stated, since the beginning of modern science, the *res extensa* is essentially homogeneous and subject to the very same laws expressed in mathematical formulae.

Formalistic generality advocated by classical mechanics also conceives the laws of physics as independent of time understood as the unidirectional flow of events from past to future: “for many classes of dynamic systems, time appears merely as an accident, since their description can be reduced to that of noninteracting mechanical systems” (Prigogine & Stengers, 1984: 69). This makes possible that physical systems be reversible: the inversion of temporal relations in the order of explanation does not affect the very nature of the physical laws. As Henri Poincaré explains: “for example, the stars could go round their orbits in retrograde direction without violating Newton’s law; the same applies to any law of attraction.” (Poincaré, 1893: 534-535)

Unlike ancient models that privileged static harmony, modern physics is focused on the study of a series of instants whose trajectory can be explained with the use of mathematical formulae. Mechanistic metaphysics disregards time (or rather abstracts it) and focuses almost exclusively on change and movement. As Hans Jonas explains, the most remarkable metaphysical consequence of this worldview is that the mathematical sequence that describes the trajectory of physical bodies “has no transcending reality of its own. Any rational properties which such a series (e.g., a planetary orbit) may exhibit when viewed as an ideal, geometrical whole, are then due no longer to intrinsic reason or an aspiration toward “harmony” in the moving principle [...] but [...] to the mere uniformity or constancy of the elementary factors involved.” (Jonas, 2001: 68) This means that the study of physical bodies is not directed anymore at the analysis of the meaningful proportion of its constituents but at the external relations that the atomic components have among themselves and the lawful formulations that allow us to calculate and predict their movement. Consequently, there is no need for a final cause, for an *a priori* intrinsic principle of organization that harmonizes the atomic components of a unity. Every macroscopic unity that we find in nature - whether it is a spatial, material unity or a temporal historical sequence - is just a conjunction of temporal or spatial particles that appear to us as remarkably different from its parts but that is nothing over and above the sum of them (Jonas, 2001: 67-70). According to this view, form is not the active principle that confers matter its lawfulness: it is the shape that material atoms take when condensed together by the blind laws of physics.

General homogeneity and a-temporal determinism make therefore the existence of material individuals practically impossible, given, the banishment of teleology, and the reduction of form to shape. With few exceptions like Hume, modern philosophers did not pose explicitly the problem of the individuality of physical objects. In consequence, that topic remained obscured and wanting of a systematic elaboration. Individuality, so it seems, is characterized then as a “secondary quality” that emerges in the relation between a subject and the world and that is apparently arbitrary. There does not seem to be a clear ontological principle of individuation for macroscopic entities in modern mechanistic metaphysics. Let us explore this deeper by exposing one of the arguments against macroscopic composition in mechanistic metaphysics.

#### 4.1.2. No natural individuals in metaphysical mechanism

Peter van Inwagen states that the problem of material individuals is directly related to the problem of composition, namely, how can things compose other things (see van Inwagen, 1990). If we assume that there are essentially no qualitative differences in material entities, then the composition of macroscopic individuals is nothing more than a mere aggregation of homogeneous particles in some given arrangement<sup>6</sup>. But, unless we want to compromise with an over-populated ontology, aggregation is not enough a criterion for individuation. We will briefly expose some arguments related to this point so that we can put the discussion within the background of historical matter.

One of the arguments to defend the impossibility of macroscopic individuals comes from Peter Unger (1979). His strategy is to use the ancient logical problem of *sorites* and translate it into modern terms in order to apply it to what he calls “ordinary objects.” The sorites argument - which Unger baptizes as “the sorites of decomposition by minute removals” (Unger, 1979: 121) - states that given an aggregate of elements that constitute a collective-term - for instance, heaps, or piles or beards - it is impossible to determine when an object of this kind has started or ceased to be. For example, given that a beard is an aggregate of facial hairs, what is the criterion to say that someone is bearded? It is clear that a man with only one hair in his face is not a bearded man. On the other hand, a man with, let’s say, 10.000 hairs grown naturally and uniformly in his face is undoubtedly a bearded man. But let’s suppose that we start removing one by one the hairs of this man: when can we say that he stopped being a bearded man? is there a number  $n$  of hairs that constitutes beard-having so that a man with  $n - 1$  hairs cannot be considered bearded? (the argument works the other way around: if a man starts to grow facial hair, there would be a point in which he can be called bearded) The existence of such a number  $n$  of hairs seems problematic, and it is even more

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<sup>6</sup> Van Inwagen defends an even more radical thesis: since all macroscopic objects are reducible to a collection of particles, there are no composite objects at all (except for organisms), because collections of particles are not really things: “There are certain properties that a thing would have to have to be properly called a ‘table’ on anyone’s understanding of the word, and nothing has all of these properties. If anything did have them, it would be a real, a true object, actually a thing, a substance, a unified whole, and something more than a collection of particles. But nothing does.” (van Inwagen, 1990: 100)

apparent with aggregates of grains of sand that constitute a heap or drops of water that make a sea.

As I said, Unger uses this argument in the case of ordinary objects. His strategy is based on the assumption that such objects are mere aggregates of simple particles. That fits an atomistic metaphysics. However, Unger does not require us to conceive ultimately indivisible elements as the basic components of objects. If we use tiny particles of dust that can be removed gradually from the main object, the argument will work. According to this view, a table, for example, is an aggregate of particles and there should be a point in which we can say that we have crossed the limit between the number  $n$  of particles that constitute a “minimal table” and a number of  $n-1$  particles that make a “non-table.”

The point of this kind of argument is to validate the idea that we mentioned previously about the requirement that individuals be no collection of objects. The mere aggregation of parts does not make any difference as a whole: no matter how many pieces of dust I have, at no point can I say that they stop being a conglomeration of pieces of dust and have suddenly become a table or any other object. And since atomistic metaphysics leads us to believe that macroscopic objects are only aggregates of tiny - usually invisible - parts of matter, then there is nothing such as a macroscopic object. We are therefore forced to conceive of physical individuals as a figment of our imagination and individuation as an arbitrary cognitive process.

In sum, a mechanistic atomistic perspective rules out the possibility of a composed whole, which is a basic condition for individuality (see chapter 1). Either the process of disintegrating an ordinary object goes back infinitely (this seems to be the option that Descartes defended) or it goes to a point in which there are indivisible elements that have no parts (as atomists would argue)<sup>7</sup>. But even if we accepted the existence of indivisible and differentiable particles, we would have to conclude that the only possible individuals that possibly exist have no parts and this would rule out any possibility of composite individuals<sup>8</sup>.

#### 4.1.3. The arrow of time: historical nature

In spite of the prevalence of the mechanistic model in modern science, the formal description of material phenomena has evolved and the metaphysical presuppositions of the old models must be updated in order to account for the new conceptions of matter. The classical mechanistic model of nature is a-temporal and deterministic, and it is highly dependent on the generalizations over concrete phenomena in order to include them all under a single model. As Ilya Prigogine and Isabelle Stengers point out “[Classical dynamics] is by definition coextensive with the world it is describing. It assumes that all problems, whether

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<sup>7</sup> One might say that in this latter case individuals do exist as atoms; however, this would block the possibility of describing living bodies as individuals, which is the main point of this thesis.

<sup>8</sup> One possibility is to consider the Leibnizian concept of ‘monad’ that is defined as an indivisible entity whose characteristics are not material but ideal. I will not explore this alternative here, but it might very well be consistent with my own proposal, given that the definition of indivisible particle and parts of a whole in Leibniz’s monadology is very different from what atomistic materialists have in mind.

simple or complex, resemble one another since it can always pose them in the same general form. Thus the temptation to conclude that all problems resemble one another from the point of view of their solutions as well and that nothing new can appear as a result of the greater or lesser complexity of the integration procedure". But, as they add, "It is this intrinsic homogeneity that we now know to be false" (Prigogine & Stengers, 1984: 74).

One of the critical changes in the scientific picture of the world is the introduction of temporality and thereby of historicity into nature. At the end of the XIXth Century, there was a division between nomothetic and idiographic sciences: the former were those sciences that describe reversible phenomena and that can be accounted for by means of formal models; the latter were those sciences dealing with particular, irreversible and unique phenomena that seem impossible to formalize, like historical events. The possibility of absolute generalization of nature makes possible a formal view of nature and makes physics a nomothetic science that is concerned with general abstract laws and not with concrete events. Nomothetic laws are contrasted with ideographic events that occur only in contextual conditions and that cannot be reproduced and generalized. Thus, the laws of physics are atemporal whereas history appears as a non-reversible process of events that cannot take place but one time under definite circumstances. To introduce history in nature means to dissolve this distinction once and for all. "Not only life but also the universe as a whole has a history; this has profound implications" (Prigogine & Stengers, 1984: 215).

The second law of thermodynamics is crucial to challenge the mechanistic framework of formal regularity and install the notion of historicity in nature. Entropy involves a non-reversible state of matter in which the ever-new arrangements of particles cannot be taken back to initial conditions of experimentation. Physical systems have a temporal tendency to disorder that cannot be taken to their initial conditions in a natural manner. In other words, nature itself is subject to the arrow of time that tends to a future state and cannot go back to its initial conditions unless those conditions are forcefully imposed in a laboratory environment. The universe is not a cyclical machine that reproduces a definite sequence ad infinitum; there are systems that tend to disorder and to increasing complexity. They are non-equilibrium systems with irreversible and stochastic processes: "Without non-equilibrium and without the irreversible processes linked to it, the universe would have a completely different structure." (Prigogine & Stengers, 1984: 231)

I will not address here the repercussions of these scientific revolutions in the various fields of physics nor the discussions about its real nature. The point I do want to remark is that the introduction of time and history in nature is significantly relevant if we want to include living individuality within the framework of natural science. By giving time its due, modern physics makes the notion of emergent properties possible and thus order and structure become objective properties and not merely the imposition of a subjective abstract mind in an otherwise chaotic world. Entropy, structure, stability and other concepts related to a dynamic view of physics are properties of composited wholes and not of atomic individuals. The epistemological method of analytic decomposition of an object into his parts does not work in the context of these macro phenomena and consequently, the atomistic refutations against the existence of real individuals are irrelevant. As I mentioned earlier, this is the defining aspect of the philosophy of organism which guides the present investigation: mind and matter

constitute together the living individual as a unity, neither of both aspects can be abstracted away neither can they be told apart if we really want to understand life.

I will give a brief exposition of how could we understand unity in the context of dynamic physics. First, I will explore the idea of structural properties for macroscopic cohesive bodies; then I will complete this picture with the idea of a cohesive unity that endures through time; finally, I will say something about stable systems that not only remain identical but whose robust structure is able to resist alien fluctuations. Once I do that, I will explore the problem of complex structures and how material individuality is to be understood in this case.

#### 4.1.3.1. Regular patterns and individuals

##### 4.1.3.1.1. Cohesion and structure

From the point of view of a non-reductive theory of physics, the ideas that we have about macroscopic objects are not so alien to the actual structure of the world. We know that different chunks of matter can have different properties and it is possible to differentiate them perceptually in a non-arbitrary way. Theoretical physics has abandoned ideas of crude atomistic metaphysics a long time ago and, though the ultimate components of matter are still a confusing and undecided topic, at least, as I have pointed out, it is possible to identify some real emergent properties in the world. We know that solids have some structural regularities that can be more or less homogeneous depending on their periodic arrangement, which can be perfectly stable in the case of crystals or less regular in the case of amorphous solids. In this sense, it is possible to discriminate ontological qualitative differences in the physical world and thereby define individual material bodies as condensed pieces of matter.

However, structural cohesion is not enough to account for individuality, and I will offer some arguments to show this, particularly based on the idea of mass nouns.

What are mass objects and how to identify them? There is a grammatical feature across many languages that allows us to differentiate mass nouns from countable nouns and that can shed some light about the metaphysical distinction between mass objects and sortable objects: we don't say that we have two individual "waters" when we distribute water in two different recipients<sup>9</sup>. It is possible to conceive all instances of water as pieces of a bigger mass, and it is also possible to think that the only thing that changes when we spill a glass of water into a recipient that already contains water, or when we divide the quantity into many parts, is the volume of the water. According to this, what distinguishes mass nouns from count nouns is a criterion of *c*. There are at least two criteria to establish when a noun is a mass noun: 1) When there is no firm ground to differentiate an object from other objects of reference, that is, in cases when the noun refers to stuff (water, sugar, wine), or when it refers to collectivities

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<sup>9</sup> Some mass nouns are relative to the language. For example, in English, the noun "furniture" is uncountable, while in Spanish, "mueble" is countable. "Gemüse" is uncountable in German, but "vegetable" is countable in English. However, the idea of massive and individual nouns seems to be present in many diverse languages, although in different forms.



(cattle, jewellery, furniture). 2) “When two entities fall under a mass noun like *gold*, then their condensation [Zusammenfassung] falls also under *gold*; on the contrary, when two entities fall under the count noun *ring*, their condensation does not fall as well under *ring*.” (Krifka, 1989: 5)

I think it is possible to reverse the process in Krifka’s second criterion and say that one entity that falls under a mass noun can be divided (up to some point)<sup>10</sup> in other two entities that fall under the same noun. This would imply that inside any single piece of matter there are potentially many other individuals identical to the original whole, and we can extract this potential multiplicity simply by dividing the supposedly single object into parts. This would violate the principle of indivisibility, one of the defining features of individuality, and might lead us to a dilemma: either we reject the existence of condensed unities or we accept an ontological overpopulation and say that every potential individual in a piece of gold is an individual in its own right. I will not go deep into the discussion here and will assume a “brutal” account of composite objects based on the structural features I am describing here: it is a brute fact that structurally cohesive unities constitute a composite object given their physicochemical configuration (For more information about this discussion and the terminology employed here, see Weatherson (2016))

In sum, there is a qualitative difference between sorting out the pieces of some homogeneous material structure and sorting out a group of different individuals. To put it in other words, the principle of “individuation” of mass objects seems to be a principle of division of a single entity. It is possible to imagine, for example, that there is a fancy island with an “ur-mountain” of gold whence every single piece of gold that we know of is extracted. It is also possible to imagine that we can collect every instance of purified gold and fuse them all together to obtain another piece of pure gold whose principle of cohesion is identical to the principle of cohesion of the original pieces. This is completely different from what happens with macroscopic individuals, especially living beings. *Pace* Quine, there is no way in which we can think of individual rabbits as separated parts of an ur-rabbit whose only difference with its offspring is a matter of size or weight<sup>11</sup>. Much less can we cut a single rabbit in two with the hope of obtaining two smaller instances of rabbit (do not try to prove my point at home, please!). It seems evident that we need different theories to account for material cohesion and for the complex individuality of material entities.

Finally, there is a problem that comes from a famous paradox that can be derived from this and it is the problem of constitution: for example, if I build one statue with some material and then reshape that material into another statue, would we have one object or two? The

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<sup>10</sup> In order to avoid the sorites paradox in this case, we can say that something falls under the name gold insofar as it keeps a definite molecular structure that cannot be divided further and still be called gold.

<sup>11</sup> Ok, a Quinean may argue that it is possible to imagine a biological theory similar to preformationism that could defend the idea that there is an original organism for each species from which every single individual originates, let’s say, as a clone. However, this is not the same as affirming that there is a block of an animal and that we can obtain new instances of animals if we cut it into pieces. Certainly we would have to imagine a world much different from what we observe in common life if we want to find an example that literally equates pieces of matter with instances of individuals.

material structure of both statues is the same, but it would be very problematic to say that the objects that result as a product of working on them to reshape them are also identical. If individuation were reduced to a problem of structural cohesiveness, then we must have to affirm the identity between a piece of lump and a statue, which is debatable (see Wasserman, 2018 for further discussion on these topics)

#### 4.1.3.1.2. Pre-individuals and transduction: crystallization and sedimentation

However, it seems possible that diverse pieces of matter form naturally a single compact unity. That is the case of rocks: rocks can be easily sorted out as singular objects. The criterion of differentiation of different kinds of rocks depends on the process of formation - igneous, sedimentary or metamorphic - and their size. This would mean that the individuality of rocks is in this case completely determined by external factors (pressure, erosion, chemical reactions, cooling, etc.) but, nonetheless responds to a progressive constitution of superposed layers of being. This is the basis for what Gilbert Simondon calls “transduction” and we will explore it briefly here.

Let us take the example of sedimentary rocks: unlike mass objects in which structural difference is the only criterion of distinction, the classification of sedimentary rocks also incorporates temporality as a defining aspect. That is the reason why we cannot divide a cobble in two and obtain two cobbles, not even two pebbles: what defines an individual sedimentary rock is the process it has gone through plus the size it has acquired as a result of this process. The individual constituted by sedimentation through time is merely the end state of a long historical process in which various forces collide and remain cohesive.

According to this model, every stage in the process of constitution of a sedimentary rock becomes the condition of possibility for further states and gives shape to the final form. There is a development from previous stages to further stages until we get to a more or less stable individual that, nonetheless, still has the potentiality to become a different structure given the necessary geological time. With crystals, the process is similar in a temporally lower scale. Every stage of the process is the end of a history of constitutive processes and the beginning of other possible configurations. This is what Simondon characterizes as pre-individuality. The process that makes the temporal structuration possible is what he calls “transduction” and this is how he defines it:

We understand by transduction an operation - physical, biological, mental, social - by which an activity propagates step by step inside a given domain, founding this propagation on a structuration of the domain that is operated from place to place: each area of the constituted structure serves as the principle and the model for the next area, as a primer for its constitution, to the extent that the modification expands progressively at the same time as the structuring operation. A crystal that, from a very small gem, grows and expands in all directions in its supersaturated mother liquid provides the simplest image of the transductive operation: each already constituted molecular layer serves as an organizing basis for the layer currently being formed. The result is an amplifying reticular structure. (Simondon, 2013: 32-33)

According to Simondon, it is in transduction that the primary reality of the individual (and of being itself) is revealed: it is revealed as a pre-individual, as a chronological process that is not reduced to the final end of a completed individual. We will explore later this aspect. Suffice it to say now, that the notion of pre-individuality allows us to understand individuation as a dynamic process that includes the variable of time as an essential part of the individual as an organized whole. Even in the case of sedimentary rocks that apparently manifests a finished process of individuation, the possibilities for re-structuration are still open.

#### 4.1.3.1.3. Persistent structures

Persistence of an individual structure through sedimentation is the product of the natural equilibrium between external conditions and internal cohesiveness. On the other hand, in crystallization, transductive processes propagate progressively in the environment so long as some initial condition is provided, and the potential chemical conditions allow for the propagation. But there are structures that - unlike the aforementioned structures that emerge from processes of crystallization and sedimentation as simple unfoldings of a previous structure - persist in their configuration as opposed to the influences of the environment.

This is what Prigogine and Stengers characterize as structurally stable systems. According to their definition, a set of reactions is introduced by external constituents in a stable system. This set of reactions “enters into competition with the system’s previous mode of functioning. If the system is “structurally stable” as far as this intrusion is concerned, the new mode of functioning will be unable to establish itself and the “innovators” will not survive. If, however, the structural fluctuation successfully imposes itself - if, for example, the kinetics whereby the “innovators” multiply is fast enough for the latter to invade the system instead of being destroyed - the whole system will adopt a new mode of functioning: its activity will be governed by a new “syntax”” (Prigogine & Stengers, 1984: 189-190)

What this concept introduces is the idea of an invariant state that remains the same in spite of the various changes that the individual goes through. This invariant state is an equilibrium that does not correspond to thermodynamic equilibrium in which the structure has dissolved, but one in which the system maintains an organization that emerges from its previous process of structuring. The system is affected by external disturbances that displace it from the state of equilibrium, and we can say it conserves its individuality insofar as it compensates that displacement and returns to its structural conditions. In this case, there are constant interchanges of energy and matter, and what we understand as “state” is more a formal than a material state (Ashby, 1957).

Living and purposive systems are seen as the paradigmatic instances of stable systems. However, there are much simpler structures that also show formal stability with respect to disturbances and material variations. Let us think about candles in which the flame is maintained by the interaction between the wick and the wax that remains constant as opposed to external factors. Or a tornado that maintains its structure for a definite time until the air supply stops and the tornado enters in a dissipative state. We will return to the idea of stable systems in order to assess the validity of theories of life that reduce it to a stable system. But

first, we will explore the problem of complexity and how there is an important shift from physical to living individuation.

#### 4.1.4. Structural complexity

##### 4.1.4.1. Aperiodic crystals

If we wanted to formulate a theory of the material composition of identifiable cohesive parts, it would be an “easy” task as long as we can find the correct pattern of crystallization or molecular bonding that keeps the structure together. To be sure, I am not saying that condensed matter physics is an easy business, but I do affirm that it does not force the theorist to think outside the laws of general physics in order to understand what is going on. The hard problem comes when we find a complex structure with diverse patterns of structuring and with other complications like temporal change and homeostatic tendencies. This is precisely what makes the study of life so special.

Complexity has been defined in various manners. We will take a very broad definition: an entity is complex when its structure is highly improbable given the known laws of physics. As we have suggested, it is “easy” to explain some regularities in nature and to attribute those regularities a character of individuality. Of course, the theoretical and experimental tools that make possible the explanation of the structure of crystals or celestial bodies, for example, are very difficult and demand a rigorous and disciplined work. The point with “easiness” is that there is nothing in those structures and regularities that puts into question the basic statistical tendencies of matter. Complex structures apparently threaten the unity of physics and in that sense, we say that they need a new sort of explanation.

What does it mean that complex objects are highly improbable? It means that non-complex objects are the product of statistically expected outcomes given some previous conditions. As I have suggested when describing the properties of macroscopic bodies, the laws of nature are not absolute but highly approximate and depend on the minute interactions of a gigantic number of non-observable particles. As Erwin Schrödinger explains: “Only in the cooperation of an enormously large number of atoms do statistical laws begin to operate and control the behaviour of these *assemblées* with an accuracy increasing as the number of atoms involved increases.” (Schrödinger, 2013: 10)

Let us remember then that observable macroscopic structures emerge from microscopic interactions governed by the laws of physical and chemical bonding. For example, crystals have a visible unity that depends on the chemical bondings of their microscopical components. These bondings present some periodicity that is reflected in the ordered structure that we recognize as a single object. Although it is not easy to describe the way this structuring is possible, we can say that the emerging product is a simple, composed unity.

Henceforth, if individuality in the framework of mechanistic metaphysics is at least problematic and depends on some identifiable homogeneity of the material parts of an object, the problem of material individuals gets even more serious when we consider complex

unities. Again, a given unity is complex when it is extremely improbable that its structure is the product of mechanical processes alone. This definition is therefore dependent on a conception of the laws of nature about which we need some clarity.

Contrary to a simple object, a complex object is not the product of a repeated structure or a spontaneous aggregation. Schrödinger uses the expression “aperiodic crystals” to refer to a group of these complex objects. He uses a powerful metaphor to illustrate the difference between periodic and aperiodic crystals: “The difference in structure [between a periodic and an aperiodic crystal] is of the same kind as that between an ordinary wallpaper in which the same pattern is repeated again and again in regular periodicity and a masterpiece of embroidery, say a Raphael tapestry, which shows no dull repetition, but an elaborate, coherent, meaningful design traced by the great master.” (Schrödinger, 2013: 5) We have just given a big jump from individuals whose structure depends on a monotonous repetition of a given pattern to individuals whose structure reveals a *meaningful* unity of diverse components and behaviours. One of the most conspicuous and wondrous unities of this kind are organisms. Their structure and functioning are highly unlikely the product of mere chance. This is so because “incredibly small groups of atoms, much too small to display exact statistical laws, do play a dominating role in the very orderly and lawful events within a living organism.” (Schrödinger, 2013: 20) Individuality becomes more interesting and difficult when we address the unity of organisms.

#### 4.1.4.2. “Beyond” natural laws: the argument of design

Now, it might be argued that every single piece of matter represents an extremely improbable outcome as it could have been arranged otherwise. Apart from homogeneous structures, there are objects with a diverse composition that supposedly constitute a unity. Richard Dawkins offers the Mont Blanc as an example of a non-homogeneous thing that constitutes a unity and is, nonetheless, not a complex one. But what makes Mont Blanc different from an aeroplane or a living being? “The answer we have arrived at is that complicated things have some quality, specifiable in advance, that is highly unlikely to have been acquired by random chance alone.” (Dawkins, 1996: 34) This quality has to be generalizable, that is, there is some functionality to it that explains the particular organization of designed or living things and that purely physical things lack. In this sense, the functioning of the parts is coordinated to produce the functioning of the whole and structural diversity is not a mere juxtaposition of different components but a structural arrangement that makes possible the functional behaviour of the whole. Thus, “the behaviour of a complicated thing should be explained in terms of interactions between its component parts, considered as successive layers of an orderly hierarchy.” (Dawkins, 1996: 38) The diverse components of the Mont Blanc or of the planet Mars, for example, are not hierarchically arranged *in order to* contribute to the function of the structure as a whole, mainly because the whole itself has no function at all. Whereas the objects with merely physical unity (whether they are diverse or not) are subject to the sorites argument in which it makes sense to ask what is the exact number of pieces of dust and snowflakes that I need to constitute the Mont Blanc, really complex objects have, as we have said following Schrödinger, a *meaningful* unity that establishes unity not as a sum of parts but as a cooperation of components in the constitution of a whole.

The existence of complex objects is the basis of the argument by design championed by certain theologians in the XVIIIth century. Particularly famous is William Paley's formulation. He invites the reader to imagine himself crossing a heath and comparing his reaction if he finds an ordinary stone with his reaction if he finds a watch laying at his feet. In the first case, it would be easy to affirm that the stone got there by mere physical processes or that it had always been there. But in the second case, he must conclude "that the watch must have had a maker: that there must have existed, at some time, and at some place or other an artificer or artificers. who formed it for the purpose which we find it actually to answer; who comprehended its construction, and designed its use." (Paley, 1802) If that is the case with a watch, Paley argues, the evidence for design in nature is even more compelling for those who recognize the complexity of living beings and their organs, especially if we take into account that, unlike clockworks, they reproduce without any apparent external intervention. If an intelligent designer created the watch, an even more intelligent designer created life.

Paley's argument may allow us to think about a theory that embraces the study of complex entities both in the artificial and the natural world. The general conception that underpins this general science is the concept of design: there is a preconceived plan that organizes complex unities making probable the improbable in the structuring of a definite entity. In this sense, *teleology* becomes an essential feature in biology and engineering. The scientist in these fields should not only (or even not necessarily) explain the mechanical processes that take place in a complex unity. Her focus should be directed mainly on the reasons why its components are where they are and how should they work according to their design. As Francisco J. Ayala affirms, "Teleological explanations are those that account for the existence of a certain feature in a system by demonstrating the feature's contribution to a specific property or state of the system, in such a way that this contribution is *the reason why* the feature or behavior *exists at all*." (Ayala, 1998: 44) This kind of explanation makes biology (explanatorily) irreducible to physics.

The theory of natural selection formulated by Charles Darwin did not reject the theory of design and therefore did not do away with teleological explanations. As Daniel Dennett points out, "Darwin didn't extinguish teleology; he naturalized it" (Dennett, 2017, ch. 3). Roughly stated, this naturalization tells apart the notion of a designing mind from the notion of design: not every design depends on a designer with foresight and consciousness of his own plan. The watchmaker that designed organisms might be, using Richard Dawkins's terminology, a "blind" one (Dawkins, 1996). Divine deliberation is replaced by a long history of repetition and persistence of some particular structure thanks to an extremely long process of millions of years. In any case, whether the product of a "sighted" or a "blind" designer, the particular instances of complex entities are the results of a plan consisting of a pre-established set of instructions.

#### 4.2. Kant: The organism as a self-produced unity<sup>12</sup>

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<sup>12</sup> My interpretation of Kant's theory is highly influenced by Hanna Ginsborg's work on the Critique of the Faculty of Judgment (Ginsborg, 2015) although I try to work on first-hand readings on the Critique itself. For

Immanuel Kant was particularly interested in the complexity of life. His insights are relevant, not only because of his weight in the history of philosophy but also because of the seriousness with which he took the problem of living beings against a background of mechanistic metaphysics that he did not want to renounce to. As the advocates for Divine Design, he thought that natural laws alone would not be able to account for the complexity of living beings. This led him to consider it was necessary to admit the notion of purposiveness if one wanted to understand the realm of the living. At face value, this seems as a revalidation of the theory of Design, but as we will see, Kant actually rejects this option by enriching the concept of purposiveness.

#### 4.2.1. Complexity beyond design: purpose without purposiveness

Kant affirms that concepts can be the cause both of objects of cognition (as when one concept brings forth another thought in our mind) and of real objects with a purpose. In this sense, artefacts are understood as products that exist in reality and whose unity depends on the way they were conceived in someone's intellect. This is the only possibility offered by Paley's argument: the description of a complex object depends on the description of its cause as the will of a designer.

Contrary to the design view, Kant makes a fine distinction between two different ways of understanding complex entities: on the one hand, he defines an 'end' or a 'purpose' [*Zweck*] as "the object of a concept, in so far as the concept is seen as the cause of the object (the real ground of its possibility)." (KdU §10. 220); on the other hand, he introduces a second term that is closely related, but not identical to that of *Zweck*: "the causality of a *concept* in respect of its *object* is purposiveness [*Zweckmäßigkeit*] (*forma finalis*)" (KdU §10. 220). So, the 'purpose' [*Zweck*] is the concept that makes possible the object, the will that the designer realizes in his product. The 'purposiveness' [*Zweckmäßigkeit*] is the concrete relation between the concept and the object, the mere fact that the object depends on a concept.

If we interpret Paley's example with these concepts, the end would be the will of the designer that organizes and produces the clockwork; the purposiveness, on the other hand, would be the complex structure that we find in the desert and that leads us to conceive the clockwork as a product of design. The argument for design demands that we say something about the will that produced the clockwork if we want to understand the clockwork itself, and this is true also for complex natural entities. Natural selection on its part replaces the will of the designer by a blind historical process in the explanation of natural complex entities but nonetheless, admits that explaining the complexity of the organisms involves explaining the cause that makes that complexity possible.

Contrary to this, the point of Kant in tracing this distinction is precisely to open a possibility for explaining purposes without purposiveness. It is true that purposeful objects are to be explained *as if* they are the product of certain will. However, we do not need to consider the will as the *cause* or condition of possibility for the complex object to exist. We can ignore

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the English translation, I will be using Oxford edition (Kant, 2007) in the following paragraphs and will use both the canonical notation and the 2007's edition page.

the causing concept and just account for the object as something that is not possible but as the product of some undefined will or plan. “Purposiveness, therefore, may exist apart from a purpose [*Die Zweckmäßigkeit kann also ohne Zweck sein*], in so far as we do not locate the causes of this form in a will, but yet are able to render the explanation of its possibility intelligible to ourselves only by deriving it from a will.” (KdU §10. 220)

Let us go back again to the example of the clockwork in the desert: if we want to know how the mechanism works and to explain the function of its parts, we have no need to talk with its actual designer and inquire about his intentions. More or less the same happens when we study anatomy: physicians were able to understand the functions of most bodily parts centuries before the elaboration of the theory of natural selection or even intelligent design. In the case of the artefact and of the living organism we can conceive it as the product of some kind of design without referring necessarily to the nature of that design. The purposive character of the object that is evident for us does not demand us to say anything about the purpose behind its existence if there is any at all.

#### 4.2.2. Neither hylozoism nor theism

But why do we even need to consider organisms as purposes and treat them *as if* they were designed? Shouldn't we renounce to the idea of design altogether in the study of organisms? We have to remember that the problem of complexity is what led us to formulate purposiveness in the first place. Kant stated that biological unities cannot be explained by mechanical laws alone. In the natural world, the products of nature are usually seen as necessary outcomes of a given set of preconditions. But the forms of organic nature are contingent, not necessary, with respect to the laws of physics: given the *a priori* principles of the laws of nature, some consequences can be derived necessarily and this is what Kant calls the “synthetic *a priori* judgments”. However, the configuration of the organism, the disposition of its parts, does not follow necessarily from the laws of nature and could have been otherwise. In Kant's own words biological unities are “in the highest degree contingent according to the mere *nexus effectivus* in nature, without appealing to a particular kind of causality, namely that of purposes (*nexus finalis*) [...] only beyond the concept of nature, and not in that concept, may we hope to find *a priori* the least ground for [an organism's] unity.” (KdU §61: 360)

Now, the same argument we exposed before can be applied to Kant's notion of contingency: are not all pieces of matter contingent with respect to the laws of nature? Kant's answer is not exactly the same as the one offered by Dawkins. He takes the anatomy of birds, whose development and composition do not seem to follow *necessarily* from the laws of physics, as an example. In this case, the difference between the unicity of an object like Mont Blanc, whose composition could have been completely different had there been some variations in the geological history of our planets; and the unicity of a single bird, is that in the latter case there is an apparent regularity that we do not find in the configuration of individual rocks: “The reason that we ascribe special significance to the mechanical inexplicability of the bird is that it displays an apparent order and regularity that are entirely lacking in the case of the stone fragment.” (Ginsborg, 2015) The supposed contingency of the composition of Mont Blanc is only the spatial coincidence of various pieces of matter that have been produced *ex*



*necessitate* from the laws of physics. The contingency of the organic unity is special because it is not a merely arbitrary coincidence of parts, but an organized whole with a pattern of behaviour whose lawfulness cannot be explained by the laws of the physical bodies. Biological regularities and laws demand a special science and that is what makes organisms different from other physical things. In the case of other physical individuals or regularities “There is no need to appeal to a special ground of lawlike order over and above the lawlikeness we already ascribe to the basic interactions of the relevant chemical kinds [...] Instead, we can view [the] regularity [of an ordinary non-living physical thing] as a reflection or manifestation of the more fundamental laws governing the motion of bodies as such.” (Ginsborg, 2015)

In his awareness of the special place of living beings within the space of natural entities, Kant seems to face an aporetic dilemma. On the one hand, he cannot accept hylozoism (the idea that matter itself has purposes) because he is compromised with a mechanistic view of nature and believes that the laws of nature must produce necessary outcomes. However, since the rule behind the organization of living organisms seems to be contingent and not necessarily resulting from mechanical principles, he cannot either deny that the purposive nature of natural entities is at the same time objective and real: It is *objective* because it goes beyond mere aesthetic appreciation of the formal purposiveness of nature and thus, it goes beyond the mere subjective harmony that is produced by beautiful objects. It is *real* because it is not a mere cognitive derivation of formal laws as in the case of geometry. In other words, the rules that give their unity to organisms do not produce merely conceptual results and are not the product of the concept of the object alone: their source is empirical and depends on an external state of affairs that demands us to conceptualize them as purposeful unities.

Given these difficulties, why don't we accept the argument from design and avoid this confuse talk of 'purposiveness without purpose'? This idea - to affirm Divine Design - is also unacceptable to Kant. If we needed to account for the will of the Designer in order to understand the complexity of organisms, then the study of these entities would go beyond the limits of our experience and therefore we could not give any reasonable account of them. If we admitted that organisms are really the product of the will of a supernatural Designer as any other artefact built by human craft, then we would have to exclude the study of organisms from the realm of natural science and we would also have to go beyond the limits of human reason, something that would contradict the whole critical project of Kant. But what about conceiving organisms as the product of natural selection? Has the Darwinian revolution in biology made superfluous the idea of purposiveness as Kant conceived it? Not necessarily, and we need to make clear a stronger reason for rejecting the analogy between organisms and artefacts.

#### 4.2.3. Natural purposes and self-production

Let us recall the distinction between purpose (*Zweck*) and purposiveness (*Zweckmäßigkeit*). Why do we need to open the possibility for purposiveness without purpose? If we want to understand an artefact, we do not necessarily need to know its designer to know how it works. This is a weak sense in which we can talk about purposiveness without purpose. However, it is necessary that we conceive the artefact as organized in order to fulfil some *external* end:

only by referring to the intention or the will of an external designer is the organization of the designed object, the artefact, understandable at all. In this sense, it is impossible to understand an object as an artefact if we do not understand its purpose as external to it.

So, for example, if we want to know the cause for the location of the mainspring or the disposition of the wheels in a clock, we need to understand the reason the designer had to organize things this way and it would be apparent to us that the pieces were created independently and put together by some external force guided by intentional determinations. Without a definite purpose, a definite will in the mind of the designer, the ensemble of the pieces and its particular functioning would be impossible to explain. On the other hand, in the Darwinist explanation of living beings (at least in the gene-centred selectionist interpretation), there is no need for a will or a literal designer but still, the complex organization of the parts is explained by external principles coded in the genes of each organism. It is by explaining the antecedent and external causes that the organization and behaviour of the artefact or the organism become clear.

As I have said, there is an anti-theistic argument against design: Kant could not accept the presupposition of a supernatural will behind the organization of living beings because that would have led him to consider those beings as outside the realm of nature, and, consequently, to put biology outside the limits of reason and of natural science. It is clear that Darwinism does not fall into this theistic anti-naturalism. However, Darwinism is interested in how general patterns of behaviour and organization emerge from historical processes. It is not focused on the organization and behaviour of particular individuals if not as instances of the species they represent. Kant's problem is how individual organisms can be studied at the same time as part of nature and as purposeful unities. He put aside the question about the origin of organic entities and aimed at explaining how are they subject to natural principles that govern their behaviour but that do not belong in the general principles of physics. But, how does he do that?

First of all, he defines a thing as a natural end (*Naturzweck*) “if it is both cause and effect of itself” (KdU §64. 371). This means three things: first, that living individuals produce other individuals of the same kind; second, that living individuals produce themselves as individuals in disposing their own material components for their own constitution, reparation, and growth; and third, that its parts are mutually dependent for their own preservation and the preservation of the whole. So, using Kant's example of a tree, it is characterized by: a) producing other trees (reproduction); b) selecting and organizing external matter for its own constitution (nutrition); and c) being composed by elements (like leaves or roots) that are the product of the whole functioning of the tree but at the same time make the existence and unity of the very same tree possible. It is evident that no artefact (then and nowadays, as far as I know) meets any of these properties. Here the crucial difference between artefacts and organisms is apparent: in the former, the purpose is external while the latter have ‘internal’ ends, which means that they can produce and sustain themselves by means of their own internal operations.

Now, let us concentrate on the third characteristic of living beings that is precisely the one that better reveals the idea of self-causation and the one that is more closely related to the problem of individuation. We have insisted in this section on one of the defining properties

of an individual that we set out in the first chapter: *an individual is a whole and not a mere aggregate of (homogeneous or heterogeneous) parts*. We have seen in the first part of this chapter that within a mechanistic metaphysical framework it is impossible to have an object that meets this requirement since mechanism presupposes homogeneity of matter. In thermodynamics, impossibility is changed by high improbability, but still, a theory of complex individuals is missing because, although some aggregations are more likely than others, it is still almost impossible to obtain a complex and highly organized unity. How does Kant explain the idea of the individual organism as a whole without appealing to an external intervention? The key lies in the mutual dependence that exists between the parts and the whole.

In the case of non-living entities, causality is an antisymmetric and irreflexive relation. This means that: a) if A is the cause of B, B cannot be the cause of A; and b) A cannot cause itself (if A causes B, A is not identical to B). The same applies to machines: the cause of the machine is different from the machine itself and its elements do not bring about the other elements in the whole but all are subordinated to the external design. So, in our recurring example: “the producing cause of the watch and its form is not contained in the nature of this material, but lies outside the watch in a being that can act according to ideas of a whole which its causality makes possible.” (KdU §65. 374)

On the other hand, an organism, conceived as a natural end, is determined by a special kind of causal relation that has no analogue in nature: “Its parts must in their collective unity reciprocally produce one another alike as to form and combination, and thus by their own causality produce a whole, the concept of which, conversely, - in a being possessing the causality according to the concepts that is adequate for such a product - could in turn be the cause of the whole according to a principle, so that, consequently, the nexus of *efficient causes* might be no less judged as an *effect brought about by final causes*.” (KdU §65. 373)

This means that causality in natural ends is circular and the effects of the whole are also the cause of its existence. There is a causally symmetric relation between the parts of an organism: for example, the digestive system breaks down the nutrients that make the functioning of the circulatory system possible, and the circulatory system moves these nutrients along the body making the maintaining of the digestive system (besides the other parts of the body) possible. There is also a reflexive relation of the whole body with itself: an organism produces itself; it is its own cause. The parts of an organism are arranged in a complex organization that produces this very organization and, at the same time, is defined by it. The whole is then more than an aggregate of parts because the parts are brought about by the whole and the whole is, by the same process, brought about by the processes that its parts engage in: “every part is thought as *owing* its presence to the *agency* of all remaining parts and also as existing *for the sake of the others* and of the whole, that is an instrument, or organ.” (KdU §65. 373-374)

#### 4.2.4. The epistemological and the normative nature of organisms

Kant reduces the faculty of understanding of objects to the study of synthetic judgments, which imply actual beings and necessary relations of objects. However, our reason has a

tendency to make distinctions between possible and actual states of affairs. This leads us to create ideas only limited by regulative principles that go beyond what we perceive in the things themselves: “It will readily be perceived that once reason advances beyond the reach of the understanding it becomes extravagant. It displays itself in ideas - that have certainly a foundation as regulative principles - but not in objectively valid concepts.” (KdU §76. 403) Given that these ideas go beyond the objective nature of things themselves, we have to conclude that they are in the cognizing subject, they are only valid as mental representations.

One remarkable instance of this power of reason is ethical judgment. Rules for action are not dependent on natural principles and are not derived from the nature of things themselves. “So the action, with its absolute necessity of the moral order, is looked on as physically wholly contingent - that is, we recognize that what *ought* necessarily to happen, frequently does not happen.” (KdU §76. 403) Since it also refers to something that is contingent with respect to the laws of nature, Kant includes the concept of natural end as belonging to the regulative and subjective faculty of the understanding: “it is simply a consequence flowing from the particular character of our understanding that we should represent products of nature as possible according to a different type of causality from that of the physical laws of matter, that is, as only possible according to end and final causes.” (KdU §77. 408)

However, as we have stated, the regulative principles applied to natural ends are not purely subjective and they are certainly non-arbitrary. There are some objective regularities that the theory of living beings must account for and to do so, it must be based on general rules, different (but not inconsistent) with the laws of physics. The notions of purpose and purposiveness imply that these laws have a teleological structure, that is, they are not determined by their antecedent causes but by the end, they are supposed to accomplish. But since the regularities and the lawlike behaviour of the organism are contingent with respect to the laws of physics, we have to understand their lawfulness as normative. This means that the rules that govern organic behaviour are not deterministic and do not refer to the things as they necessarily *must* be but as they *ought* [*sollen*] to be according to an *a priori* judgment by which the subject can possibly cognize living organisms.

Unlike artefacts, organisms are determined by concepts only epistemologically, i.e., they are not the product of a deliberate will, the concept “behind” their organization is not what brings them to existence, but what makes them a possible object of cognition for the subject: “To regard something as a purpose without regarding it as an artifact is to regard it as governed by normative rules without regarding those rules as concepts in the mind of a designer.” (Ginsborg, 2015: 251) It is thus that Kant is able to reconcile the idea that the organism is a purposive entity with the idea that it is a natural being. What it shares with the artefact is not its origin (as the result of a planned organization) but the fact that it is subject to some normative constraints. “Regarding an object in this way is not inconsistent with regarding it as a product of nature. It would be inconsistent only if the idea of production by nature excluded not only the idea of production by an intelligent cause but also the idea of being subject to norms. But there is no reason to suppose that the one idea does exclude the other.” (Ginsborg, 2015: 252)

Biological generalizations are therefore non-universal and non-extensional as they do not need to apply to all (or most) objects under their dominion. They are mainly intensional

because they point out at some characteristic that the organisms or their parts ought to meet in order to be considered normal or healthy: they say what does it mean for something to be an organism. The norms that we ascribe to organisms capture “not what always happens, not what usually happens, but rather what is supposed to happen, or what will in fact happen if things go as they ought.” (Ginsborg, 2015: 254) This does not mean that those elements that fall outside the scope of what they ought to be are excluded from the study of biology. However, these cases must be understood as defective with respect to the general rule: “if we are concerned with what typically brings about the failure of a certain biological system, the generalizations through which we come to understand the conditions of failure are intelligible only if we already understand what the system is meant to do.” (Ginsborg, 2015: 255)

One last point to make here concerns the criteria that we have in order to establish the rules that govern organisms. As we saw, artefacts and natural purposes are similar because it is possible to assess their behaviour with respect to a purported state they ought to attain. In the case of artifacts, the will of the designer not only brings about their existence but is also the determining factor for the assessment: we know whether an artefact is doing what it is supposed to do when we compare its behaviour with the purpose that the designer intended for it. We can also assign functions to artefacts from the point of view of the user: a thing is doing what it is supposed to do if it is doing what the user wants it to do. However, in both cases, the assessment criterion is external, relative to someone outside the artefact itself.

Since we have dispensed with the idea of the designer in natural ends, we need a different assessment criterion in order to understand the proper conduct of an organism. It seems that the only way to do this according to Ginsborg’s interpretation of Kant is by means of the frequency of a given state of affairs in the species, or by means of an exemplar. In the first case, we define normativity as normality, that is, if the organism acts as other organisms of its species generally do, then we can say that it is acting as it ought to. In the second case (which does not exclude the first), we take a particular individual as a standard for proper functioning. Both cases are problematic: On the one hand, the problem of normativity ends up being a descriptive phenomenon, which contradicts the idea that normative judgments are not extensional generalizations (see Ginsborg, 2015). On the other hand, to take a model for proper functioning does not solve the question, but just adds a further step: what is the criterion to take *this* or *that* individual as the standard for the others?

I am not going to extend in this discussion here, neither will I examine how these analyses on natural teleology are relevant for systematizing Kant’s critical philosophy. I do not know whether Kant (or Ginsborg, for that matter) have a satisfactory answer for the questions I have raised here. Nevertheless, I will re-address those questions from my own point of view in the context of the phenomenological and ontological analysis that I carry out in the next sections. However, I want to make the problem derived from Kant’s theory more explicit, since it will help me to connect the problems of this chapter with the topics I study in other chapters.

#### 4.2.5. The subjective basis of normative judgments

There seems to be something paradoxical about Kant's conception of natural ends: even though he tries to distance himself from theistic views that explain the origin and structure of organism by appealing to an external intelligence, the internally driven organization of living beings that he recognizes is still dependent on the external attribution of a thinking subject that is trying to understand their complexity. This means that Kant renounces to an external ontological principle of organization - in order to avoid Divine intervention - only to replace it by an external epistemological principle of regulation. Nature is still the set of components regulated by physical laws. Consequently, any material complex unity with principles of organization and regularity different from the general principles of physics can only be understood in two ways: a) as the ontological intervention of a designer that has decided to rearrange some pieces of matter in order to make them follow some ends assigned by her; or b) by the epistemological intervention of a researcher that has no other way to understand a pattern of behaviour that would seem mysterious or arbitrary otherwise. In sum, the internal organization of a complex unity is either crafted or postulated from the outside.

Let us remember that the main reason Kant seems to give for regarding organisms as natural ends (that is, as self-organized entities) is that accepting a principle of external organization leads him to an undesirable compromise with theism. But, has not the theory of natural selection opened the possibility for the naturalization of design? Why should we keep on applying the regulative principle of biological normativity if we can make the whole constitution of complex individuals explainable by means of a theory that is continuous with mechanistic principles? There might be some epistemological convenience for doing so. Daniel Dennett, for example, talks about a "design" or "teleological stance" which works as a strategy for explaining complex things that seem to have a purpose but are not so complex to be attributed a mind (see Dennett, 1989). Our regulative judgments would arise thus as a cognitive enhancer that would help us to make sense of regularities that we cannot describe immediately in strictly physical terms given our cognitive and technical limitations. This seems compatible with Kant's views at face value.

However, Kant seems pretty sure that we cannot escape from natural ends attributions: "Indeed, so certain is it, that we may confidently assert that it is absurd for human beings even to entertain any thought of [explaining natural ends with mechanistic laws] or to hope that maybe another Newton may some day arise, to make intelligible to us even the genesis of but a blade of grass from natural laws that no design has ordered." (KdU §75. 400). Since Kant was aware of the changing state of scientific knowledge throughout history, why did he not even leave open the possibility for a future state of knowledge in which the laws of biology were submitted to the general laws of physics?

The connection between Kant's considerations on teleology and the rest of his theory is a very complex matter and it is outside the scope of this work to explore it in depth. Anyhow, it seems that Kant is not merely postulating an epistemological strategy to solve temporarily the problem of natural teleology until we get a more complete explanation. He seems to be pointing out at an *essential* feature of our understanding in relation to living beings. In that case, mechanistic explanations such as those offered by natural selection may give us a deeper insight on the origins and complexity of living beings, but they would not dissolve the innate tendency that we have as humans to understand other beings as living individuals with internal processes of self-organization. This means that irrespective of how complex

and detailed might be the mechanistic model of the world, there is something intrinsic to living beings (or at least to our understanding of them) that escapes a complete description within the framework of this model.

Let us recall some of the difficulties that natural ends present to a mechanistic theory of nature: on the one hand, there is a normative order in living individuals that is contingent to the laws of physics and yet is not completely arbitrary; on the other hand, there is a circular causality that violates the strict non-transitivity and non-reflexivity of the laws of Newtonian physics. Solving these difficulties without ignoring or eliminating them would involve a larger framework for science not restricted to the narrow constraints of mechanism. This would lead us to expand the limits that Kant had imposed on human understanding thereby allowing for a more comprehensive view of the laws of nature that might include the complex aspects that make living beings special.

Andreas Weber and Francisco Varela claim to have advanced in the elaboration of such a comprehensive view of the organism. In their own words: “Kant, though foreseeing the impossibility of a purely mechanical, Newtonian account of life, nonetheless was wrong in denying the possibility of a coherent explanation of the organism.” (Weber & Varela, 2002: 120) They have in mind that autopoiesis theory offers this possibility of explanation. Let us review this proposal in order to evaluate to what extent does it accomplish its ambitions.

#### **4.3. Is Autopoiesis Theory an adequate account of biological individuation?**

One of the theories that took individuality as the centre of its conception of life was Autopoiesis Theory (henceforward AT). In the words of Humberto Maturana and Francisco Varela, originators of AT: “our purpose is to understand the organization of living systems in relation to their unitary character.” (Maturana & Varela, 1980: 75)

Unfortunately, AT is far from being a unified and definite theory. There are many interpretations from authors interested in the conceptual novelty of this project and there are also various reformulations from the creators themselves. However, I think that one of the best ways to evaluate whether the theory is successful or not is by assessing how good its conceptual novelties are to explain the individuality of living beings. If AT is effective in answering to this problem, then we can use it to give a definitive answer to the problems that have been raised in this chapter and we can exclude the interpretations that are inconsistent with an adequate response to the problem of complex individuality. My claim is that AT meets these expectations only incompletely and ambiguously, but I also think that a critical analysis of its main ideas can be useful to shed some light into the problem.

##### **4.3.1. Autopoiesis theory and the definition of life**

Traditionally, biology defines life in reference to the *structure* and the *observable processes* common to all living beings that actually exist. According to this structural approach, there are three main conditions that all living beings seem to share: “(1) all living things are made of cells; (2) the life cycles of all cells - their formation, growth, development, reproduction,

and so on - are based on chemical reactions among similar sorts of molecules; and (3) the way that amino acids are put together to form proteins is specified by DNA and RNA according to a precise and nearly universal scheme.” (Thompson., 2007:92) Autopoiesis is a theory whose main purpose is to define what is life in terms of the *conditions* that make it possible.

From a systemic point of view, it is evident that there is something underlying these processes and structures, namely a particular kind of *organization* that is a consequence of a dynamic process of production - or rather self-production - of the components that individuate an organic form. Thus, given that we understand autopoiesis theory within the framework of General Systems Theory, instead of describing or enumerating the properties that are common to all living forms, the focus of the theory of autopoiesis (and of systemic theories in general) is on the basic organizational dynamics that make possible the emergence of these properties.

But where do the proponents of autopoietic theory think that the study of life must start? It is evident that organisms have become more and more complex over time, and that there are living features that are relatively recent in evolutionary history. This is why it is important to start with the most basic unity, the unity that must have remained essentially the same since life first emerged and that stands as the building block of complex organisms: the cell. We can conclude that the methodological principle behind this approach is reductionist in the sense that it assumes that “biological systems are most fruitfully investigated at the lowest possible level” (Brigandt & Love, 2017)

However, this form of reductionism does not share with others the idea that biological systems can be understood at the molecular level as physicochemical systems. Cells are the minimal level of analysis and reducing them further would take us beyond the interests of biology. Moreover, cells only emerge from other cells - in our time, life does not originate naturally from an inorganic source - and hence the whole complex organisation of a single unity is transmitted to its descendants. In this sense, the chemical composition of life is not enough to account for it: it is necessary to analyse the way a cell works as a whole. This also means that life does not originate as an aggregation of components, but rather as the constitution of an organized whole that recapitulates the organization of a previously constituted whole similar to it. Life originates from life and therefore, it can only be understood as an independent field of study.

Accordingly, to give a particular account of how a cell works is a useful guide to our task of defining life and understanding its origin. In this sense, if life only emerges from life, the question about the origin of the first biological unity on earth is an evidently hard one. Nevertheless, as Thompson remarks, we might fall into a tautology in these considerations: “to define life in terms of cells is basically tautological: life is cellular because there is no life without the cell.” (2007: 97) This is why we need to understand how a cell is independently organized without characterizing this process directly as a life process. In Thompson's words: “To get out of the tautology we need to specify the basic properties of a cell without invoking the notion of life.” (2007: 97)



Another way to escape from the tautology is to formulate this problem is by inquiring how life emerged historically from the non-living. By doing so, we would have a definition of life that does not presuppose the existence of cellular organisms. But it is impossible to address the question on the origin of life unless one has a definition of life itself: “The question of how and when life originated is inseparable from the question of what a living system is.” (Thompson., 2007: 95) Taking this into consideration, there are three main approaches that Thompson identifies as defining the essential basis of life: 1) Characterizing life on the basis of genetics and reproductive populations (genetic theory). 2) To characterize life as a component of an ecological whole and inseparable from it (Gaia theory). 3) To characterize life on the basis of the single organism in its concrete situation (autopoietic theory). “These three ways of characterizing life are complementary, not mutually exclusive.” (Thompson., 2007: 96) In this sense, it is necessary to integrate the three approaches in an explanatory framework. However, since our problem is the living individual and we are currently examining autopoiesis theory, we will keep on focusing on it without saying too much about the genetic or the Gaia theory.

Let’s keep in mind that when we are defining life in the context of autopoietic theory, we are doing it focusing on its organization. A cell is a living system not merely because there can be no living systems that are not cells or composed by cells, but because it is organized in a particular way that characterizes the way in which more complex living systems are also organized. The theory of autopoiesis is an attempt to show how this organization works. In this sense, the cell works not as the defining unit of life, but as a minimal observable living entity that reflects the properties that all living beings share. As I mentioned before, the study of cells in order to define life follows a methodological, not ontological form of reductionism, according to which the best way to understand a complex phenomenon is by studying it in its simplest manifestations (see Brigandt & Love, 2017). However, as we will see later, even this cautious form of reductionism is problematic for the theory of autopoiesis.

In order to carry out successfully the methodological reduction, it is arguably a good idea to start with bacterial cells whose processes need not be interpreted as subordinated to a higher function in a more complex organism. What characterizes a bacterial cell as a living being different from non-living structures? The answer is simple: “The bacterial cell is the simplest of living systems because it possesses the capacity to produce, through a network of chemical processes, all the chemical components which lead to the constitution of a distinct, bounded unit.” (Varela, 1992: 5) Unlike more primitive and non-living chemical components, bacteria can define the conditions of their own individuality by producing those very same conditions and it is precisely this productive capacity, referred to its own organization, what makes it a living being and what reflects the basic conditions that are present in all living beings and only in living beings. The capacity of self-production is what the term ‘autopoiesis’ refers. By defining the minimal conditions of life this way, Varela and Maturana are confident to affirm that “the notion of *autopoiesis* is necessary and sufficient to characterize the organization of living systems.” (Maturana & Varela, 1980: 82)

In order to make this definition more general, Varela and Maturana propose a formulation that remains more or less unaltered from the beginning of their work. Let’s see two different versions of it:

“An autopoietic machine is a machine organized (defined as a unity) as a network of processes of production (transformation and destruction) of components that produces the components which: (i) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (ii) constitute it (the machine) as a concrete unity in the space in which they (the components) exist by specifying the topological domain of its realization as such a network.” (Maturana & Varela, 1980: 78-79)

“An autopoietic system is organized (defined as unity) as a network of processes of production (synthesis and destruction) of components such that these components: (i) continuously regenerate and realize the network that produces them, and (ii) constitute the system as a distinguishable unity in the domain in which they exist.” (Varela, 1992: 5)

In the case of the bacterial cell, the first condition (regeneration and realization) is met in the processes of generation and catalysation; and the second condition (self-constitution) is met by the creation of a semipermeable cellular membrane that permits the interchange of matter and energy with the environment while at the same time constitutes a boundary that separates the organism from it. What is essential to an autopoietic system is that it defines its own space, its own boundaries. That is the reason why instances such as autocatalytic systems are not autopoietic: the boundaries for these systems are provided from the outside. The definition of its own space, the production of its own boundaries, constitute the system as a unity and autopoiesis is, in some sense, the process of constitution of a unity: “autopoiesis implies the subordination of all change in the autopoietic system to the maintenance of its autopoietic organization, and since this organization defines it as a unity, it implies total subordination of the phenomenology of the system to the maintenance of its unity” (Maturana & Varela, 1980: 97). An autopoietic system is then a system that defines its unity and brings about its very own constituents by means of creating its own limits and by maintaining the processes therein stable.

In the 1980 article of Varela and Maturana, there is no explicit mention of the difference between the autopoietic organization at the basic level, for example, the bacterial cell; and at the level of second-order systems like mammals or colonies. In further interpretations (Maturana & Varela, 1992; Varela, 2000), the authors do not think it is necessary to examine how the autopoietic process becomes more complex in multicellular organisms. However, without an elaborate theory about the real extent to which we can literally apply the theory of autopoiesis, it is impossible to tell whether it is an accurate and general alternative to describe living individuals, let alone cognitive processes, as it promises. Let's see why it is so restrictive and how it can possibly be extended.

#### 4.3.2. The role of the spatial boundary in Autopoiesis Theory (AT)

We have interpreted the central role of cells in autopoiesis theory as a methodological reductionistic strategy that intends to understand complex phenomena by describing its simplest instances. However, in order to work as a suitable explanation, such reduction must enable a wider application of its principles to the phenomena that supposedly fall under its

scope. It is thus necessary to prove that high levels of organizational complexity in living beings are essentially analogous to the basic organisation of cells. This is where we find one of the most obscure aspects of autopoiesis theory and the occasion for various debates and inconsistent interpretations.

As we mentioned earlier, the membrane of the cell is one of the essential components of the autopoietic process. Without the membrane, there is no physical boundary, and without a physical boundary there is no interiority and no self-production of life<sup>13</sup>. If we extrapolate from the cell to the whole set of living beings, then, provided that we want autopoiesis as a general theory of life, there must be some physical boundary that plays the role of the cellular membrane. “A system can be said to be living when it is defined by a semipermeable chemical boundary which encompasses a reaction network that is capable of self-maintenance by a process of self-generation of the system’s components from within” (Luisi, 2003: 52).

However, there have been some interpretations that understand the role of the physical boundary as secondary. There are examples that abstract the theory to a point in which autopoiesis is not even a theory of life, but a general theory of self-organized systems that can be applied to diverse areas. One of the most representative theorists in this perspective is Niklas Luhmann. According to him: “If we abstract from life and define autopoiesis as a general form of system building using self-referential closure, we would have to admit that there are non-living autopoietic systems, different modes of autopoietic reproduction, and that there are general principles of autopoietic organization that materialize as life, but also in other modes of circularity and self-reproduction.” (Luhmann, 1990: 2)

There are, however, less radical interpretations of AT that do not intend to contest the essential connection between of autopoiesis and life but want to re-describe it in order to make it consistent with the general aims of the original formulation. For example, Virgo and colleagues argue: “The spatial boundary is undoubtedly important in maintaining the conditions necessary for many ongoing processes in living organisms. While these are indeed important contributions, we do not believe that they are of a different *type* of contribution than the other enabling processes that form living organisms” (Virgo, Egbert, & Froese, 2011: 245). In other words, the physical boundary is just one among many enabling processes that make autopoiesis possible.

What is the problem of giving too much importance to the physical boundary in describing an autopoiesis system, even if we want to restrict our theory to a theory of life? There are at least two points of contention:

#### 4.3.2.1. Autopoiesis: a closed all-or-none process

As we have already mentioned, it is not clear that the description of a cell as an autopoietic system can be generalized to multicellular organisms. We can identify, in most living individuals, a physical covering or cuticle that distinguishes them from their surroundings -

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<sup>13</sup> See Varela (2000) for an explicit redefinition of autopoiesis in this direction.

namely skin, exoskeleton, hide, etc. - but there is a relevant difference between these cuticles and the cellular membrane. The latter is not only a protective covering that keeps alien elements away from the cellular interior: it is what defines the unity of the cell as such, it is what “translates” the surrounding elements in nutrients that, at the same time constitutes the membrane itself. That is why in this case the circularity of the individuation process in living beings is co-extensive with the circularity of physical membrane constitution. Unlike other membranes that usually play a secondary role among other processes in the organism’s self-constitution, the cellular membrane is the defining feature that constitutes a living unity and that makes living processes possible by a circular dynamic of self-production. In Varela’s later works, the definition of autopoiesis includes explicitly the semi-permeable boundary as the first condition for autopoiesis, the other two conditions being the internal production of that boundary and the reactive processes that regenerate the unity (see Varela, 2000)

This is more apparent for us if we examine some attempts at formalizing and defining the minimal constituents of an autopoietic system. There we can see that the essential process - from which all the others can be abstracted - is membrane self-constitution. For instance, the first model proposed to explain autopoiesis (Varela, Maturana, & Uribe, 1974) consisted in an algorithm with three main functional particles: substrate particles (S), catalysts (K), and bonding particles (L). Three processes are related to these particles: production (Ks mix with Ss to create Ls); bonding (L particles bond with each other to create bonds that may eventually close in a unity); and disintegration (L particles randomly disintegrate releasing the bonds that it has with other L particles and yielding the production of two S particles). Bourguine and Stewart (2004) have proposed a tessellaton automaton model that makes the process of constitution, disintegration, and self-reparation much more complex but whose essential structure is still dependent on the persistence of an enduring membrane.

As is evident in these models, the membrane is the necessary condition for living individuality. This means that without a membrane, there is no living individual. It is also sufficient for an entity to have a self-productive membrane to count as a minimal autopoietic system, rendering all other processes involved in the constitution of life derived or secondary ones: if there is a (self-producing) membrane, there is a living individual. This is what makes life an all-or-none condition under the autopoietic interpretation: “Like a candle flame, the system is either “alive” or “death.” If it is “alive,” it may waver at times (several holes may appear), but it can recover and go on as though nothing had happened. If it is “dead,” however, nothing can resuscitate it; the system collapses and disintegrates entirely.” (Bourguine & Stewart, 2004) Therefore, the existence overtime of an autopoietic system - given the disturbances and the entropic tendency of its material environment - depends on the homeostatic capacity that it has, i. e., it depends on its capacity for maintaining the existence of the membrane at least within a feasible margin for its continuing self-reproduction.

It is now evident that the generalization of autopoiesis to other organisms is extremely problematic within the strict limits of AT. On the one hand, I insist, there is no *physical* substitute to the cellular membrane in multicellular individuals. The function of maintaining the individual as an individual in its own right does not depend on a homogeneous structure in the case of complex multicellular individuals. Thus, the sufficient and necessary conditions for individuality in multicellular organisms are not so obviously identifiable as a single

process, or structure. On the other hand, as Barry McMullin (2004) points out, autopoietic models open the possibility for two bodies - sharing their material composition and being closely enough - to fuse together into a single autopoietic unity. This is not only inconsistent with Darwinism, which is McMullin's main concern, but also with a theory of individuation because "adjacent agents tend positively to merge rather than to maintain their individuality" (McMullin, 2004: 289)

Furthermore, the extremely minimalistic description of the autopoietic system makes it too wide to count as a sufficient condition for life. Although the authors underline the importance of autonomy in their theory, there is nothing in their formulation incompatible with a passively constituted system. In fact, given their explicit rejection of teleology, it is practically impossible that the authors can defend the idea that an autopoietic system is active in its own constitution. If we observe the artificial models of autopoiesis that the authors have proposed, all the conditions that maintain or disintegrate an autopoietic system are random (probabilities may vary depending on how big or structured is the system in question). If it were not so and the system actively constituted its own unity, then it would have to have a description of the goal - a unified system - as a defining element in its operation.

The notion of autonomy that Varela and Maturana defend in their initial formulation has to do with the nature of the changes produced by the operation of a machine. If those changes contribute to the maintenance of the system, we have an autopoietic system. Else, if those changes have as a product something different from themselves, they are allopoietic (Maturana & Varela, 1980: 80). But what does it mean that they contribute to the maintenance of the system? Given that we have a conservationist, all-or-none description of life, we have to define this contribution negatively: as long as they do not destroy the system, changes contribute to its maintenance. As Ezequiel di Paolo eloquently describes it: "According to the conservation perspective, balancing at the edge of a cliff is a perfectly viable behaviour, so is falling over the edge - both are interactions that conserve autopoiesis. It is only crashing against the ground that is bad for the organism" (Di Paolo, 2005: 436). Autonomy ends up meaning that any state of the system contributes to its maintenance in so far as it does not destroy it. Whatever doesn't kill the system, keeps it alive. This is far from an intuitive definition of autonomy despite the authors wanting us to believe that they are not changing substantially the meaning of this word (Maturana & Varela, 1980: 28)

The cybernetic background of autopoiesis theory makes it difficult for Maturana and Varela to go beyond a conception of life as pure maintenance of minimal conditions. As Froese and Stewart (2010) recount, the theory of ultrastability proposed by cybernetician Ross Ashby inspired Maturana in his first formulations of autopoiesis theory. Ashby was interested in systems that tended to stable equilibria when faced with disturbances from the environment. This means that a given ultrastable system only acts to establish its equilibrium state when perturbed from the outside. Movement is then not autonomous or internally motivated, but conditioned by the environment, "it is only when the external environment pushes an essential variable out of bounds that the system does anything at all" (Froese & Stewart, 2010: 20). Maturana seems to follow this formulation and proposed autopoiesis systems as homeostatic (with a tendency to maintain their equilibrium state), but adds that there must be some kind of operational closure that includes the organization of the system as a variable of its very own operations. This means that the system's function is to produce the very

components that maintain the system itself stable. “Thus, whereas Ashby was only concerned with the *maintenance* of a stable organization, as demonstrated by the homeostat, Maturana is adding the idea that the operation of living systems can also be characterized as the *production* of a stable organization” (Froese & Stewart, 2010: 25)

With the notion of self-production, Maturana wanted to go beyond the mere systemic stability Ashby proposed and thereby intended to create a criterion to differentiate a living system from a non-living homeostatic system. An autopoietic system produces its own organization and it is, therefore, an operationally closed system whose transformations always take place within the limits of its own operations as a living entity: the system is alive and will remain alive insofar as its transformations do not destroy life and resist the perturbations of the environment. However, Maturana’s model does not grant autonomy to living systems (at least as we understand autonomy as self-caused behaviour) because they are still dependent of the perturbations of the environment in order to produce their own organization. Moreover, Maturana equated autonomy with systemic closure, and that does not rule out the possibility of operationally closed non-living homeostatic systems, which makes blurry the limit between the living and the non-living. “Ashby would have been happy to point out that there are many trivial examples of operationally closed systems that are not instances of living systems. In fact, any complete dynamic system or machine will satisfy the mathematical criteria required for closure, which means that this type of circularity cannot be used as definitional of what makes a living system a different kind of system” (Froese & Stewart, 2010: 30). The case of the cell as producing its membrane is but a particular instance of a general notion of operationally closed systems and there is in principle no reason to restrict operative closure to physical boundedness. Let’s keep in mind that autopoiesis theory, in accordance with cybernetics, starts from abstracting the material component of the system and focuses exclusively on its organisation. The cell might be an instance in which operational closure and physical borders coincide, but it is difficult to conceive of another system that meets this particular coincidence.

In sum, even if the autopoietic model - restricted to the production and maintaining of a physical border - is successful in explaining how a cell is organized, it does not seem to work at a more general level. In addition to the absence of a material structure parallel to the cellular membrane, it is extremely difficult to accept an account of living beings that restricts life to mere survival. Moreover, notions like interiority or autonomy that the authors seem to defend never go beyond mechanical patterns that are enabled by a given structure that has nothing to do with autonomous subjectivity - which is our main concern in this thesis. Autopoiesis does not really account for agent movement, that is, a spontaneous movement initiated from the system itself. Life is conceived here as certain processes that emerge passively and that maintain the system alive insofar as the perturbations from the environment do not destroy them. Finally, the very notion of material individuality has been explicitly discarded by Maturana in recent works as an epistemological construct from an external observer: “According to Maturana’s own interpretation of his work the circularity of the living must exclusively happen on the level of components without any reference to the system as a whole, and without any reference to the result of the component interactions” (Froese & Stewart, 2010: 26). The mechanist background adopted by the early formulations and maintained tenaciously by Maturana today prevents autopoiesis theory from being a theory of individual wholes that regulate and configure the processes of their parts. It seems

that the reference to individuality as a building block of the theory of autopoiesis is only illusory, at least in the case of Maturana. Varela seems to have a different opinion and the conflict between the two proponents of autopoiesis will be more conspicuous when they make clear their particular interests.

#### 4.3.2.2. Cognition and operational closure

Varela and Maturana not only wanted autopoiesis to be a theory of life, but also a theory of cognition because they thought the latter was included in the former. It seems nonetheless paradoxical that Varela defends an enactive view of cognition that is relational and includes the environment in mental states. How can this be possible within an interpretation that emphasises so much on systemic and material closure? Given this possible inconsistency, Bitbol and Luisi point out: “autopoiesis and cognition are distinct processes, and autopoiesis alone may not be sufficient for defining life” (Bitbol & Luisi, 2004: 100). Anyhow, there is a possible way out, but it demands a radical reformulation of the project of autopoiesis.

As we have mentioned before and as most commentators recognize<sup>14</sup>, the theory of autopoiesis was too vague in its formulations and too ambiguous in its terminology. It is then no surprise to see radically different interpretations even from the original proponents of the concept. Varela emphasised especially in his late years the cognitive character of life and progressively abandoned his emphasis on the internal processes of the living system to focus more on its relationship with its environment. Hence his interest towards an enactive theory of cognition as an extension and revision of autopoiesis theory (Varela, Thompson, & Rosch, 1993). However, as we have mentioned, the internalist and non-teleological nature of the original project seems inconsistent with an enactive view of cognition that emphasizes on sense-making and openness to the world. One option to address this incompatibility is to understand autopoiesis and cognition as two separated, complementary processes, the former referred to internal self-organization and the latter referred to the relational constitution of meaning in the environment (e.g., Bitbol & Luisi, 2004; Bourguine & Stewart, 2004; Di Paolo, 2005). The other option is to re-define autopoiesis so that it allows for a description of the cognitive relationship with the environment within the framework of life constitution<sup>15</sup>. The former option sacrifices the identification between mind and life, an aspect that is central to the original intentions of the autopoiesis theory project. The latter saves this identification by abandoning two central tenets of this theory: namely, the emphasis on material individuality and the complete renounce to teleology. Let’s see this in more detail.

I have pointed out repeatedly that AT is about the organization, not about the physical structure of living beings. This is so because autopoiesis theory emerged within the framework of Systems Theory and Cybernetics. In fact, we can understand autopoiesis theory in the ideal space of science as a subset of homeostatic systems’ theory which belongs to General Systems Theory (GST). It is true, nonetheless, that the intention to create a theory of closed systems is incompatible with the view of the precursors of GST like von Bertalanffy

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<sup>14</sup> besides the ones quoted in this section who unanimously point out this, see Razeto-Barry’s history (2012)

<sup>15</sup> Virgo and colleagues, (2011) explicitly defend this option, but also Villalobos and Razeto-Barry (2019) seem to agree

who saw biology as dealing with open systems. However, some distinctions need to be made in order to understand what can the authors mean by closedness and how this is compatible with the physical openness of all biological systems.

According to Virgo and colleagues (2011), one of the biggest conceptual holes in autopoiesis theory is related to the notions of process and limits. Also, related to that, there a theory about the difference between formal and material processes is wanting. This is where the incompatibility between autopoiesis and cognition arises: if autopoietic systems are physically closed, and all processes need to take place inside the membrane, there is no option for extending the system without violating its autopoietic nature. However, if we interpret the notions of process and limit in a purely formalistic way as opposed to the notions of dynamics and boundaries - which refer to material correlatives or products of these formal operations - we can do away with the limits literally and figuratively imposed by some interpretations of autopoiesis theory and thereby can we extend it to include a theory of cognition.

The first misunderstanding that we have to pass over is the identification between operational limits and physical boundaries and, more importantly, between operational closure and physical membrane. A system is operationally closed when the processes that are carried out within it are mutually dependent:

“Given a collection of processes  $C$ , we can identify an operationally closed subset of those processes,  $S$  such that for every constituent process  $P$ , the following conditions are true.

1. Another process  $P'$  requires conditions produced by process  $P$ .
2. Process  $P$  is conditioned by another process  $P''$ .
3.  $P'$  and  $P''$  [belong to]  $S$ .
4.  $P'$  and  $P''$  can be (but are not required to be) the same process.” (Virgo et al., 2011: 243)

Since the dependency is formal, not material, it is possible that the cycle of mutual conditioning goes outside the limits of the organism. For example, spiders create silk from the food they take from their environment, with the silk they create cobwebs, and the cobwebs allow them to catch prey and obtain food. This is a circular operation in spite of not taking place within the physical limits of the organism involved. In order not to take abstraction to the extremes of Luhmann’s interpretations, Virgo and his colleagues include autopoiesis within the theory of closed systems (that is included in the theory of homeostatic systems): “operationally closed networks of processes may or may not involve organisms at all. This is not problematic for the theory of autopoiesis as autopoietic systems are the subset of operationally closed systems that produce a spatially bounded structure.” This means that autopoietic systems are a subset of operationally closed systems and that one of their defining features is that it must have a distinctively material unity as one of its products (Virgo et al., 2011: 244)<sup>16</sup>.

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<sup>16</sup> It seems that the material restriction is ad hoc and those who want to extend the theory of autopoiesis to include communication or other abstract processes, e.g. Luhmann, would want to see materiality as a



Let us make this last point clear: although the physical unity of the organism is involved in the autopoietic process, it is not a kind of autopoietic system. In other words, organisms are not subsets, but constituent parts of autopoietic systems. It is the cognitive environment plus the organism what constitutes the autopoietic system, but neither of these components is by itself autopoietic. This can explain how the living being can remain an open system with material interchanges with its environment while at the same time it belongs to an operationally closed system with mutually conditioned processes. Varela himself mentioned this particular topic: “It is ex-hypothesis evident that an autopoietic system depends on its physicochemical milieu for its conservation as a separate entity, otherwise it would dissolve back into it. Whence the intriguing paradoxicality proper to an autonomous identity: the living system must distinguish itself from its environment, while at the same time maintaining its coupling; this linkage cannot be detached since it is against this very environment from which the organism arises comes forth.” (Varela, 1992: 7)

Thus, according to the interpretation of Virgo and his colleagues, the autopoietic system is physically open but operationally closed. However, the radical point of departure from the original theory is that operational closure is not instantiated in a physical closure. If we restricted autopoiesis to a theory of cellular life, it would be possible to identify the cellular membrane production with the operational circle of an autopoietic system. However, if we extend the theory and take into account other organisms, we will see that the cuticle that covers multicellular organisms is just one of many intervening and enabling process in the autopoietic operation. The autopoietic system can, therefore, include the physical space that it interprets for its own survival and cognition becomes not a complementary process, but a constituent part of life. The price to pay is to deny the identity between individual organism and autopoietic system, that is to say, that autopoiesis is not a theory that deals mainly with physical individuation in living beings<sup>17</sup>.

In this sense, the notion of autopoiesis as the processes merely involved in the conservation of a physical membrane seems hopeless as a general theory of biological individuation. A more promising alternative is to extend it so that it includes (either as a complement or as a constituent part) cognitive processes involved in sense-making and active self-differentiation. If we do so, the living body becomes only one stage -though an essential one - in the general phenomenon of life. It is necessary to include and emphasize the normative relationship that the organism establishes with its environment, and we cannot lose from sight either the spontaneous activity from the organism as an agent in the constitution of its own individuality nor the intrinsic teleology of the process of self-constitution. But how can we understand this bigger picture so that we can have a more adequate description of the uniqueness of living individuals? The proponents of enactive and embodied cognition offer

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characteristic of some subset of autopoietic systems but not as the defining factor of autopoiesis (see Luhmann, 1990). Perhaps it is a verbal dispute, but it is important to point out why materiality is essential to organisms if we want to keep this feature as defining of autopoietic (biological) systems

<sup>17</sup> Villalobos and Razeto-Barry (2019) have recently proposed an interpretation of autopoiesis that accepts the definition advanced by Virgo and colleagues, but that includes living individuals as subsets and not only parts of autopoietic systems. I see no reason to reject this theory in principle, but they need to present a theory of material individuation, and the option they make of taking cohesiveness as the defining factor is still too problematic (see Ayala, 2019)

an answer that solves the problems with the original formulation and that we will expose critically henceforward.

#### 4.4. From conservation to homeostasis: the importance of normativity in accounting for organic unity

As we have argued, the conservationist interpretation of autopoiesis leaves no room for subjectivity or normativity. Or rather, it leaves too much room for non-subjective and non-normative descriptions of living, and generally, self-organizing processes. AT is so wide and encompassing that it needs to redefine concepts like autonomy or self in order to look like a proper theory of life. The vagueness and ambiguity of AT make further elaborations and reformulations necessary for those researchers - such as myself - who have taken seriously the initial problem formulated by Maturana and Varela, namely a definition of life that puts individuals at the centre of the discussion.

Moreover, though the extended interpretation of AT solves many of the ambiguities of the original formulation, it still relegates the individuality of living beings to a secondary place in the constitution of an autopoietic extended system. Consequently, my goal in what follows is, on the one hand, to restrict more explicitly the theory of life so that it be able to account for subjective experience and real autonomy; and on the other hand, to go into detail into the process of individuation and the dialectics between the internal and the external processes of self-constitution I will carry out the first task in the remaining of this section. The second task I will leave it to the next and final section of this chapter.

##### 4.4.1. Homeostasis

Maturana and Varela aimed at going beyond systemic and cybernetic descriptions of life by identifying the essential feature shared by all living beings and only living beings. Maturana made some initial attempts in this direction but, as we have seen, they did not go too far in specifying an autonomous system. However, the idea of self-production that he conceived seemed like a promising step forward in the project of an autonomous science of living beings. The concept of 'autopoiesis' is a neologism that he coined and a concept that he developed with Varela and it is intended to account for the specific form of self-production that is essential to a living system. The authors were inspired by their observations of biological and cognitive phenomena to develop a theory that seems very attractive but that is too constrained by its theoretical presuppositions: "The realization that self-production is a defining aspect of the organization of the living might well be considered as the core insight of the autopoietic tradition, even if its full implications are obscured by an inherited discourse that prevents them properly grasping the phenomenon." (Froese & Stewart, 2010: 36)

Initially, as we saw in the last section, the point that these authors wanted to make is that living beings produce the conditions of their own existence and maintenance. If we interpret this in a mere conservationist sense, it simply means that the conditions of existence and maintenance take place within the limits of the living system. But if we take it more literally,

it means that the living being is the *agent* of its own production and maintenance, which is a huge step in the definition. The big problem with AT is that the authors remain ambiguous about the role of the system in its own constitution. If it is purely conservationist, the organism plays no role and we cannot talk exactly about self-production or self-maintenance but only about circular operations that keep stable a pre-given state of affairs. If it is active, the theory would have to account for the experience of agency and this would force it to abandon its mechanist background and include subjectivity and teleology in its definition. The first horn of the dilemma maintains the theory coherent with its background and its presuppositions but makes it deceitful and equivocal in their use of concepts like autonomy, individuality, and self. The second horn makes the theory more adequate to its promises but leads it away from its mechanistic principles. We have already exposed the case for purely ultrastable maintenance, which is the option that Maturana leans to. Let us now talk about active homeostasis, the option favoured by the later works of Varela.

The notion of homeostasis, which is more general than the notion of autopoiesis, refers to the regulation of some stable conditions by compensating some perturbations that keep the system away from its stable conditions. What makes homeostasis so special is that it makes a dynamic equilibrium possible. Physical bodies tend to a thermodynamic equilibrium i.e., a state of thermal uniformity, no mechanical acceleration, and a balance between chemical products and reactions. In the case of living beings, this equilibrium means death because it is the absence of the dynamics that make living processes possible such as the production of new chemical components. In this sense, homeostatic dynamic equilibrium is different from thermodynamic equilibrium, not because they represent two different ontological states or two qualitatively different levels of matter as vitalists wanted to assert, but because they represent two different tendencies in the physical world.

The idea of homeostasis was first envisioned by Claude Bernard and it was related to what he conceived as ‘milieu interieur’ or the internal conditions of the organism (also called ‘intra-organic milieu’) that enable biological processes, particularly metabolism. According to Bernard, the ‘milieu interieur’ is the locus of internal self-regulation of the organisms in relative independence from their environment and it is more evident and complete in endothermic than in exothermic organisms. The milieu interieur is comprised of fluids that surround the cells and enables their functioning by maintaining the adequate conditions for cellular processes.

Bernard insists on the idea that organisms belong to natural phenomena and are therefore subjected to physicochemical laws just like any other material body. The only difference with other physical bodies is that living beings have an intrinsic organization (whose origins are not in the interest of the physiologist) that is unstable and that depends on the exchange of matter with the environment within the framework of natural laws. Although he does not use the term ‘homeostasis’ a very clear definition for it can be found in one of his observations: “Living bodies are non-stable compositions that are in constant disorganization under the cosmic influences that surround them; they only live under these conditions and the organs formed by living matter are used and destroyed as the organs formed by inert matter. In order for life to continue, it is then necessary that the organized matter forming the histologic elements *renews itself constantly as it decomposes*, and thus we can observe the cause of life

as residing truly *in the power of the organization that creates the living machine and repairs its continuous losses.*” (Bernard, 1878: 129-130 my emphasis)

In this case, homeostasis is essentially a process of repair and renewal to maintain constant the variables of the internal milieu that make life possible. Now, the idea that Bernard has of the living body as a machine and his neglect of the questions about the origin of this order derive in a conception of a pre-established structure that the system must recompose every now and then. The idea of homeostasis has, from its very beginnings, a presupposed equilibrium, a state that all the physiological processes tend to maintain in a coordinated execution of functions. But, after the revolutionary works of Bernard and other biologists of the second half of the nineteenth century, the question of the purposeful and organized nature of the organism remains open and the demand for a theory that explains these phenomena becomes more and more manifest. In order to fill this conceptual gap within the strict limits of mechanist science, Norbert Wiener and other colleagues propose a theory of purposiveness.

#### 4.4.2. Behaviourism and purposefulness

The idea of purposefulness motivated Wiener to create a twofold explanation: one based on the behaviour of the observed systems and the other based on the regulative mechanisms that control those systems. In the first case “the term “purposeful” is meant to denote that the act or behavior may be interpreted as directed to the attainment of a goal - that is, to a final condition in which the behaving object reaches a definite correlation in time or in space with respect to another object or event” (Rosenblueth, Wiener, & Bigelow, 1943: 10).

I will expose the regulative control theory in the next section.

The definition that I quoted above is very vague and has been the target of various critical reviews. It seems that they are defining purposefulness as a correlation between the observed behaving object and another object and event. That would imply that practically every event in the universe can be conceived as purposeful because “any behavior culminates, at whatever point we choose to call its culmination, in a definite correlation in time or space between the behaving object and other objects or events” (Taylor, 1950: 19). Though Wiener and his colleagues attempt to restrict the notion of purpose only to active and voluntary behaviour, their precautions are vane. As in the case of Maturana and Varela, Wiener and his colleagues use some crucial concepts in a very fuzzy if not equivocal fashion. For example, they say that “the basis of the concept of purpose is the awareness of ‘voluntary activity’” (Rosenblueth et al., 1943: 10), but two paragraphs later they bring forward target-seeking torpedoes as the paradigm of intrinsically purposeful machines.

The behaviouristic concept of purpose relies heavily on presuppositions about what counts as an end state in a given situation. This explains why Maturana and Varela conceived any reference to an end or any use whatsoever of teleological language as a feature that is necessarily observer-relative and not internal to the system itself. Another exponent of this behaviourist interpretation of purpose is Ernst Nagel, who considered that all teleological explanations can be translated into non-teleological language: “The difference between a teleological explanation and its equivalent non-teleological formulation is thus comparable

to the difference between saying that X is an effect of Y, and saying that X is a cause or condition of Y. In brief, the difference is one of selective attention, rather than of asserted content” (Nagel, 1961: 71). The translation of a teleological statement into a causal one is via the analogy of necessary conditions for an event and function: if the event E has the function F in a system S, it can be understood as synonymous with E as a cause or necessary condition for F.

Though we say that the heat of the sun is the cause or necessary condition for the forming of clouds, no one would claim in a scientific context that the function of the sun is to produce clouds<sup>18</sup>. In order to avoid such extreme generalizations, Nagel restricts the use of teleological language to the description of events that occur in goal-directed systems. He defines goal-directed systems as those that “continue to manifest a certain state or property G [...] in the face of a relatively extensive class of changes in their external environments or in some of their internal parts” (Nagel, 1961: 77). Goal-directed systems can be also described as homeostatic systems that tend to regulate the processes that take place within their domain in order to maintain a particular state of affairs. It is in describing those systems that we can translate causal into teleological statements.

But Nagel is not very explicit about the nature of these systems. Are they real systems or mere constructions of the observer? For Nagel, “the distinction [between teleological and non-teleological systems] is highly vague” (1961: 85) and even in some passages, he seems to believe that such distinction actually depends on our scientific knowledge. For example, he says that before Newton’s laws a pendulum “might very well have counted as goal-directed” (Nagel, 1979: 275). Moreover, as Carl Hempel remarked, it is not clear what causal statements within a goal-directed system can be properly translated into functional ones: why is it valid to say “The heartbeat in vertebrates has the function of circulating blood through the organism” as a translation of the sentence “circulating blood is one of the effects of the heartbeat”, but it is not valid to say “The heartbeat has the function of producing heart sound; for the heartbeat has that effect” (Hempel, 1965: 97-98).

In order to solve the problem of the nature of goal-directed systems and of the criterion for real normative statements it is important to recall Kant’s theory of natural purposes. First, at least in the case of living beings, the homeostatic unity that enables teleological explanations is a real feature of the system, not an arbitrary attribution of the observer. Second, the criterion for discriminating relevant from non-relevant attributions of teleology is the contribution of the feature described to the maintaining of the system, that is, to the way in which the system is supposed to behave, that is, *the criterion is not merely behavioural but normative*. This is precisely what Hempel, among other authors<sup>19</sup> proposes: “The heartbeat has the effect of circulating the blood, and this ensures the satisfaction of certain conditions

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<sup>18</sup> These attributions are nonetheless frequent in unscientific descriptions of nature or in some instances of science divulgation. It would be interesting to make deeper research into the persistence of teleological language in physical sciences.

<sup>19</sup> Francisco Javier Ayala, for example: “Why is it that we apply to organisms teleological accounts, such as encased above in the phrases 'in order to', 'designed to', and 'for the purpose of', but we don't do so for physical processes or objects (other than those made by humans)? The reason is that the biological phenomena that call for teleological explanations are adaptations, which have come about because they are useful to the organisms in their essential functions of survival and reproduction.” (F. J. Ayala, 1998)

(supply of nutriment and removal of waste) which are necessary *for the proper working of the organism*" (Hempel, 1965: 98).

If we want to describe living beings as homeostatic systems, we cannot escape teleological language. When we say that a system *creates* and *repairs itself*, we are referring to some assumed conditions of normality that the system is supposed to maintain *actively*. The tentative exclusion of every trace of teleological language in the description of living beings - or its relativization as a purely observer-dependent - misses the point about the essence of life and it is no surprise that defenders of a radically mechanistic view of life introduce equivocal language referred to design or agency or take for granted normal conditions of life in their reductionist explanations.

The problem with behaviouristic theories such as Wiener and colleagues' (whose truth is taken for granted in autopoiesis theory) is that they only refer to a definite state of coupling that is either met or not, which leads to a theory so extensive that it does not explain what we want: "The reason why behavioristic analyses fail to capture what is essential about teleological behavior are many and diverse, exhibiting both underdetermination and overdetermination. The same behavior can occur with different goals and the same goal may be present in different behaviors" (Nissen, 1997: 26). That is the background of a conservationist formulation of autopoiesis that we exposed earlier and that "implies that the system does not adapt to changes in its environment, it is already adapted to it and either survives the perturbations or it doesn't" (Di Paolo, 2005: 436-437). In this sense we can only say *that* some processes take place within the system without destroying it, but not *why* or *how* some processes do contribute to the maintaining of the system while others do not. In other words, without a normative presupposition, there is no way of discriminating the effects that actually contribute to self-production from those that merely happen within a goal-directed system.

By shifting from conservation (of a functional or a physical boundary) to homeostasis, the component of active constitution suggested and taken for granted in autopoiesis and behaviourist theories becomes explicit and takes its central place in the description of living beings: "Whereas homeostasis connotes the existence of active mechanisms capable of managing and controlling the network of processes that construct the organism, conservation is a set-theoretic condition that may or may not be realized in an active manner" (Di Paolo, 2005: 435). It is now that we can talk in a more univocal way about autonomy and self-production and that we can take seriously the outward innovations of cybernetics and autopoiesis theory. Since living systems are a subclass of homeostatic systems (as the proponents of autopoiesis admit) and all homeostatic systems are active in their constitution and are normatively governed in their activity, active constitution and normativity are also essential features of living systems.

#### 4.4.3. Cybernetics: negative feedback

As I stated earlier, there is a second aspect of Wiener and colleagues' theory of purpose that focuses on regulative mechanisms. In this case, "all purposeful behavior may be considered to require negative feedback. If a goal is to be attained, some signals from the goal are

necessary at some time to direct the behavior” (Rosenblueth et al., 1943: 11). This clearly points out to causal pathways that make purposeful behaviour possible and not merely to behavioural patterns. Therefore, though the authors do not make a clear distinction between the behaviourist and the feedback theory, there is certainly one (see Nissen, 1997: 2, 29-30).

The theory of negative feedback is at the centre of Wiener’s main project: cybernetics. Cybernetics is a theory of control and communication that selects messages from the environment in order to make them conform to the goals of the system: “Cybernetics might, in fact, be defined as the study of systems that are open to energy but closed to information and control - systems that are ‘information-tight’” (Ashby, 1957: 3). Information and control in this context mean the systemic tendency to order as opposed to the thermodynamic tendencies in the environment. The connection between feedback and cybernetics is that the system is able to recognize signals from the environment that guide it towards the reduction of disorder and thereby to the maintaining of its homeostatic equilibrium. In this model, normativity is guaranteed.

Now, there are two presuppositions in this account: on the one hand, feedback mechanisms have the correcting signal coming from the goal-object that directs the action. This would exclude two kinds of behaviour from purposiveness: 1) meaningful movement in which the goal is not visible or present and cannot, therefore, send correcting signals; and 2) extremely fast movements in which there is not enough time for the feedback process to take place. In fact, Wiener and colleagues themselves accept explicitly the second option and reject fast movements involved in hunting or prey-catching as purposeful: “Indeed, the movement is in these cases so fast that it is not likely that the nerve impulses would have time to arise at the retina, travel to the central nervous system and set up further impulses which would reach the muscles in time to modify the movement [of the predator] effectively” (Rosenblueth et al., 1943: 32)

With respect to the first option, it is obviously problematic to dismiss exploring behaviour as non-purposive just because the end is not in view. Some authors<sup>20</sup> have tried to escape this problem by displacing the correcting source of feedback to a mental representation thereby guaranteeing the existence of the two correlated elements (end and behaviour) without compromising with the factual external existence of the end state. Though this recourse to mental representation as substitute for external source of signals solves the problem raised by Wiener and his colleagues, there is a deep presupposition both in cybernetics and in representationalist views: they assume that the goal and the organism are already complete

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<sup>20</sup> Ducasse: “What is essential [to purposive events] is that the following elements be present, or be supposed, by the speaker, to be present: 1. Belief by the performer of the act in a law (of either type) e. g., that if X occurs, Y occurs. 2. Desire by the performer that Y shall occur. 3 Causation by that desire and that belief jointly, of the performance of X.” (2015: 53-54) Woodfield: “There is no such thing as a goal to which the agent’s behaviour is directed, yet which the agent has does not have; and to have G as a goal is to have G as the object or content of desire” (1976: 172) Nissen “The reason why intentionality is central to goal-directed behavior is that the behavior is mediated not by the realization of the goal but by the representation of the goal-state.” (1997: 199) Milikan: “Goals are envisioned - represented - and moved toward by means first of abstractly knowing how, understanding how the reaching of first this and then that prior goal will lead to a further goal, then by filling in, step by step, making the abstract concrete by following sensory affordances - roughly, Gibsonian affordances - from here to there to there, step by step.” (2012: 1)

and constituted unities and that purposive behaviour is merely the coupling of these two entities. The goal must pre-exist either as an external object or as an internal representation and the action's correctness criterion is the adjustment to this pre-existing goal. That is the risk of introducing normative language in natural phenomena and the source of objections against natural teleology at least since Descartes<sup>21</sup>: the entity that carries out a purposive action must *know* beforehand what it is supposed to do or its purpose must be imposed from the outside by a knowing agent, otherwise, there is no purposeful action.

## 5. Self-affection and kinesis

This takes us back to the problem that Kant faced in his description of natural ends. Since he rejects intelligent design and he does not seem happy to admit that non-human living things have thoughts, where does the source of normativity come? is it a statistical tendency? is it the following of a paradigmatic model of correctness? It is precisely in this point that I can connect the themes of this chapter with the themes of the last one and open the gate for an elaboration in the remaining of this thesis: *the source of normative assessment is not an external<sup>22</sup>, already constituted state of affairs, but a radically internal sense of self-affection: the original notion of adequacy or inadequacy emerges from the primitive capacity that we have of being affected positively or negatively by the surrounding world, that is, by the capacity of having a subjective feeling of the material interaction between organism and environment. This capacity also presupposes an even more primitive capacity of self-affection, that is, a capacity of feeling oneself as an individual and to be the agent of one's own movements. In short, the source of normativity is life itself as a subjective experience.*

As I have already defended in the first chapter, in accordance to Henry's reflections, the transcendental subjectivity, the individuality that grounds the cognition of other individualities - and that remains mysterious for Kant and other philosophers that have addressed this problem - is a pre-intentional self-affective one. In the context of this discussion, it is possible to identify the origin of meaning and normativity in this self-affective subjectivity. We have seen that the equivocal languages of cybernetics and autopoiesis have problems of underdetermination (it excludes from life entities that it should include) and overdetermination (it includes in life entities that it should not). Representationalism, though not necessarily a theory of life, is a theory of meaningful behaviour and as such shares also a problem of cybernetics and autopoiesis.

There is overdetermination in the theories that I have examined here because they include artefacts as agents of meaningful behaviour<sup>23</sup>. One of the main theses of Kant's theory of

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<sup>21</sup> Descartes equates having an end with having a mental representation and that is why he ultimately rejects any kind of purposiveness in extended nature, animals included: "But what makes it especially clear that my idea of gravity was taken largely from the idea I had of the mind is the fact that I thought that gravity carried bodies toward the centre of the earth as if it had some knowledge of the centre within itself" (Descartes, 2005: 298)

<sup>22</sup> Constituted, contentful mental states also count as external insofar as they are the intentional object of the original subject. They are, as I mentioned before, transcendent, not transcendental.

<sup>23</sup> Even though autopoiesis theory does not equate living things with other artefacts (or what they call "allopoietic machines"), they do pretend to create artificial models of life. Since their notion of autonomy is



natural purposes is precisely a delimitation between artefacts and self-organized natural entities. The problem with artefacts is that their meaning is derived from the cognitive attribution of an external entity. However, we do not tend to think of living beings (humans included) as being guided all the time by external instructions and pre-established norms. There must be a point in which we can conceive of an originary meaning that other meanings can derive from. But why is Kant so sure that there must be an original meaning, a source of conceptualization? *Because he is himself one*. He is aware of his own intentions and, moreover, of his own ability to move his own body and to navigate the cognitive space with it. We have already discussed that, but my point here is that this capacity is precisely the source of his (and our) certitude about the individuality of living beings and the impossibility of describing them in merely mechanical terms: we cannot escape from attributing an inner life to other organisms because we are ourselves alive: “The observer of life must be prepared by life. In other words, organic existence with its own experience is required of himself for his being able to make that inference, which he does make all the time, and this is the advantage - perennially disowned or slandered in the history of epistemology - of our “having”, that is, being bodies” (Jonas, 2001: 82). In a nutshell – and paraphrasing various passages of Hans Jonas – “only life can know life”. Furthermore, being alive forces us to see other living things as alive<sup>24</sup>. To dismiss them as mere machines or as explanatorily useful figments of our imagination is inconsistent with our own experience, it is to deny our transcendental, immediate experience, to shut down our subjectivity.

Representationalism, along with the other theories criticized herein, also has a problem of underdetermination. As I mentioned earlier, it only conceives as meaningful and purposeful those behaviours for which there already exists a predetermined end that they must adequate to. But that implies that our capacity for moving ourselves only acquires meaning with relation to an already constituted environment. This idea emerges from a condition that Varela and his colleagues have described as a “Cartesian anxiety” and that puts us in a false dilemma: “either we have a fixed and stable foundation for knowledge, a point where knowledge starts, is grounded, and rests, or we cannot escape some sort of darkness, chaos, and confusion” (Varela et al., 1993: 140). Furthermore, as we saw in the critique of Henry against phenomenologists, even if we do not assume that the world “is already there” but as a horizon to-be-constituted, the view that meaning only takes place for an intentional subjectivity that is thrown into the world is too restrictive: it is possible to move meaningfully without even having an end in mind or in view.

Here I want to introduce the concept of “kinesis” and make an analogy (I hope it is not an equivocation) with the idea of primitive, non-intentional movement. Kinesis can be defined as “the non-directional change in space motion in response to the change of conditions” (Gorban & Çabukoğlu, 2018: 77). It refers to a kind of movement for which there is no distant information of sites or concentration of gradients available. Organisms in this case only change the speed of their movement or turn their bodies without directing it towards any specific goals. Kinesis is opposed to taxis, which is “the guided movement to more

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so fuzzy, it is not clear to what extent would a successful artificial model be different from an ordinary machine.

<sup>24</sup> Not only in conceptualizing external objects as belonging to the category of “living entities” but in perceiving them directly as animated and, consequently, capable of complex, unexpected behaviour.

favourable conditions” (Gorban & Çabukoğlu, 2018: 77) However, one is condition of the other, the basis of tactic, directed movement, is kinetic movement, but the latter can exist without the former: “If the information available to an organisms is completely local then taxis is impossible and kinesis remains the only possibility of purposeful change of spatial behaviour in answer to the change of conditions. The interrelations between taxis and kinesis may be non-trivial: for example, kinesis can facilitate exploration and help to find non-local information about the living conditions. With this non-local information, taxis is possible.” (Gorban & Çabukoğlu, 2018: 77)

Thus, when I am exploring a completely unknown territory and wander about looking for a sign (or even for the very pleasure of walking with no direction), my movement is not necessarily meaningless. I might not even know what I am really looking for until I explore and find some possible spots that call my attention or by causing me a pleasant or a painful experience. As we will see in the next chapter, the meaningful environment where we can find ends towards which we can move is constituted by the agent’s own navigation and exploration of terrain that is mostly unknown. Tactic movement is thus constituted by kinetic movement in the sense that the objects that count as the goal of my actions have to be discovered first in a meaningful exploration.

Moreover, the unity of the organism itself as the locus of subjectivity cannot be taken for granted either. My movement is not necessarily directed at navigating the world but it can also be self-directed at the explorations of the possibilities of my own body. As Maxine Sheets-Johnstone puts it: “Clearly, our first consciousness is a tactile-kinaesthetic consciousness that arises on the ground of movement that comes to us spontaneously, indeed, on the ground of fundamental and invariant species-specific kinetic acts that we simply “do” in coming into the world, acts such as kicking, stretching, sucking, swallowing, and so on. Such acts happen to us before we make them happen. In just this sense, movement is there prior to “I move.” Kicking, for example, is there before I kick; stretching is there before I stretch. In effect, movement forms the I that moves before the I that moves forms movement. Spontaneous movement is the constitutive source of agency, of subjecthood, of selfhood, the dynamic core of our sense of ourselves as agents, subjects, selves” (Sheets-Johnstone, 2011: 118-119)

With this in mind, we can address the problem of the individual as a problem of individuation in line with the project of Gilbert Simondon. Now that we have made a critical examination of the theories of individuality we can go further and propose an understanding of the living individual that takes into account the process of becoming an individual without necessarily reducing individuality to perpetual individuation (as Simondon seems to do in some parts of his work). Now that I have asserted that the primitive criterion of normativity is self-affection expressed in movement, we can include the primitive subjective body into our considerations of individuality and integrate the material with the subjective aspects of individuality.

The inclusion of normativity via the idea of homeostasis led us to the problem of meaningful (purposive) action. Though it is possible to understand homeostasis with the tools of natural mechanistic science alone, there is a capacity for active self-production and self-repair that integrates the material constitution of the organism with its subjective experience and that escapes the purely objectivistic scientific analysis. It is in this integration of subjectivity and

materiality that we can see a true constitution of individuality. Materiality alone does not count as a criterion for individuation because the identity of the organism does not coincide with the identity of its material parts. Neither is the organism identical to the genetically-programmed instructions that organize its material components and configure some definite traits. There is a concrete, lived experience that takes place in a definite region of the material universe and that is concerned with its own existence. The norm that directly governs this individual unity is not the conservation of a physical state of affairs or the blind following of a set of instructions. As Hans Jonas puts it: “The fundamental point of departure is that life says “Yes!” to itself. In wishing itself to continue it declares itself as a value.” (Quoted by Varela and Weber (2002: 118)) *This primitive value of self-affirmation is the basis of more complex values and of the identity of the individual through time and material changes.*

For now, I hope to have solved what Fuchs (2018b) called the problem of “vertical circularity”, that is, the integration of complex parts into a whole. Here I have offered a solution that is neither material (individuality is not the condensation of matter in a definite space nor the space within a physical boundary) nor functional (what defines individuality is not a definite set of instructions that guides the organization of diverse parts into a whole). My contention here is that *an organism is a dynamic material whole whose criterion of integration and individuation is the possibility of self-affective experience in that whole.* It is not the physical nor the functional limits what defines a living individual but the extension of its affections, the space that it can experience and move as its own, “the ontological individual requires, behind the continuity of form, *internal* identity as the subject of its existing *in actu*” (Jonas, 2010: 196). Through the process of moving and exploring there are many material changes and functional variations that the organism goes through, but they remain as constituents of the same whole insofar as they are the locus of a unitary experience of bodily unity. Though the physical processes that take place in the constitution of individuality are not arbitrary and need to follow the laws of physics and biology, we can identify them as conforming a material whole only when we have presupposed a subjectivity behind the material cohesion of the organic particles. Thus, I am not denying the role of genetical or biophysical laws in the constitution of the living individual; those laws are part of the external components of the organism that both limit and enable its individuality. But the essential nature of the living being - what makes it a concrete individual - is the dialectical tension between its internal self-affirmation and these and other external conditions. Let us see what is this tension about.

## II. DIFFERENTIATION: NEEDFUL FREEDOM AND RADICAL DISTANCE

In this chapter, I will focus my attention on the *animal* organism whose distance from its environment allows for a more definite individuality in comparison with other less differentiated living forms. We will see that the defining feature that distinguishes animals from other organisms, particularly plants, is the capacity for local movement. However, it is important to ask whether local movement enough for the constitution of the animal as a distinct individual relatively independent of its environment, that is, whether local movement is sufficient for establishing a distance between the organism and its surroundings. That is why I will explore three main sources of criticism related to Jonas's idea of individuality.

We have defined homeostasis as an active process of self-organization guided by an agentive experience that constitutes a formal-material unity, that is, a whole that transcends the sum of its parts. However, the unity of the organism has a particular relationship with the material conditions that exist outside of it. This relationship between the organism as a coherent unity and its surrounding environment is both of resistance and dependency. The environment appears for the organism both as the threat to, and the condition for its own existence. This is what I will define, following Fuchs (2018a) as *horizontal circularity*. In order to understand the basic condition of this horizontal circularity, I propose to study the concept of metabolism as exposed by Hans Jonas's theory of the organism.

### 1. Needful Freedom: The Dialectical Constitution of the Living Individual

The integration of materiality and subjectivity that takes place in the organism as a whole is complemented with the differentiation of this whole with its surroundings. The complex unity in which elements with a low probability of spontaneous integration organize, the unity that is the seat of inner experience and meaningful behaviour is not only different but opposed to the rest of the material universe to which it belongs: the organism survives inasmuch as its homeostatic organization does not succumb to the thermodynamic tendencies of its material environment and gets absorbed by it. It is this opposition what makes organic unity so especial and problematic in the general landscape of physical entities.

Since the existence of the organism resists to its material environment, it is also independent of its laws in its own constitution. The living individual exists as the principle of integration of its material components and also as the subjacent principle that remains the same through material changes across time. This means that the organism is complex, not only synchronically, but also diachronically: its physical parts are organized in a highly unlikely structure, but also its temporal parts differ from one another in a highly changing yet stable composition. The temporal identity of a living individual is not the maintaining of the same elements through time - as in the case of other material individuals - on the contrary, the

organism is constantly changing its material constitution *in order to* persist in its own existence.

When I talk of a subjacent principle, this is not to be understood as an unaltered substance that remains identical to itself in spite of the changes that take place in its environment and in its own material constitution. Neither it is a formal code of instructions that organizes matter and remains external to the material components that it organizes. It is rather an active dynamic principle that exists through its material manifestation but is not defined by it. The living individual is a unity that produces its own individuality, an autopoietic system if we take the concept, not in its technical sense – which we have addressed in previous sections – but in the literal sense of an active self-producing individual. “Unity here is self-unifying, by means of changing multiplicity. Sameness, while it lasts (and it does not last inertially, in the manner of static identity or of on-moving continuity), is perpetual self-renewal through process, borne on the shift of otherness. This active self-integration of life alone gives substance to the term “individual”: it alone yields the ontological concept of an individual as against a merely phenomenological one.” (Jonas, 2001: 79)

The organism is thus not the synchronic sum of its material parts because those parts are in constant change and renewal. Neither it is the product of an external atemporal design that organizes matter. It is not even the diachronic sum of its temporal stages, that is, the juxtaposition of successive times in a single entity: “the individual is whole and its complete self in each of its successive “materializations” *so long as the succession goes on*. If a creature is killed midway in its normal lifespan, the whole has been killed and not half of it” (Jonas, 2010: 193). A useful way of capturing this dynamic nature of the organism is to stop thinking about as a static unity that remains unaffected by changes and complete in itself. As Simondon says, “*the living being conserves in itself an activity of permanent individuation; it is not only the result of individuation as the crystal or the molecule but the theatre of individuation*” (2013: 28) However, the organism is also the agent of its own individuation, as it were, the actor of its own theatre. The problem now is how to understand this dynamic. How is it that the whole in which the organism is individuated relates to what is external to it?

Although the material composition of the organism does not define it as a unity, it is the necessary condition of its existence. Not only does the organism remains the same *in spite of* material changes but *thanks to* those changes. It is the active process of material self-renewal what maintains the unity of the organism as different from its surroundings. The organism *needs* to change its material composition in order to retain its identity: “In this process of self-sustained being, the relation of the organism to its material substance is of a double nature: the materials are essential to it specifically, accidental individually; it coincides with their actual collection at the instant, but is not bound to any one collection in the succession of instants, “riding” their change like the crest of a wave and bound only to their form of collection which endures as its own feat. Dependent on their availability as materials, it is independent of their sameness as these; its own, functional identity, passingly incorporating theirs, is of a different order. In a word, the organic form stands in a dialectical relation of *needful freedom* to matter” (Jonas, 2001: 80)

Why this dependency? This is where the concept of metabolism takes place in the constitution of individuality: The organism needs the resources of its environment in order to transform them into the material for its own existence. It takes the chemicals that exist outside of it and transforms them into sources of energy and organic tissue. External and internal matter are in a dialectical process of constitution and resistance. “The power to use the world, this unique prerogative of life, has its precise reverse in the necessity of having to use it.” (Jonas, 2010: 197) Again, unlike material patterns or formal-ideal unities, the organism does not subsist in spite of but thanks to changes and transactions with the material world. A material pattern changes its identity with the change of its material constitution - if the material constituents of a rock or a piece of gold changed, the individual rock would change into another individual. A formal entity is complete in itself irrespective of its material instantiation – a software is defined by its formal structure, not by the way in which it is implemented. But without the constant changes involved in the metabolic process, life would simply not exist.

The idea of needful freedom shows us that material individuality exists in a state of tension and dynamic stabilization. This tension is precisely what opens new possibilities and increasing complexity in the constitution of form, it is what makes a form a “good form” as Simondon expresses it: “the good form is the one that is *close to paradox, close to contradiction*, without being contradictory in logical terms; and the tension of form is to be defined thus: *the fact of approaching to paradox without becoming a paradox, to contradiction without becoming a contradiction*” (Simondon, 2013: 549-550). It is a good form because it is pregnant with new possibilities. The basic tension of the organism with respect to its environment opens the possibility of constant renewal and of an agitive constitution of form. Let us now examine another aspect of this tension.

## **2. Primitive Causality: Force and Struggle**

The idea of causality has been traditionally understood as a formal relation (very similar to the logical relation of consequence but not necessarily identical) in which an antecedent condition brings forth a consequent product. According to Kant, this relation of causality is part of the *a priori* constitution of experience but it presupposes a formal structure that is separated from experience itself. This conception abstracts causal relations from their embodied and factual origin and, consequently, neglects the true notion of causality that we have experience of in our daily existence. By reducing the relation of cause and effect to a relation between antecedent and consequence, the theory of causality advocated by modern and contemporary philosophy neglects the actual experience of movement and of relationship with the material world around us, it neglects the and the idea of force that is connected with the idea of bodily sensation of pressure and exercise of effort on one’s own limbs. As Christopher Peacocke argues: “If a subject is to mentally represent objects as material objects [...] possession of an intuitive mechanics mentioning forces is essential” (Peacocke, 1993: 172). The concept of cause and of material objects presupposes the experience of force, that is, of effort and pressure.

In order to grasp its original meaning, causality is to be understood as the basic experience in which the tension between my bodily internal experience transcends itself into the experience of the resistance of outer bodies. “Causality is thus not an a priori basis of experience, but itself a basic experience. That experience has its seat in the *effort* I must make to overcome the resistance of worldly matter in my acting and to resist the impact of worldly matter upon myself” (Jonas, 2001: 23). The relationship between the agent and the material world that opposes it (and makes its very existence possible too) is primarily a projection of the force that the body has to exert upon the world to manipulate it and even upon itself to move autonomously. The experience of effort and resistance “happens through and with my body, with its extensive outwardness and its intensive inwardness at once, which both are genuine aspects of myself. And advancing from my body, nay, myself advancing bodily, I build up in the image of its basic experience, the dynamic image of the world – a world of force and resistance, action and inertia, cause and effect” (Jonas, 2001: 23)

The modern point of view of the relationship between object and subject that pervades classic cognitive science neglects this direct transaction between the subject and its world and describe perception as a passive reception of sensory data and the object as the rather obscure source of such data. As a consequence of conceiving the relationship between the subject and the object or the objects among themselves in this way, the only possible theoretical option is an occasionalist theory either in the form of a divine intervention (Malebranche), of a passive association of repeated patterns of experience (Hume) or of a formal cognitive system that acts a priori upon the data of experience (Kant). In its many manifestations, occasionalism presupposes the need for external intervention in order to connect otherwise isolated fragments of reality. But the nature of the relationship between subject and object and objects with other objects still remains obscure in this framework.

The dialectical nature of the living individual can only be accounted for by studying the organic body not from a theoretical but from a practical point of view, not from the external examination of an observer but from the internal experience of the moving bodily subject. “Causality is primarily a finding of the practical, not of the theoretical, self, of its activity, not of its perception - an experience of the one, not a law of the other” (Jonas, 2001: 23). It is in this practical perspective that the organism is released from its isolation and opens to the world, “[f]or without the self-transcendence of the ego in *action*, i.e., in its physical dealings with the environment and in the attendant vulnerability of its being, the closure of the mental order is logically unassailable, and solipsism can appear as rational discretion instead of as madness” (Jonas, 2001: 32). In its self-transcendence, the organism constitutes its environment and is constituted by it and it keeps its own identity by going “outside” of itself. The relation between the inside and the outside is circular. It is also horizontal because the organism and its environment are independent from one another and remain as such in their relationship.

This relationship is also horizontal because the organism and its environment remain independent in their encounter. The subjective and the objective do not merge in a supra-entirety encompassing both of them, as seems to be the case with extended autopoietic systems (see supra). On the contrary, the individuality of the subject and the independent reality of

the object define their own boundaries in this dialectical relation, it is the causal dynamism between subject and object governed by force and resistance what makes the distinction between subject and object an ontological fact instead of a mere theoretical construction.

The “extensive outwardness” and the “intensive inwardness” that Jonas mentions also reflects the co-dependence and co-constitution of the external and the internal in the living body. Bodily effort is the manifestation of agent movement as we saw in the first chapter. However, when immersed in the material world, this effort is exerted against the resisting world that manifests itself to the subject by presenting its own resistance, its own impenetrability. This is particularly clear in the case of tactile perception: the awareness of my own body and of the objects in my surrounding world appears as one in the experience of touch, either when it is passive or active. The objects present to ourselves directly in touch and show us their shape, their texture, etc. But there is more. “Unlike the other senses, touch also often involves a seemingly subjective experience of the present state of our own bodies *from the inside*. We feel that our forearm is warm, that there is pressure on our shoulder, that our finger is vibrating, and so on” (Fulkerson, 2014: 8). Primal bodily awareness is manifested in direct contact with the objects in the world. The sensations of my body do not only appear to me as immediate experiences that I feel from the inside but as manifestations of the external objects that give them their particular form. And, parallel to this, the perception of the external world depends on the perception of my own body as the background of every possible experience (see Chapter 1 and also Fulkerson on the necessity of implicit bodily awareness for the sense of touch (Fulkerson, 2014: 89-94))

Force and resistance are then the primordial manifestations of living individuality, the first step in the constitution of an external world and of our own bodily movements. Here we are in the precise point at which auto-affection transcends itself and becomes allo-affection, or simply affection. This is the ground of intentionality, but we are still far from the meaningful world that is the object of a directed consciousness. We still have to set up the scenario wherein this intentionality is possible.

### **3. Beyond Metabolism: Animality and the Constitution of Primitive Spatiality**

As I mentioned earlier in this work, the point of view that I am taking in the study of living individuality gives privilege to the dynamic aspect of individuation over the stable end-form of individuality that results from that dynamic. This approach implies that individuality is not an all-or-none condition. Certainly, in the case of living individuals, which is our main concern here, the individual can be either alive or dead. There are no gradations in that sense and a living individual *qua* living cannot have more than two possibilities of existence. However, knowing that the living being constitutes itself as opposed to its environment, it is possible to establish degrees of individuality depending on how strong is this opposition: the more different and independent an organism is with respect to its surroundings, the more pronounced it is its individuality.



At its most basic form, the organism is directly connected to the environment and in permanent contact with it. This would be the case of a very primitive organism: it feels directly its environment and responds with agentive movement whenever there is a change of humidity or light in the environment. Jonas believes that the plants are also in the same situation of direct relationship with their environment: "By its ability to synthesize inorganic matter directly into organic compounds the plant is enabled to draw its sustenance from the ever-ready mineral supply of the soil, while the animal has to depend on the unassured presence of highly specific and nonpermanent organic bodies" (Jonas, 2001: 103). This does not mean that plants are an inferior form of life or that the animals are better suited for living. An increasing differentiation and, therefore, a more pronounced individuality open some possibilities but also impose restrictions and dangers. Let us see more about it.

The crucial difference between animals and plants is their possibilities for movement. Since the plant is directly connected to its environment, it does not need to move locally. But in the case of the animal, there is a gap between itself and its surroundings. This gap is spatial as well as temporal: the organism is not always in direct physical contact with its environment and also the environment has a different temporal rhythm than the organism. "The spatial gap between subject and object, which is provisionally spanned by perception, is at the same time the temporary gap between need and satisfaction that is provisionally spanned by emotion (desire) and practically overcome by motion" (Jonas, 2010: 206). Here I want to point out that organisms with an exclusively kinetic movement also have a direct relationship with the environment – as plants do – but – unlike plants and similar to animals – they move locally in their environment. When I expose the constitution of space later, I will venture a theory on this problem. Suffice it by now to say that it seems that it is not local movement what definitively makes plant individuality – according to Jonas's description – less pronounced than animal individuality, it is rather the relationship with space and how it becomes a possibility for self-transcendence and self-differentiation.

The spatiotemporal distance between the animal and its environment is correlated to the centralization of motility and a consequent variation of movements that emphasizes the animal's differentiation and, therefore, its identity. It is in this aspect that the distinction between the individuality of the animal and that of the plant become more evident. One of the main criteria in this differentiation is the possession of limbs, that is, movable parts that help the organism to navigate its environment and whose movement does not lead to a radical change in the organism. The centralization of motility has, according to Jonas (2010), three main characteristics: a) speed: animals can respond immediately to cues from the environment, which allows for a wider range of possibilities for the individual organism but also an increasing complexity in its environment; b) occasional instead of continual: changes in the animal, particularly in the movement of their limbs, are suited to a particular occasion unlike changes in plants, which signify a continuous process in their natural development; c) variable instead of predefined: animals move according to a particular situation in which they are and, therefore, have a wider range of movement, plants are predetermined by their process of growth; d) reversible instead of irreversible: growth, the particular form of movement of a plant, is a process of constant and irreversible change, animals can move and return to their

initial position or situation: "It is an unaltered animal which proceeds from this to the next motion, and the limb resumes its proper function each time under identical structural conditions. In other words, the operation of a limb does not entail its own and thereby the agent's transformation in the process" (Jonas, 2010: 204).

If we assume - in accordance with Jonas - that plant movement reduces to growth it is true, almost by definition, that every movement of the plant involves a radical change in its individuality. In animals, growth is complemented by a very wide range of movements, particularly movements of displacement that give the organism its freedom to move without changing radically. The radical changes introduced by animal growth are secondary to its existence relative to the rapid everyday movements by which the animal responds to its environment in daily life remaining itself relatively unchanged. This possibility of variation is precisely what makes animal movement – and animal existence in general – much more independent from the situation in its environment than plant movement. Jonas even believes that there is some kind of “reversal” in the evolution from unicellular autonomously moving organisms to multicellular, practically static, plants. We will explore that later, but let me finish the point of this chapter.

Whether plants are as simple as Jonas describes them is an empirical question. However, the philosophical point of his analysis is to expose a contrast between a kind of relationship with the environment in which the autonomous response to the changes in its environment is immediate and determinate and another in which the organism not only can mediate its responses but also change its possibilities by means of exploring new horizons and thereby creating new situations. Plants – under Jonas’s description – cannot change their position and that means that their movements have to respond to the demands of its particular environment. Animals, on the other hand, extrapolate the dialectics of needful freedom to their own capacity for movement. They are not only free to move but they are also forced to move when the situations they are in are not favourable. This results in a greater autonomy of their own bodies but also in increasing complexity of the environment around them because every new situation involves new challenges that the organism may not have faced before. By changing their situation, organisms take the *risk* of opening new horizons, and new horizons demand new strategies to solve the problems that the organism finds in its way.

In the next chapter, we will explore this idea of risk and the problem of the constitution of the environment. Let me now emphasize that the aspect of individuation that we will explore in this chapter is that of differentiation in the sense of a dialectical differentiation. This means that individual and environment are independent realities because their criteria of existence are not only different but opposed: there is a real, physical world with its laws and with an inherent tendency to entropy that is opposed to the complex organization of life; there is also a biological unity with a sense of interiority that cannot be reduced to the laws of physics and whose existence depends on its successful resistance against external entropy. The dialectical nature of individuality also refers to an essential dependency of the individual to its environment: its energy, its resources for self-constitution can only be found in its material environment; it is by transforming the material surroundings into conditions for life that life itself is possible; furthermore, as we will see in the next chapter, it is by adding a ‘surplus’

of meaning to the physical environment that cognition becomes possible and the organism can be said to have a consistent internal identity.

With this notion of dialectical individuality, we can reject the intentionalist monism that can be derived from some statements in phenomenology according to which the internal and the external perception are but “the two faces of the same act” (Merleau-Ponty, 1945: 237); my self-referential relation to my body is, in its foundations, independent from my reference to the environment and I can always move myself freely without being necessarily pressed by the demands of the external world; that autonomy is what allows me to explore the various possibilities of the environment and what allows me to open new horizons<sup>25</sup>. We can also reject the various sorts of dualism presupposed in cognitivism and other philosophical positions, such as mind-body, cognition-action, subjective-objective, etc.; my interior self is always in need of an external source of resources and challenges; my agent movement, which is the basis of my autonomy, is always resisted and enabled by the nature of my surroundings. This dialectical process produces the *tension* that, as we have seen before following Simondon, opens new horizons by approaching paradox without ever becoming one. In order to understand this tension, we should not conceive of the opposition between individual and environment as a static contradiction between  $p$  and  $\neg p$ , between an entity and its absolute negation, but as a dynamic tension between an individual and the conditions that at the same time enable and limit its freedom.

Before exploring this tension in more detail, I want to mention some theories that Hans Jonas has advanced on animal individuality. My point is to expose broadly those theories and formulate some possible counterarguments. Those counterarguments, nonetheless, do not aim at refuting Jonas’s theory altogether but rather at complementing it with other possibilities and thereby laying down the ground for my own proposal.

#### **4. Jonas’s thesis of animal individuality: A Critical Assessment**

##### 4.1. Local movement and individuality

As far as I know, Jonas’s theory of living individuality is condensed in three parts that I have quoted in the last chapter of this thesis<sup>26</sup>. One of the main theses of this theory is the one

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<sup>25</sup> Although Merleau-Ponty opens the possibility for an “abstract movement” that is not necessarily responsive to the actual situation in which the body is engaged (Merleau-Ponty, 1945: 126-129), this movement is still oriented to a “virtual” situation that presupposes a purely external, intentional existence see, Chapter 1.

<sup>26</sup> One is the article on “Biological Foundations of Individuality” in his *Philosophical Essays* (2010) and the other two are the third and four essays of his *Phenomenon of Life* (2001). His other essays on philosophical biology are, of course, connected with the topic, and I suspect that the books he has written on the subject and which I did not have the opportunity to read also say something about individuality. However, the “Biological Foundations” article is explicitly addressing the problem which concerns us here and I guess that everything he says in other places on the issue is implied or supports Jonas’s main theory in that article. May he forgive me if my interpretation is too unfair.

about the degrees of distinction between the organism and its environment that ultimately result in an increasing independence of the former and also in an increasing complexity of the latter. However, Jonas does not go into much detail about why is it that some organisms are more differentiated than others and he seems to treat differentiation as a categorical, not a dispositional property – that is, as something that the organism just ‘has’, not something that is actualized in how the organism acts or in how it is affected by its environment .

According to Jonas, differentiation is just the result of a more basic property – centralization – that is mostly referred to the anatomical structure of animals that plants lack and that emerges from the capacity (and the necessity) to move locally. The general idea of Jonas is that, since animals cannot metabolize their food directly as plants do, they need a “mechanical mediation” in order to obtain their resources: “This mechanical mediation, on which the intra-organic work of metabolism has been made entirely dependent, consists in the external activities of locomotion and manipulation, entrusted to distinct motor structures that serve no other organic purpose” (Jonas, 2010: 201). In order to make these motor activities possible, the animal body has to be centralized, which means that it possesses the characteristics already mentioned in the last chapter (speed, occasional movement, variability, reversibility). In short, they can and must move locally in order to obtain food, and that movement is possible thanks to the anatomical structure of the animal. Now, this pair of movement and centralization is what makes the animal a continuous independent individual and it is what defines its independency as a living organism, a quality that plants do not possess.

In this and the next chapter I want to defend that animal independence has three main characteristics: a) spatial independence: animals do not need to respond immediately to the cues from the environment; b) temporal independence: animals maintain an identity that is continuous in the long run; c) identity through change: animal identity depends on changes of its own structure and of the relationships that it establish with the environment. These three characteristics, again, are a necessary consequence of the capacity for local movement and centralization. They are dispositions that need to be actualized in the activities of the organism but they arise from categorial qualities that animals seem to have as naturally given.

In this chapter in particular, I will try to question the idea that local movement is in itself sufficient for independent individuality. As I mentioned before, my point is not inconsistent with Jonas’s theory broadly understood and there are some parts of his writings that anticipate some of what I will say next. However, there is a gap that I think needs to be filled in order to understand the constitution of animal independence as a process and, especially, the constitution of the animal as an individual that persists identical through time in spite of its changes, which is the problem that I want to address in this chapter.

#### 4.2. “Counter-examples” to Jonas’s Theory of Animal Individuality

I will formulate three imaginary counter-examples in the form of mental experiments in order to revise Jonas’s theory. Those counter-examples will work for this and the third chapter, but

the first is especially relevant for the present one and the other two are to be developed in the next one. I do not claim that any of the imaginary individuals exposed in this section corresponds to an actual existent being or represents a particular theory (though some of them are more connected to this or that theory of cognition). My point is just to show how the gaps in Jonas theory make room for situations that, even if extreme and fictitious, reveal some possible sources of trouble and unexplored presuppositions.

#### 4.2.1. The cyber-bat

The model of cybernetics, proposed by Norbert Wiener and his colleagues, states that there are feedback mechanisms that guide purposeful action in machines and animals. As we saw in the previous chapter, there are many criticisms against the adequateness of this proposal to explain actual animal behaviour. However, let us suppose that there exists an organism – a bat – that behaves in a way that can be perfectly described under the cybernetic model: this bat sends signals to the environment (ultrasounds) and the goal object – the prey – sends back a feedback signal that guides the bat’s action until it gets to its objective. The “cyber-bat’s” life when it is not catching prey is as uninteresting as the whereabouts of an anti-aircraft missile when it is not shooting at war aeroplanes.

Let us first evaluate whether this organism meets the structural requirements that make bodily independence possible: first, it moves locally in its environment; second, it does have a centralized movement: it responds rapidly to the cues from the environment, it varies its movements without essential changes, it can change its situation depending on the external feedback and, finally, the movements of its limbs are reversible. However, it seems that this organism – and, for that matter, any individual object described under classical rules of cybernetics – is not independent from the cues of its environment: all it does is in response to the feedback from its goal, even if there is no direct contact between the bat and its prey. We have the antecedent conditions without necessarily deriving the consequent basic feature of independence. Even the existence of an observable gap between the organism and its environment does not imply a capacity for independent movement on behalf of the animal. The physical existence of this gap is not enough for a real gap that actually creates an existential distance between the animal and its environment. And that is the reason why it does not seem irrational in principle to describe the cyber-bat as an extended system in which the “organism” is only a part that interacts with other elements like the prey and the signals. There is something else that this gap needs in order to make the separation really possible and, thereby, to constitute the animal independence.

#### 4.2.2. The “real” zombie (or the living Golem)

The bestiary of mental experiments in philosophy includes the zombie as one of its most distinguished specimens. However, as is often the case with philosophy, the technical concept of “zombie” has little resemblance to the concept as it is used in its original sense. The philosophical zombie is an individual with no subjective consciousness, indistinguishable

from the outside from another individual with the same physical characteristics, including its behaviour. The “real” zombie that appears in the folklore of Haitian peoples and horror movies is an individual that acts mindlessly, usually controlled by a sorcerer. It does not necessarily lack subjective experience and, for our purposes here, it is irrelevant if it does.

There is another folk monster that has not been appropriated (or at least not so famously) by philosophers, namely the Golem. It is a clay humanoid figure that acts according to the instructions given in form of codes inserted in its mouth by a rabbi who is very well versed in the kabbalah and the various combinations of the Hebrew alphabet. Now, let’s suppose that for some reason a voodoo sorcerer learns how to use the Golem of coded instructions in order to control slave zombies. In this case we have a (kind of) living individual that acts according to the instructions put in his mouth by its master. Whenever this zombie finds an obstacle that leads it astray from its objective, it does away with it and continues with its task until completed.

This complicated example illustrates a case of cybernetics with mental “internal”<sup>27</sup> feedback: the signals that orient the movement of the individual come from the instructions that are given to it and not by the responses of the environment. Every feature of the environment is already codified in the instructions and, if anything gets wrong, the zombie will try to return to a state in which the situation is coherent with the guiding principles installed by its master. Once it has met its task, the zombie returns to its state of rest ready for new instructions<sup>28</sup>.

We can check once more all the properties of movement as we have made in the previous case. However, the identity of this individual – as in the case with the “Strawsonian” bacteria that we will see next – does not seem to be connected with the history of its organic development. It seems that the identity of the zombie’s consciousness – because it is indeed conscious of what is happening and can guide its behaviour according to what it perceives – is completely encapsulated in the set of instructions that it is given. The system is robust and is responsive to the conditions of the environment, but it does not really integrate the interactions with its environment into its own constitution as a living entity. The dialectical relation between adaptation and resistance to environment is rather static: the zombie adapts to the demands of the environment and somehow depends on it (otherwise it could not execute the instructions that it is given), but it does not change significantly in its interaction with its surroundings.

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<sup>27</sup> It is not radically internal because it comes from the master and can be manipulated from the outside.

<sup>28</sup> The point of making this example so bizarre is that I want to avoid the idea of a life permanently guided by a set of instructions already predetermined. This is because I do not want to engage in discussions about general determinism or illusory freedom. I have been told that philosophers like Dennett believe that we all are zombies, that there is no voodoo master and all our actions are derived from instructions given by natural selection or something like that (I have also heard that he says that actually we should not deny freedom and that our actions are our own making. He better does, and I guess he found a good way to make the two ideas consistent, but I do not think that I am interested in those problems of interpretation...). Nonetheless, I want to preserve some distinction between a free, undetermined action and a codified, pre-established one. Whether that distinction is illusory, is part of a discussion that does not concern me in this work.

### 4.2.3. The Strawsonian bacterium

Let us recall Galen Strawson's theory of SESMET (subjects of experience that are single mental) and take it to an extreme situation in which there is no connection between one SESMET and its successor, even when they occur in the same physical unity. SESMETs, we are told, are transient unities of experience whose duration is variable but, generally, very short in the case of humans or other living beings – their lifespan can be counted in seconds or even less lengthy unities of time. Even when the gaps between one SESMET and the other are not easily perceivable, they exist and mark the difference between one state of consciousness at one time and other at the very next time – it is even possible that there can be many SESMETs simultaneously in the same subject. If we have the idea of a unitary self through time, Strawson thinks, it is because we – validly or not – unify diverse SESMET subsequent states in a single self.

Now, let's suppose that this theory is true and that there is a physically unified organism in which a SESMET in a time  $tx$  cannot appropriate the experience of another SESMET that existed in  $tx-1$ . In other words, let's suppose that there exists an organic, material unity within which various experiences disconnected from one another in an intermittent flow of quasi-punctual experiences. In this case, material unity would not be parallel to conscious unity (which is what Strawson ultimately wants to defend).

Now, we can take the example one step further: let's suppose that this organic unity with a disunite consciousness is an animal, that is, an organism with capacity for local movement. Is that possible and, if so, how? Gorban and Çabukoğlu have created a “toy model” of an animal that conveniently answers this question. According to their description: “The [toy-modelled] animal is assumed to be very simple: it can just evaluate the previous state of the location where it is now but cannot predict the future state. There is no memory, it cannot predict the properties of the locations where it was before” (Gorban & Çabukoğlu, 2018: 77).

They also state that their model only has kinetic movement, that is, it selects locations but it does not direct its movement to a concrete object in the space<sup>29</sup>. I think I can do away with this particular feature in order to make the toy model fit into my criticism of Jonas. Let's suppose that the animal is lacking memory, as the model described, but let's treat it as some bacterium with filaments that guide its movement according to an immediate present task or objective. So, for example, if the “toy model” bacterium detects a gradient of sugar in its environment, it will try to direct itself towards it by reorienting its filaments but it cannot recognize locations or objects where it has been before. The bacterium remains physically the same through some period of time, but its consciousness has a much shorter span that extends only to the moment when it identifies a source of food and goes for it (even this event

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<sup>29</sup> The model is much more complex and interesting than what I show here, but I am afraid that I do not understand very well the technical descriptions and the scientific discussion in this paper, so I will restrict my reading to those parts that I am more confident to have understood.

can be subdivided). The animal described here lives to seize the moment in a very radical manner.

Again, it is possible here to identify the properties that Jonas assigns to animal organism: local movement, rapid responses, variety of movements without essential changes (the filaments can change direction without that meaning a radical change in the bacterium as a whole), possible change of situation, and reversibility of movement<sup>30</sup>. However, it is apparent that there is possible to dissociate, at least theoretically, the structural continuity of the material whole from the living continuity of the experiencing subject. The fact that every experience is lived *in* a material unity does not necessarily guarantees that the continuous stability of the material whole is parallel to a continuous stream of coherent thoughts. In other words, we can accept that every state of consciousness is synchronized with a material state (because they are identical or, at least co-dependent), but the diachronic unity of the various states of consciousness that an individual lives through is not necessarily identical to the material structure that remains more or less stable through time and that supports these conscious states. Jonas's theory is wanting a more systematic treatment of memory and its connection with material continuity and, though he does not neglect the subject completely, I think that there is another gap in this approach that needs to be filled.

Unlike the zombie for which nothing was new because everything is already specified, for the bacteria everything is new. Even the bacterium itself is new all the time. It does not just live in the ever-changing river of Heraclitus but it is the Heraclitus followers' radical notion of the ever-changing individual taking a bath in the ever-changing river. In order to account for an identity that survives through change, something is missing in the argumentation.

I think we have had enough of fancy mental experiments. My idea now is to try to fill the gaps that these cases evince in order to build a more complete theory of living, particularly, animal individuality. In what follows, I will take one by one the problems that remained open in the examples so that I can give a positive elaboration of a complete theory of individuation. Let us keep these problems in mind: a) the problem of separation between the organism and its environment; b) the problem of dynamic constitution and identity through change; c) the problem of the temporal identity of consciousness. I will address these problems by exposing three main features of living individuality corresponding to each of them: a) spatiality, b) change, and c) continuity.

## **5. Constitutive Spatiality: Subject-Object Independence**

With the example of the cyber-bat I wanted to show that lived distance is not necessarily the same as physical distance. Although it is possible, from a third-person point of view, differentiate the animal from its environment in this case, the consciousness of the animal is directly linked to and totally dependent of the cues from the external world. A lived space is

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<sup>30</sup> this last one is more problematic, but can be understood in a very minimum instant: for example, the bacterium moves its filament right and then moves it back left, remaining the same individual in the process.



more than a perceived distance between an organism and its surrounding objects, it means the lived possibility of free movement between myself and my environment. It means that the organism has the freedom to select from the possibilities offered by the field where it moves. The idea of space is essential to the idea of freedom (Tuan, 1977).

To understand space as possibility for movement means that it is not a system of coordinates that can be described geometrically or the container of the totality of objects in a definite region. As Merleau-Ponty points out: “The space is not the real or logical field [milieu] in which things are disposed but the means by which the position of things becomes possible” (Merleau-Ponty, 1945: 281). In order to differentiate the idea of space as possibility and the space as a plane where things are contained, Merleau-Ponty coined the concepts of “spatialized” and “spatializing” space. The former refers to this idea of horizons of possibilities while the latter refers to the abstract idea that we have of space and that can be object of geometrical description.

However, space in Merleau-Ponty is the product of the interaction of a cognizing subject with the world around her. In his own words, “the constitution of a spatial level is simply one of the means for the constitution of a complete world: my body is geared on the world when my perception offers to me a spectacle as varied and as clearly articulated as possible, and *when my motor intentions, in their unfolding, receive from the world the responses that they expect*” (Merleau-Ponty, 1945: 289-290). In my case, I am rather interested in the space as a horizon for individuation of the cognizing individual himself, that is, not as a simple means for it to gear itself onto the world, but an essential element of its constitution as an individual. My object of analysis is not the constituted subject that moves around space and discover how things are located within it with respect to her own perspective. I am rather interested in understanding how space is an element for constituting myself as a living individual and my surroundings. The problem of how the exploration of the space posits things with respect to my body understood as the point zero of reference is only secondary to my interests. My point is to examine how this very exploration becomes possible given the possibilities that the environment and my own body can offer to me so that I can actualize them. The “spatializing” space, in this sense, takes a much more radical ground in a theory that privileges the problem of individuation. It does not refer to the subjective constitution of things in space

According to what I have suggested, there is a double spatiality that participates in the process of individuation: on the one hand, there is the spatiality of my own surroundings and, on the other hand, there is the spatiality of my own body<sup>31</sup>. In order to understand how both kinds of spatiality are constituted and how they are related, I want to return again to the notion of kinesis but from a very different conceptualization.

### 5.1. Kinesis and wandering

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<sup>31</sup> Again, Merleau-Ponty has explored both kinds of spatiality in his *Phénoménologie* but from the point of view of an intentionalistic philosophy that, as I exposed in the first chapter, is not radical enough.

Let us recall that kinesis is a kind of animal movement that is characterized by its lack of directionality. However, the technical term in studies of animal locomotion applies to simple organisms like the woodlouse, some bacteria and other primitive animals. The kinetic movements of these animals are random but are completely responsive to the conditions in the environment. Even if the organism has a very tiny possibility of selecting how to move, it is pressed and limited in its possibilities by the surrounding conditions of humidity, light, etc.

If we generalize the idea of undirected movement, we can include a kind of motion that is much more widespread in the animal kingdom and that is perfectly fathomable for us human beings, namely wandering. In wandering, the animal ambles around a certain space without having any objective in sight, maybe because it has lost its way and it is walking adrift, but also because it has nothing else to do and is just exploring the environment. Wandering is kinetic in the sense that it has no specific direction but, unlike primitive kinesis, it is not a random response to a cue from the environment, it is a self-caused movement that is guided only by the willingness of the animal to move in this or that way.

It, is in fact, theoretically possible to think about a purely free movement in an empty space. Free wandering in an empty space is thinkable as a kind of exploration where I can move my body unrestrictedly and explore all its possibilities without any external hindrance. However, it is only an extreme case of bodily autonomy. It reveals that my body is capable of a kind of self-movement only limited, in principle, by its own internal possibilities. In this case, the free space around which I move offers me the possibilities to actualize the powers of my own body and wandering is – like stretching or kicking or jumping – the primitive way in which I open my way out in an unknown and chaotic world. But this conception of space, I repeat, is a mere fiction and the real world is full of hindrances and clear areas that limit and enrich self-movement.

We can think of an objectless space through which the animal wanders unrestrictedly as the extreme possibility of free agency. The emptiness of this theoretical space makes the movement absolutely caused from the inside of the moving animal, not from the cues in the environment guiding the decision to move. However, even if that were possible, there is a restriction that comes from the very structure of the animal body. As we saw in the first chapter, the primitive sense of agency is self-referential and limited by the possibilities of the body. That is, at the same time that it is exploring the outside space, the animal has to explore the possibilities of its own body: how long can it get, how does it move, how strong it is. This is precisely the meaning of Maxine Sheets-Johnstone's phrase: "movement forms the I that moves before the I that moves forms movement" (Sheets-Johnstone, 2011: 119). The kinetic exploration of the possibilities of my own body precedes my free wandering in space and, furthermore, the discovery of the affordances that the spatial objects have to offer.

But my existence as an individual is not restricted to the discovery of my own bodily possibilities. Compared to most animals, it takes us human beings a long time to explore the capacities of our own bodies before navigating the world ourselves by our own means. However, even at the foetal stage of development, we learn that the worldly space is not

totally empty and open for us to move. The possibilities of my own body are not determined only by my own power for moving but also by the resisting objects in the environment. The idea of pure free agency in an empty space is more or less what we explored in the first chapter when we were interested in understanding experience beyond (or before) intentionality. But now that we are interested in our bodily existence as immersed in the real world and in the dialectics of self and world constitution, it is important to understand how the self-transcendence of the body involves that self-constitution is mediated by the interaction with the external world and its possibilities.

Furthermore, the exploration of the environment is not a free association analogous to what we do with our imagination when we are thinking about a story or connecting memories and imaginary episodes in our free time just for because we are bored or feel creative. As we will explore later, the encounter with an unknown space and the movement towards a stabilization of our behaviour in an unstructured space involves a bigger mental and bodily effort. Experiments with rats in mazes show that the first stages in which the rat still does not know where should it go next involve much more effort and that, precisely the search for habitual patterns of movement and action is a way to simplify this effort: “It was as if the first few times a rat explored the maze, its brain had to work at full power to make sense of all the new information” (Duhigg, 2012)

To develop this point further, it is important to remark that the potential for an independent, self-referential exploration of the body is, paradoxically, a result of the increasing complexity of the subject-object relationship. Primitive organisms can easily survive by responding almost automatically to the simple cues from the environment. The problem is when this relationship becomes much more complex and an asymmetry between sensation and response becomes necessary. This is a product of our natural history: “When the complexity and diversity of the interactions [between organism and environment] increased, an organ of integration became necessary that inserted itself between the sensory and motor functions placed at the periphery of the organism” (Fuchs, 2018a: 87) Bacterial kinesis and animal wandering are both undirected movements but they differ radically in that the latter is a kind of movement in which the body explores freely its environment not (yet) determined by the external signs, whereas the former is a quasi-deterministic random response to the changes in the environment. Wandering presupposes a radical distinction between subject and object that becomes possible thanks to the centralization of the cognitive functions in a central nervous system. It is this very centralization what allows the organism to take distance from its environment and to put a space *between* itself and the outside world.

## 5.2. Lived space and the I – world asymmetry

We already have two elements of the constitution of space: the exploration of my own bodily powers and the exploration of the environment. The point now is to emphasize that there is a space between these two aspects of my own existence as a living animal. Unlike plants or cybernetic entities, there exists an existential distance between my own experience and the changes in the world around me. This is precisely what Jonas wanted to single out in his

analysis of living individuation. However, the distance between me, the animal, and my environment is not a physical one, it is not merely the distance that the observer can identify after individuating and differentiating the organism and the objects around it. It has to be a *lived* distance, a space that gives freedom of choice and that mediates my relationship with the environment. This is what the Japanese philosophers call “*basho*”, a concept that can be related to the notions of “*topos*” or field: “this *basho* is not a position in the neutralized, physical space that obliterates any human significance; rather, it is the life-*basho* in which we find the interconnected meanings of the life-world” (Yuasa, 1987: 38).

This space between me and the objects around me defines me as an individual opposed to my surrounding world. The “betweenness” that differentiates me from my environment is also the element that allows me to live within it, not as an undifferentiated part of it but as an autonomous individual. This is where we as humans become aware of our existence as living beings as existence among other objects and other living beings. Again, the Japanese thought makes special emphasis in this aspect of existence: “to exist in a spatial *basho* means nothing other than to exist as a human being by virtue of one’s body; I exist in my body, occupying the spatial *basho* here and now: this is what it means for me to exist within the world” (Yuasa, 1987: 39).

The space between myself and the world around me shows me the possibilities but also the limits of my own body. I can move freely in those spaces where I am able to explore by walking around, but my movement can be blocked by a resisting obstacle in the physical environment in which I cannot navigate. The environment also enriches my own movement and shows me new possibilities that I had not considered before. I can move more rapidly in some areas, more slowly in others, I can swim, hike, jump, and so on, I can also create new paths and become familiar with my environment. I will explore this constitution of familiarity later in this chapter and will show how crucial it is in the constitution of the individual as a persisting entity through time.

For now, let us keep in mind that this possibility of exploring spaces, of using the freedom that the space between myself and the objects around me, is one of the grounding elements of my own individuality as a living thing and also the basis for the cognitive relation between me as an agent and the external world as independent of myself. In this sense, the critical analysis of the idea of space makes it possible to identify deep presuppositions in the idea of subjectivity and perception. Charles Lenay and Pierre Steiner share this thesis of the primacy of space and, by using empirical examples, they show that the classical debate in philosophy of perception about the vehicles of representations – whether they are internal (representationalism) or external (ecological perception) – is based on the tacit presupposition of a space that allows for enactive constitution.

### 5.3. Tactile exploration of the environment – the coupling of action and perception

Lenay has studied with his colleagues (Auvray, Hanneton, Lenay, & Regan, 2005) the idea of active constitution of space by analysing sensory substitution systems, especially the

Tactile Vision Substitution System (TVSS) developed by Paul Bach-y-Rita. This system consists in the mapping of visual patterns into tactile patterns that the patient can feel in her back or, in more recent developments, in her tongue. In other words, if there is a distant object, its colour pattern (usually a black-and-white one) will be represented in a tactile pattern that will stimulate the patient's tactile organs. In this case, the observed object will generate a pattern of tactile stimuli whose intensity decreases or increases depending on the colour in the object, for example, the brighter it is, the more intense the stimulus. What these studies proved, among other things, is that the correlations between different stimuli across sensory modalities are almost impossible to identify if the subject is passive. Contrariwise, if the subject actively explores her environment, it is relatively easy for her to identify correlations and, ultimately, identify distal objects. The conclusion of this result is that sensations and internal associations between them are not enough to build a representation of objects. In accordance with the classical theories of Helmholtz and Condillac, the authors state that "If we just passively received sensations, we would not understand that these sensations refer to objects that exist in an external world [...] our exploratory movements allow us to extract the spatial organisation of our sensations; it is the spatial existence of the objects of the world that allows us to consider them as external" (Auvray et al., 2005: 518)

Now, there are two points that need to be remarked in these experiments: first, the correlation of bodily movements and stimuli from the external world is necessary but not sufficient for the conception of a distal object and the distinction between "the inner" and "the outer" in perception; second, the active exploration that allows for a constitution of sensory invariants and, consequently, perceptual objects, depends on the notion of space as the enabler of bodily movement and exploration. The first point is proven by designing experiments in which there are obstacles between the object and the perceiving subject. Even if the subject can identify more or less the shape and the location of the object, it is by evading the obstacles that lead to it that she can understand the independence between agent and object. Obstacles show the possibility that different actions can be correlated to the same object or, vice versa, that different objects can correspond to the same action, depending on how the external world is actually structured. "The obstacle allowed participant to differentiate between the sensory stimulation (proximal stimulation) and the distant source giving rise to that stimulation (distal perception). *The source of the stimulation can be understood as being distant because something can be interposed between the perceiver and it*" (Auvray et al., 2005 my emphasis). There is no direct mapping between the goal and the movements of the agent, on the contrary, both can be understood as independent of one another, which reveals that the agent is able to explore different bodily strategies to approach the same object or the same strategy for different objects. The way in which I move my body in the space is in some sense independent of the object towards which I am directed. And even in the cases in which I am not familiar with the external object, it is by establishing the difference between my bodily movement and the external unidentified objects that I can constitute the structure of my relationship with the world by being aware of the asymmetry between my body and the salient features of the environment.

The second point to be remarked – the presupposition of a lived space – is in consonance with what we have already exposed on the concept of betweenness and possibilities of movement. This is where the theory of the primacy of space comes into play. Lenay and Stewart design a minimalistic experiment that shows, not only the need for an active exploration of the space in order to identify environmental invariances – which had been already shown by Bach-y-Rita and even by Helmholtz and Condorcet way before him – but also and specially the precedence of the notion of space before concepts as internal representations or external affordances.

The experiment consists in a single proto-electric cell connected to a single tactile stimulator. If the light from the external object that passes through the cell exceeds a definite threshold, the all-or-none tactile stimulus is triggered. It is tested on a blind or blindfolded subject that can move his arm freely in response to the stimuli he receives. It shows that active movement allows the subjects to identify the source of light easily. The big difference with the TVSS model is that in this case it is not possible to interpret the experiment as if the external object mapped into the tactile stimuli is more or less isomorphic and therefore helps to create an internal representation of it, as would be the case with TVSS. Since the stimulus received is not spatial and the information received at each moment is only one bit (there is or there is no stimulus), the subject must actively find the spatial configuration of the pattern of stimuli received: “If there is no intrinsic spatiality in the sensory input, the perception of a target which is localized as to its direction and distance is only accessible by means of an active exploration. In these conditions, the perceptual activity can be studied on the basis of observable movements. Our device therefore forces a spatial and temporal deployment of the perceptual activity” (Lenay & Steiner, 2010: 942).

Here, as in the experiment with obstacles of the previous paper already mentioned, it is possible to separate bodily-movements from the external source of stimuli. According to what they Lenay and Stewart report, the subjects of the experiment develop a strategy that I interpret as “kinetic:” they change the intensity of their arm movements in accordance to the intensity of the stimuli creating thereby a sensori-motor invariant that correlates with the invariants in the environment. However, the subjects also discover that their bodily movements have an asymmetric relation with the invariants of the environment and with the causal source of stimuli as we shown earlier: one strategical movement (moving more intensely as the stimuli are more intense) can be correlated with different environmental sources and vice versa. “The point is that this law [of sensori-motor contingency] cannot be completely defined without taking into not only the strategy deployed by the subject, but also the coupling device which defines the range of actions and sensations which are available, and the environmental causality  $s = g(a)$  which defines the sensations  $s$  which the subject will receive as a function of the actions “ $a$ ” that are performed” (Lenay & Steiner, 2010: 944). The modification of the stimuli received in the coupling mechanism changes the representational content *even if the strategy of active bodily responses remains constant*.

Lenay and Stewart propose that the space of perception in which objects appear is unified, but that it is also constituted by bodily movement. In this idea, they follow the notion of “representative space” coined by Henri Poincaré. Poincaré agrees that there is a relation

between movement and spatial objects and he even says that the geometrical space is the product of regularities found in the coupling of sensory stimuli and action. However, he identifies an argumentative circularity in this constitutive theory: space is constituted by bodily movement, but bodily movement takes place in space. His way out of this apparent question begging argument is to presuppose a pre-spatial bodily experience: “In order to avoid this circularity, Poincaré considered that in the first instance the subject only has access to internal proprioceptive data” (Lenay & Steiner, 2010: 946). This leads him to conceive the space of perception as the result of comparing internal proprioceptive sensations with exteroceptive sensations that are caused by external objects. If we interpreted the experiment by Lenay and Stewart this way, it would mean that the agent systematizes the proprioceptive sensations in a complex representation of his own body and couples this representation with the corresponding systematization of the tactile exteroceptive sensations that he obtains as caused by the external object.

Lenay and Stewart disagree with the idea posed by Poincaré and take phenomenological analysis as their basis for a different theory of spatiality. According to them, “in our lived experience, the space of perception is identical to the space of our body, our actions, and of the other agents we meet” (Lenay & Steiner, 2010: 946). What they want to avoid is an internalist theory of perception in which a mental representation of the world (either in the form of sensations or images or any other representational token) precedes the active interaction with the environment. In the phenomenological analysis, the coupling of proprioceptive and exteroceptive information – necessary, according to Poincaré, to constitute the space of perception – is superfluous because in the lived body those sources of information are unified. In this instance, I will recall some of the theories of internal perception that I exposed in the first chapter but from a different perspective. Let us first develop Lenay and Stewart’s phenomenological approach in order to make clear why, even if the description that he gives is not the most appropriate, Poincaré does have a point in his distinction between internal bodily feeling and external world.

It is important to insist that Lenay and Stewart want to undermine both an objectivistic and a subjectivistic theory of perception. In that respect, the idea that they have of space is in consonance with the theory of Merleau-Ponty. In fact, they quote the *Phénoménologie* in order to defend a relational characterization of space: “Far from my body being for myself only a fragment of the space, there would be no space for me if I did not have a body” (Merleau-Ponty, 1945: 119) That is, the idea of a detached space or a private representation of space preceding the very constitution of perception is an erroneous presupposition of what Merleau-Ponty would call intellectualism and empiricism and that Lenay and Stewart characterize respectively as the internalist and the externalist point of view. What follows after this quote from Merleau-Ponty express very accurately what Lenay and Stewart want to defend: “If the bodily space and the exterior space form a practical system [système pratique] – the former being the background on which the object stands out or the void in front of which it can *appear* as target of our action – it is evidently through action that the spatiality of the body is brought into being and the analysis of our own movement should allow us to understand it better” (Merleau-Ponty, 1945: 119). The space is then the scenario

where the coupling of our own movement and the objects of our perception becomes possible but, moreover, it is there that the very possibility of perception emerges. Before the active engagement with my surroundings in the environment, there is no perception as such, there is no possible internal representation that can anticipate and substitute my own active interaction with the world around me, nor is there an external information waiting to be actualized. Space is primordial in the sense in which it is there that the active constitution of the object of perception takes place. The error of internalist views such as Poincaré's is that they need to presuppose an internal cognitive "map" for which the external world is a mere corroboration or a regulator that gives feedback to the internal representation so that it accommodates to the external object. We will explore more deeply the problems with this internalistic theory of perception in the next section, but for now, let us say something about the Merleau-Pontian theory of perception endorsed by Lenay and Stewart.

In the design of the experiment and in the passages quoted from Merleau-Ponty (in fact, in his whole book), it is clear that the authors want to explore the nature of perception and that they defend the idea that perception is essentially a product of the "practical system" that involves both the moving agent and the environment as inseparable parts. That is why they directly explore the actions of the subject towards a definite goal in the environment. Of course, it is not so definite as to allow for a pre-established representation that is merely actualized in action. But it is definite enough to bypass some presuppositions in the description of the situation.

Concretely, in the experiment by Lenay and Stewart, we know that the patient has some limited time to discover a distal visual object by means of the tactile sensations correlated to that object that they experience via the coupling mechanism. Now, though the patient's movement is at first exploratory and self-referential, it becomes more systematic as she understands that she is getting closer to her proposed task. The idea that there is no need for an internal representation mediating between the action and the object is well argued, I believe. However, the distinction between what movements or strategies are "useful" for the proposed task and what strategies are superfluous is already granted: *the patient knows beforehand what she is supposed to attain, even if she has no idea of the concrete object that she will find at the end of the experiment.* It is the same as if I was a hunter who goes out to get a prey: I might not need to visualize beforehand my prey or the map of the detailed strategy that will lead me to catch it, much less the exact movements that will lead me to successfully hunt it; however, I do know what I went out for and I do have a general idea of what counts as a successful hunt and what does not. But even a hunter faces dangers that puts his own life in an existential threat and that might force him to redesign his strategies, to create new objectives, or simply to postpone his original task. Those risks are not faced by the subject of the experiment and are not usually described as an aspect of normal perception. The world is there "for me" as a space suited for my own goals and my own existential needs.

Of course, I am not saying that the authors should have design their experiment so that they would be able to consider every aspect involved in perception, and I am not totally against the enactive theory of perception defended in this proposal. I think it is very reasonable to think that there exists some "unity" between the acting subject and her target, a unity that is



actualized in the active engagement with the world. What I do want to remark is that the unity that we find in these perceptual activities is itself a product of a much more basic ontological difference that in principle is not so harmonious. This difference is not that between a subject and her mental states and the world with its physical laws. It is rather the difference between myself as the original locus of affectivity and as the primary source of agent movement, and the world as an external phenomenon with its own independent existence. As Henry would put it “the difference is the essence of the unity [between subject and object]” (Henry, 1963: 89).

This foundational difference is precisely what motivates questions like Poincaré’s about a primitive state that precedes the engagement with objects in space. I agree that to describe this primitive state as a system of proprioceptive sensations is wrong and carries with it all the problematic assumptions of naturalist philosophies that phenomenology has convincingly refuted. However, as I tried to show in the first part of the first chapter, my absolute subjectivity, what ultimately makes me an individual, that what remains essentially invisible and in which the capacity for agency and self-affectation resides, is separated from the phenomenal world by a radical *phenomenological distance* which is, as Henry puts it, the essence of all manifestation. There is an *alienation* of the world with respect to my own being that cannot be completely overcome, that remain at the basis of my own engagement with the world: “The unity of man and world is an ontological unity, it suppresses the alienation in so far it is identical with freedom, that is, with the feature that joins us to the things. But the ontological essence of this unity is nothing else than the alienation. [The essence of this unity between man and world] *is the essence of a presence that is obtained by the mediation of phenomenological distance*” (Henry, 1963: 89). It is this phenomenological distance what, as I said earlier, makes the engagement with the world possible and, at the same time, establishes a radical difference between the subject and the world surrounding her.

According to this interpretation, the idea of a space that precedes the distinction between the inner and the outer but, at the same time allows for the relationship between these two spheres, can be extracted from the experiment of Lenay and Stewart and generally from the enactive view of perception: “It is only on the basis of this “in-between” [connecting and separating the organism from its environment] that there is a perceptual space, i.e., a lived world for the organism” (Lenay & Steiner, 2010: 949). The difference between my interpretation and the Merleau-Pontian interpretation of Lenay and his colleagues is perhaps one of scope: These authors want to explore the structure of perception in which the individual – understood as the internal structure of the organism – “only provides *a part* of the processes that intervene in the realisation of the strategies which allow the subject to stabilize reversible operations which participate in the constitution of [the perceptual] space” (Lenay & Steiner, 2010: 949). I, on the other hand, want to understand the individuality of this organism itself (not as part of a greater system) and how it is constituted dynamically with the world from which this organism is alienated but to which it depends for its own existence. That is why I think it is important to retain some of the results of these experiments, especially those related to the independence of the movement of the agent with respect to the objects around. It is remarkable that the authors take reversibility of movement as one of the

crucial elements in the correct identification of the distal element via the tactile stimulations (Lenay & Steiner, 2010: 946-947). This is in consonance with Jonas's theory of animal individuation that also gives a central role to reversibility in the distinction of the animal and its environment.

Given that I am interested in the individual as a whole and not as a part of the perceptual-practical system or the extended cognitive system, the idea of differentiation, alienation and distance is crucial for my own project. That is why I do not want to defend a conception of the cognitive activity that subsumes under one high-order system the individual and its environment. I am not criticizing the convenience of studying the living individual with this systemic approach and I reckon that it might be theoretically useful in many circumstances. What I do want to point out, however, is that it is not the only approach and that it might be sometimes misleading to talk about "cognitive space" or "extended cognitive systems" as if there were not a *real* and radical difference between the subject at the centre of those systems and the surrounding elements within it. There is a sense in which I can think of myself as an organism that, in interacting with the elements in his environment, constitutes an emergent system of interactions of which I am just another element. But that does not take from the immediate evidence that I have of myself as the agent of my own interactions and as the experiencing subject in a lived body that is not literally extended in its tools or the surrounding resources. To say that the world is mine or that the environment is an environment for me presupposes at least one minimal sense of myself as the "I" presupposed in these phrases. The cyber-bat that I described earlier and that motivates this discussion is precisely a system of impulses and responses in which the organism is but a receptor of signals that works as one gear in the mechanical system of interaction that is described as its movement. The cyber-bat is not only the bat but also the signals, the elements in the environment, and the observed behaviour: it is an extended system, something that I, as a living individual, am not. Moreover, I think that even for the humblest living form it is possible to conceive that this differentiation exists at the basis of its own existence.

#### 5.4. Distance and sight – Jonas on the distinction between sense modalities

Another problematic presupposition in the experiment of Lenay and Stewart is that they are trying to generalize the results in the tactile-kinetic sphere to other senses, particularly vision. In accordance with the original project of Bach-y-Rita, the authors believe that modalities can somehow coincide in a single plastic perceptual system that originally unifies all sensory modalities. The patients that can identify visual forms via tactile stimuli literally see the object, only they are using different means to access the information that we usually acquire with our eyes. In Bach-y-Rita's own words "We see with our brains, now with our eyes" (Doidge, 2007). This means that the information that comes to my brain by means of one sense can be replaced with information from another sense. They are all just paths that lead to the same end, that is, object recognition.

This idea seems attractive – and very promising for patients who have problems with their sense modalities, particularly blind patients – but there is something strange at the basis of

these project and the way it is proven in the experiments. What these experiments usually show is how to couple tactile information with an object that is visually accessible to the observer. Patients have been successful in identifying shapes of card suits, lines in the floor, geometrical figures, etc. However, as I mentioned earlier, the target object is presupposed. The success condition is to identify tactually what is visually apparent to the observer. That proves that *if we wanted* to perceive with our touch the objects that are accessible to our vision, we would have to move and create some strategies in order to access the same information. But it says nothing about how the observer acquired the visual information in the first place, neither does it really prove that tactile exploration is actually able to replace *all* the possibilities of perception offered by vision. In few words: it describes touch as directed towards recollecting information accessible via visual experience – namely, information of the shape of a definite object – but it says nothing about vision itself.

These experiments presuppose a world already constituted and some definite tasks that allow me to relate to that world. Their promise is that there are tasks that I usually perform with one sense that I could also perform with other senses. However, even accepting the success of multimodal integration in various tasks, we are very far from a complete generalization of this instances of integration. Sure, the experiments might have found a common origin in the constitution of visual and tactual shapes of perception, but the way in which we usually acquire visual information is very different from the way we acquire tactile information. In particular, I think that there is a crucial difference between these sensory modalities and, in general, between vision and the other senses: the idea “betweenness” that I have already mentioned, and particularly the idea of remoteness and proximity that derive from the idea of primitive distancing that I have just discussed in the last section.

In the first place, it is important to remark that, regardless of how sophisticated it can become, without vision, the experience of space remains impoverished: “the lack of visual experience implies an alteration of the representative space; the auditory and tactile substitutes are insufficient for the correct evaluation of distances; congenital blind people know less well the distances than the late blind” (Fernandez-Zoïla, 1987: 62). In concrete, perceptual experience of objects in the congenital blind has four main aspects: a) it is based on tactile experience, particularly *active* tactile experiences, which means that kinaesthesia and proprioception are also involved; b) the inner horizon of the object perceived has to be limited; c) the perceiver has to reach certain degree of familiarity with the object in order to experience it as an object; and d) there is a motivating aspect in the relation between the subject and the object, this involves an emotional investment of the subject (see Karlsson, 1996). I will focus particularly on the two first aspects. I will leave the other two for the next chapter.

The experiment of Lenay and Stewart – I think it is evident by now – shows precisely the first aspect of tactile perception of objects. The pure sequence of tactile inputs does not enable the subject to perceive a real objective pattern and that makes active engagement with the object, especially via manipulation and hand exploration, a critical point in constituting a perceptual representation of it. In principle, that does not seem to be the case with normal visual experience. The way I see the objects does not involve the active integration of discrete

sensations into a whole. The world is “already there” with its objects already constituted and simultaneously accessible to my visual experience. There is no need to “get involved” with the objects and explore them, neither do I need that the object acts in some way in order to reveal itself to me, as it happens with auditive perception: “With sight, all I have to do is open my eyes and the world is there, as it was all the time” (Jonas, 2001: 143). This allows me to have an idea of a static world in front of me: “One can say that the image experience, as opposed to the step-wise tactile perception of an object, entails a kind of “freezing” in time of the way in which the object is given” (Karlsson, 1996: 318)

This “freezing” of the objects in front of me also increases significantly the possibilities of my knowledge of them, independently of my own motor capacities, that is, it enlarges my *horizon*. Furthermore, “the possibility of image experience, by means of tactile impressions, is dependent upon, among other things, the possibility of grasping the so-called *inner horizon* of the object” (Karlsson, 1996: 319). This means that tactile experience can constitute an object with horizons and faces that are not directly accessible to the immediate sensation I have of them, but these “hidden” faces that “co-appear” with the present sensation are extremely limited and depend on a skilful engagement with the object acquired by experience and motivation. “Under this heading one can also mention that not only the size of the object is of importance for the possibility of image experience [that is, an individual representation of the object that emerges from tactile experience], but also its structure (complexity) and materiality. Examples of objects whose structure was too complex and the material too loose for the possibility of image were snowflakes and spiderwebs” (Karlsson, 1996: 320).

Contrary to tactile experience that only shows the inner horizon of one single object, the simultaneity enabled by visual perception allows me to explore the relationship between the objects in front of me without having to use my memory in order to do so: “Only the simultaneity of image allows the beholder to compare and interrelate: it not only offers many things at once, but offers them in mutual proportion, and thus objectivity emerges pre-eminently from sight” (Jonas, 2001: 144). It is precisely in this possibility of comparison and interrelation that emerge dualities like stillness and movement, permanence and change, etc.: “Indeed only the simultaneity of sight, with its extended “present” of enduring objects, allows the distinction between change and the unchanging and therefore between being and becoming” (Jonas, 2001: 144-145)

By neutralizing the dynamics of perception and by allowing the observer to detach himself from the object of his perception, sight is the pre-condition for the theoretical attitude, that is, an attitude in which the subject and the object remain independent of each other and in which the subject is free to fix his attention on a particular element in the visual spectrum and register it in his imagination in order to make associations that are consistent with the observed world: “In imagination the image can be varied at will. This is also the case with sound, it is true, of which “imagination” can compose a freely created world of its own: but this has no reference to the world of things and therefore no cognitive function, whereas even the freest exercise of visual imagination retains this reference and may reveal properties or possibilities of the external world, as the case of geometry shows” (Jonas, 2001: 147). Free from the dynamic component of perception that is essential to other senses, the subject is

now capable of exploring without pressure the horizon of perception and open new possibilities of cognition.

It is easy to sense the gesture of disapproval of a defender of “4E cognition” when reading these descriptions of visual experience. One of the grounding ideas of the “4E movement” in cognition (cognition is Enactive, Embedded, Embodied, Extended) is that all modalities of perception require an active engagement with the surrounding world, and vision is no exception. Since immediate experience offers only a profile or an aspect of the perceived object, the profiles that “co-appear” with the object and that are not directly accessible can be understood as anticipated movements: “When you visually experience a plate as circular, you do so relying on your implicit knowledge of the way the plate’s appearance – its look – varies as your relation to the plate changes. You encounter its real shape (its circularity) in your experience, thanks to your encounters with its merely apparent shape (its elliptical look) [...] To experience something as *elliptical from here* is to experience it as occupying a certain place in your sensorimotor space, for example, as being such as to be blocked from view by *this sort* of an obstruction, or as being something whose outline could be traced by such and such movement, and so forth. To experience it as circular, despite its looking elliptical, is to understand the way its appearance would change, if the conditions in which you view it were to change (e.g., if your spatial relation to it were to change)” (Noe, 2006: 123).

Not only this, but I have defended myself in the first chapter that the unifying element of subjective experience is bodily movement and I have used ideas from Jonas himself to support that statement. In fact, Jonas’s theory of the inseparability of action and perception appears in his appendix of the “Nobility of Sight” article that I have just quoted. Not even the reception of moving images is enough for the constitution of visual space, it is needed that the organism be an agent in the constitution the external image: “A winged seed sailing on the wind, if it were endowed with eyes, would at most perceive a time sequence of two-dimensional manifolds continuously blending into their successors [...] a kaleidoscopic change with a definite but meaningless pattern, lacking reference to position and to dimensions defined thereby. Thus, all its travels would not help it go gain a perception of space and to relate the passage of images to a space traversed” (Jonas, 2001: 155). Unlike this “seeing” winged sail, self-moving animals can make sense of their visual environment because they engage actively with it by means of their autonomous movement: “through the interplay of force, the geometrical becomes a dynamical situation which by this very character discloses the geometrical aspect as well. The proprioception of motor activity becomes a guide for the organism in the successive construction of spatial distance and direction out of the phases of the motion it actually performs” (Jonas, 2001: 155).

What is then the point in describing the visual space of perception as neutralizing the dynamic aspect of perception and “freezing” the world around us? By admitting that action also plays a role in visual perception, are not we obliged to return to the idea of not making a real distinction between vision and other modalities like touch? Is Jonas’s admission of the need for agency in perception a retraction from his previous theory of vision? I do not think it must be and he explicitly says that both theories are compatible. But my aim is not to prove the coherence of Jonas’s theory. I would rather like to show what is radically different in visual

perception that is not present in other sensory modalities and how this affects the basic relation between bodily movement and perception. I also believe that this is what Jonas wanted to say, or at least what he should have wanted to.

I think that vision allows us to add something to the idea of phenomenological distance that we have explored in the first, and in previous sections of this chapter. Let us remember that phenomenological distance is the condition for the very manifestation of a phenomenon: I am not the things around me, I am radically distant from the “outside” that constitutes the external world. But this distance is a fundamental condition common to experiences like direct touch and distance seeing, and it remains implicit even in those experiences in which the object is in direct contact with me: “This transcendental phenomenological distance is thus distinguished, in the plainest manner, from all spatial distance, because it subsists in its absoluteness just there where spatial distance becomes null, also there where the structure of being is such that there is no point in talking about spatial distance” (Henry, 1963: 79). The concept of phenomenological distance says nothing about real distance, that is, it does not allow to make a distinction between remoteness and vicinity. What I want to show here is that the differences among sensory modalities imply differences in the particular relation between bodily movement and perception and also imply a different conception of space and my place in it as an individual.

It is not the absence of movement but the kind of movement involved what distinguishes vision from other senses, particularly touch<sup>32</sup>. As we have seen, in touch, it is necessary, first, to explore the parts of the object and, then, to integrate them in a coherent whole. In vision, on the contrary, the whole experience, the panorama, appears normally at once and the delimitation of objects is given by a focus of attention. This means that the tactual exploration of the object requires a local contact between the subject and the object: I usually explore objects tactually with my hands, not with my whole body, and of those objects I usually can touch only a part and cannot anticipate my future experience if not by a repeated interaction that allows me to familiarize myself with the object. Without interaction, without my active involvement with the object, it is usually impossible to constitute an external object in touch. In vision, on the contrary – though the perceptual ability originates in the eyes – my acquaintance with the object usually involves moving my whole body. If I want to see what is behind the table, for example, I would have to surround it in order to have the perspective I want and, in order to surround it, I would have to move all my body. It is not unusual, though, that I do not need to move my body at all, particularly if the object is sufficiently away from me.

From this derives the idea that in vision I have a sense of my body as a whole. It is true that I can get visually acquainted with external objects only by moving my head or my eyes and by integrating some local images into a wider representation: “In this way, from the ordered system of sensations in eye movement, in head movement freely moved, *etc.*, there unfolds such and such series in vision” (Husserl, 1989: 63). But it is important to note that the extension of this “etcetera” that Husserl mentions is much wider than in the case of tactile

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<sup>32</sup> I will say something about hearing later.

apprehension. I usually need to move my head or my eyes if the object is too close to appear in front of me completely. But an appropriate distance allows me to have a general overview of the object and its relations with other objects around, and the adjustment of a proper distance implies that I have to move my whole body in order to get the desired perspective.

Moreover, as I mentioned before, distance also allows me to perceive changes as being part of a more general stable system. In the experiments of Bach-y-Rita and Lenay and colleagues that we discussed earlier, the object explored by tactile exploration is static. The active subjective exploration is successful in finding invariants and general patterns precisely because the corresponding object of perception remains stable enough to allow for a general integration. “In typical touch experiences the purported bodily experiences are constantly shifting and variable while the object of our awareness remains fixed” (Fulkerson, 2014: 92). But, as remarked before, a very loose or very structurally complex object escapes apprehension, and that would include necessarily moving, liquid, distant, composed, etc., objects.

Visual perception, by not requiring a direct – or especially mediated – contact with the object but, on the contrary, by favouring distancing for a better apprehension thereof, is much more adequate to make sense of a dynamic environment. This is so, because vision allows the subject of perception to distance himself from the surrounding world so that he can observe it while keeping a wide berth from the dangers and risks of the material world. The remote distance that separates the subject and the object is a distance constituted by my own body, by my ability to move to a safe point from which observation can be more reliable and detailed. My body is still there in the role of constituting the perceptual world, but my movement does not necessarily open the worldly objects for me the way it does with touch, for example. There are at least three cases in which visual perception is not directly linked to practical engagement with the object observed: “First, there are visual events such as sunsets, that are always perceived at a distance and do not offer any opportunity for physical interaction. Second, there are objects whose recognition depends on holistic visual appearance, rather than on aspects of physical structure that offer opportunities for perceptuomotor interaction. Human faces are the showcase example here, although the same point can be made for recognizing individuals of other categories, such as dogs or houses. Third, there is the case of reading, where sheer visual pattern recognition is paramount and opportunities for physical interaction with those patterns are virtually nil” (Wilson, 2002: 632)

The awareness of that radical distance might have led many philosophers through history to believe that mind and world constitute two completely different and independent realities. This dualistic intuition derives in problematic metaphysical theories that XXth Century philosophers in particular have almost unanimously and vehemently rejected in a very convincing way. But while we can reject the theoretical constructions derived from this experience of distancing, I think that the experience itself persists in our perception of the world and ourselves as individuals.

However, to rely too much on visual experience and to abstract ourselves from direct interaction with our environment might lead us to believe that the world is already there, that I am already here, and that there is no way in which it be possible to put both dimensions of existence in relation. By giving too much emphasis to distal visual perception, we tend to neglect our direct relation with the world by means of other senses: “Thus vision secures that standing back from the aggressiveness of the world which frees for observation and opens a horizon for elective attention. But it does so at the price of offering a becalmed abstract of reality denuded of its raw power” (Jonas, 2001: 148). We should go back to the dynamic origins of the interaction between animal and world in order to not lose from sight the dynamics that take part in the horizontal circularity of the constitution of the world and the constitution of myself as an individual.

#### 5.5. Dependency (and independency) between kinaesthesia and object perception

We have concluded that vision is favoured by a wide distance between the perceiver and the object. In touching, and to some extent in hearing, the farther the object, the most difficult it is to perceive it; but in vision, distance offers a better perspective and identification of details. There are many cases in which closeness actually occludes visual perception. But staying away from the object not only gives a better perspective of the landscape, more important than that, distance opens a field of alternatives, a lived free space (what we previously identified as “bashi” according to Japanese philosophy) that offers to my body possibilities for movement: “The facing across a distance thus discloses the distance itself as something I am free to traverse; it is an invitation to forward motion, putting the intervening space at my disposal. The dynamics of perspective depth connects me with my projected terminus” (Jonas, 2001: 151).

In vision, it is easy to realize that these open possibilities are not directly mapped onto the objects of my perception: there is no kinaesthetic experience analogous to my seeing a mountain, or seeing an ant, for example<sup>33</sup>, but that is also the case with touch. As I mentioned earlier, the experiments in object recognition by means of tactile stimulations sometimes are modified so that they include obstacles between the subject and the object, from which derives a dissociation between bodily movements (or strategies) and object invariances: there can be different strategies to perceive a shape with touch and there can also be different shapes for one single strategy.

Moreover, the horizons opened in visual experience by the distance between myself and the objects of my experience are not only defined by an already intended object. It is possible for me to open the possibilities while I explore the environment and choose in my own exploration what to attend to. In wandering there is a primitive sense of exploration of the environment, an active search of meaning in a chaotic surrounding world that becomes possible precisely because there is an open space that I can explore and that is ever open to

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<sup>33</sup> Let us recall the first chapter in which we saw how Henry points this out by levelling all sensory modalities as “transcendent”, including kinaesthesia.



further exploration. If the identification of shape by means of touch is an end that is attained when I can identify an object and become familiarized with it and its inner horizon, the identification of visual space is always open to new outer horizons that enrich my experience and invite to move forward and constitute new objectives.

The relation of dependency of perception and kinaesthesia is therefore neither constitutive nor analytic or identical. If it were so, the experience of “hardness,” for example, would be constituted by (or even identical to), among other things, some definite state of bodily experience (see Fulkerson, 2014: ch. 4). However, such claim is implausible: “I can, for example, feel a surface as hard by pressing it with my thumb, or forefinger, or forehead, or toes, or back, and so forth. Each of these is an entirely different state of bodily awareness (with distinct contents), but all assign the same property, *hardness*, to the surface” (Fulkerson, 2014: 84-85). Even if there can be some general associations of bodily experiences and object properties, it would be problematic to make a significant mapping of one onto another, not even by proposing a set of possible movements, a cluster of “I cans” related to the perceived object. What is the kinaesthetic sensation or the bodily anticipations corresponding my seeing blue, for example?

It is clear that we need to refine the idea of dependency in order to understand better the relation between body and world. What we can know for certain, anyway, is that the feeling of my own body is relatively independent of the perception of external objects. My moving around, as in the case of wandering, is not necessarily directed or conditioned by an external object, and the objects in the world are not necessarily defined by how I move towards them, or how does my body feel when I approach them. The dissociation between concrete kinaesthetic feelings and external objects forces us to reconsider in what sense perception depends on the body and this dependency is much more general than a one-to-one mapping or even than an isomorphic relation between bodily possibilities of movement and object properties.

#### 5.6. Peripersonal space and the connection between sense and movement

How can we reconnect, then, the experience of our bodies with perception, particularly visual perception? First of all, though I emphasized that distancing from my visual object allows me some independence from it to a point in which there is no need for bodily movement beyond my moving away to an adequate distance, this does not mean that there is not a certain correlation between bodily movement and visual experience. As Husserl points out: “In the essence of the apprehension itself there resides the possibility of letting the perception disperse into “*possible*” series of perceptions, all of which are of the following type: *if* the eye turns in a certain way, so does the “image;” if it turns differently in some fashion, then so does the image alter differently, in correspondence” (Husserl, 1989: 63). Though the *types* of visual experience – and all experience in general – are not correlated with *types* of bodily movements, it is true that – except for extreme cases like being submerged alone in a big pool where all I can see around is water – every change in bodily movement is accompanied by a change in visual perception.

This correlation of movement and change in perception is much more evident in touch. I have insisted repeatedly that the independence of visual perception with respect to the object depends on the distancing of the perceiver with respect to the object of perception. However, this does not mean that only by means of vision are we capable of perceiving distant objects. We can also perceive objects with touch that are not directly in contact with our sensory receptors. The function of the cane, for example to allow blind people to perceive the surfaces in the floor before they have a direct contact with them. In fact, as Aristotle pointed out, the epidermis itself is a medium for touch: “Most touch receptors lie deep within the dermis, under many layers of dead cells in the epidermis. All touch experiences would thus seem to occur through some mediating material that lies beyond our actual receptors” (Fulkerson, 2014: 142).

The big difference between touch and vision lies rather in that the former usually depends on bodily experience in its perception of space: “Vision typically makes use of external reference cues, like external objects or landmarks used as anchors for assessing spatial relations between objects. Touch, on the other hand, typically uses body-based reference cues, such as locations relative to the midline of the torso or a small movement of the hand to the left” (Fulkerson, 2014: 162)<sup>34</sup>. Even in distal perception, touch needs an appropriate connection between the medium and the experiencing body: “A connection is appropriate for touch if it involves tactual media that can reliably transmit information about distal tangible features” (Fulkerson, 2014: 149).

As the Aristotelian theory of perception would have it, in touch the skin itself is the medium of perception and therefore the body is also perceived when I am using my touch. By feeling the object – even indirectly – I also feel my own skin. My possibilities for tactile explorations are constrained by my concrete possibilities of movement and by my present localized sensations. In vision, on the other hand, where the medium is transparent, my possibilities for perception are given by the objects themselves. Furthermore, I do not see my own seeing, my seeing the object do not involve my seeing the organ of perception, which is a condition that might be at the basis of my “disappearing” as a subject from the observed universe in visual perception. The struggle between subjective effort and the resistance of the external world which is, as we have identified before, the source of our primitive experience, is a tactual, not a visual experience, and to lose sight from this basic struggle may lead us astray into neglecting the original contact that reveals both the subjective and the objective.

How can we then harmonize these mutually exclusive approaches, that is, the external world of vision and the personal-struggling world of touch? There is a space in which both the personal, bodily-dependent, experience and the external, object-dependent, experience coincide: the peripersonal space. This is the space to which our immediate action, according to the possibilities of our own bodies, is confined: “The coordinates of peripersonal space are defined by such things as how far we can step or reach in various directions, and these things, being grounded in proprioception and kinaesthetic feedback, play a crucial role in genuine

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<sup>34</sup> Fulkerson here proceeds to show that it is possible to have allocentric reference in touch and egocentric reference in vision, but this only in peripersonal space perception.

tactual experiences” (Fulkerson, 2014: 160). It is the space of the “I can” that is frequently invoked by the phenomenological tradition as the space in which consciousness originates. As Merleau-Ponty says following Husserl: “Consciousness is originally not an “I think” but an “I can”” (Merleau-Ponty, 1945: 160). Even the lack of movement or the limitations imposed by the environment constitute my surrounding space as a practical space: “Before perceptual acts are representing, and well before the cases of conceptual sorting, they are tethered to ways of handling or coming to grips with materials at hand [...] As such, [perceptual acts] are always integrated into *actions*, even if that action is nothing more than sitting still” (Welton, 2012: 180).

In this peripersonal, practical space the surrounding world also appears as a system of affordances for action in which my whole perceptual powers are involved. I do not need to constitute the perception of a face, for example, by active, tactual exploration, but if I were to kiss goodbye a friend with whom I am not romantically involved, I would have to be capable of telling her cheek from her mouth and moving in consequence. The perception of celestial bodies can also be obtained directly by staring at the sky, but I need some minimal consciousness of the situation of my own body in order to not fall into a well when doing so. The objects that are close to me and upon which I am decided to act demand that my visual perception be complemented with other sensory information, like kinaesthesia, touch, proprioception, etc<sup>35</sup>. To limit our perception to the static objects that amaze us when we contemplate it, to reduce the objective universe to the “starry sky above me,” is to lose sight of the factual engagement with the world that pervades most of our lives and that is presupposed in our most sublime abstractions.

It is easy to see how the idea of practical engagement with the world solves the problem of sensory multimodal integration and how it reveals that bodily movement is implicit in perceiving. However, there are at least three problems that I wish to point out:

*First*, it is not so clear that this practical engagement with our peripersonal space can be generalized to all our perceptual activities outside this peripersonal space and to the individuation of perceptual objects. As I remarked before, there is no apparent analogy between the contents of proprioception and kinaesthesia with the contents of other perceptual modalities, like touch and vision. Moreover, it does not seem very clear that in all cases movement changes the content of perception, even admitting that having (or being) a living body is a necessary condition for any perceptual experience whatsoever. If I am at home and hear the rain falling outside, does it make any relevant difference in my auditory perception if I move my head, or walk around the house? What about the mountains that I see through the windows lying on the eastern part of the city? It is very rarely that I think in practical terms when I see them (sometimes I do have the firm intention to climb them next Sunday, but it is less usual than I would like to). Finally, it does not seem clear how *all* my

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<sup>35</sup> The case of Ian Waterman studied by Gallagher and Cole (1995) is a good example of the necessity of sensory integration for bodily awareness. In this extreme case, the patient has to replace the proprioceptive cues that he has lost, with information from other sources like vision. His visual awareness in this case is intimately connected with action and he needs a careful integration of these senses in order to navigate successfully his surrounding world.

exteroceptive experiences (visual, tactile, olfactory, tasty, auditory) are grounded in my interoceptive experiences (proprioception, kinaesthesia). I can accept that my experience as a whole begins as a sensorimotor exploration – as Piaget and his followers would defend – but it is less clear that, once I have constituted my peripersonal space and my distal world, I remain so directly dependent of sensorimotor cues in order to build new representations of the world. The idea defended by Poincaré of the need of an internal representation of my body in order to integrate it with the representation of external objects is wrong, as we have already seen. But it is also important to examine critically the enactive idea of the constitution of the world by movement: beyond the basic level of practical engagement in the peripersonal space, the thesis of kinaesthetic constitution seems at least problematic and needs some caveats in order to correspond to our experience. The idea of an objective world independent from our subjective existence is perhaps not a construction of the scientific worldview but a reflection of our mundane experience that has its basis in the ontological structure of the relation between subject and object.

*Second*, as a conclusion for this section, differences between sensory modalities are relevant and reveal important aspects, not only of the cognitive but particularly of the ontological structure of perception. Not only the contents of my perception are different depending on the sense I use to perceive the world, but also the very relation between subject and world changes. I think that the old Aristotelian structure that conceives perception as involving the organ, the medium, and the object is still valuable – with some modifications – if we want to understand how the individual relates to her environment. It is easy to identify that the organ and the object correspond to what we understand as the subject and her environment. Maybe we would like to say that organs do not perceive in isolation and rather the whole body is involved in the process of perception by interacting with the surrounding world. All the same, what is more relevant for my conclusions in this section is the notion of *medium*, which I think is akin to the notion of space I am interested in. It is the medium what conditions and makes possible the relation between the subject and the object, and the variation of the medium offers different spatial possibilities to the perceiver. In other words, the medium is the *lived space* that opens the world to the possibilities of my body. Since in visual perception the medium is transparent, I can engage directly with the objects and the space between me and them seems as an empty field of possibilities for movement that I can actualize constantly. By navigating this space, by exploring this transparent medium, I can also open a horizon that goes beyond the inner horizon of the object and its profiles. In touch, I am still in relation with the world through the medium of my skin, which means that there is a transcendental distance, a space between me and the object, but the exploration is at the same time more restricted and also more revealing of my own engagement with the world. With other sensory modalities – and I will say something about hearing later – the relation changes but the general structure is the same: far from an extended system in which the elements play a functional role but belong to the same ontological level, the ontological structure of organism-medium-world reveals the dialectics of dependence-independence that is at the basis of the ontology of the material individual. The medium is what separates the subject from the object but also what makes possible – and necessary – their relation.

*Third*, the language of enactive perception and practical engagement with the world sometimes gives the idea that the objects of my perception already hold informational properties as affordances or possibilities for action and that the subject is also given the intentions that she needs to fulfil in order to interact with this world of affordances. Even in phenomenological literature – as, for example, Don Welton recognizes (2012: 180) – it seems that there is an *a priori* guide for our actions that gives them their meaning and help to direct all bodily efforts towards a definite task<sup>36</sup>. But as I mentioned in this chapter before, the particular case of wandering or undirected movement does not necessarily conceives our exploration of the world as *directed towards* a specific target of practical engagement. I think that more elements are involved and presupposed in the constitution of those targets, and that it is necessary to reveal them in order to understand the details of sense-making and living individuation.

### 5.7. Some clarifications about kinesis and wandering

Wandering reveals this primitive relationship between the organism and its surroundings. It shows the minimal elements in the constitution of the space: the agentive movement, the space, and the material world. However, I am not proposing this primitive description as an empirical report of the way living beings have constituted spatial cognition, either phylogenetically or ontogenetically. The precedence that wandering and primitive “betweenness” takes over tactic – directed – movement is genetic and transcendental, not historical and developmental. Even we, human beings – who have a very long process of bodily constitution of space – have a capacity for directed movement very early in our development: new-born babies can orient their bodies toward a definite object just days after being born (see Fernandez-Zoila, 1987: 12-13) and it is possible to trace back the origins of those kind of movements to the pre-natal stages of development: “The movements of the newborn infant are, to a large extent, a continuation of those of intra-uterine life” (Thomas & Autgaerden, 1963: 4). I do not pretend to say that we need to wander before we know where to go in every case. We humans are evidently endowed with at least some minimal inborn capacities for recognizing the environment and moving our bodies towards some signals that come from it – let alone other animals who develop their bodily abilities very

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<sup>36</sup> For example, Merleau-Ponty: “A movement is learned as the body has understood it, that is, as it has incorporated to its world, and moving one’s body is to aim through it to the things, it is letting it to respond to their solicitation that is exerted upon it without any representation” (1945: 151). This “without any representation” makes clear that the *a priori* intention is not a kind of intellectual token that contains some conceptual formula, so that we do not confuse it with some form of intellectualism or cognitivism. The affordances are not definite formulae that are somehow encoded in the object and my “incorporation” of the world is not the acquisition of some cognitive instructions. As I will mention in the next paragraphs, this is view of the world is generally right: we are not *tabulae rasae* that progressively give meaning to a chaotic world from the outset. Our experience shows us a world already furnished with values and expectations, and I have a kind of *a priori* acquaintance with the possibilities of my own body. However, as we will see, it is important to show how this “incorporation” takes place in a process of individuation.

early and whose innate patterns of movement are complex and structured without the need of a previous “training”.

What I want to bring to light in the analysis of wandering is our capacity for *active* constitution of our own bodies and our relationships with the world surrounding us. My point is to remark the autonomy of the living individual, without which we would have to conceive all our transactions with the environment as mere responses to stimulus or, even in a more sophisticated fashion, as an exploration of “horizons” or “affordances” from the objects in the surrounding world that is almost automatic, as if we were totally determined by the horizontal possibilities of the world. Without this primitive autonomy, it is also possible to conceive the other extreme alternative and think about the environment as something already constituted and codified in our cognition, a physical stimulus that only confirms our cognitive pre-conceptions. The fact that there is a lived, spatial distance between me and my environment gives an idea of the way in which the living body is capable of some autonomy and of a repertoire of possibilities that can be explored spontaneously and not as a direct response to external constraints (even if those external constraints are located in the cognitive “programme” of concepts and goals that we are born with).

The possibility for being an active part of self and world constitution depends on the possibility of being the agent of our own changes. Free movement in space presupposes an ability for self-change, an active variation of the situation where the individual is in. This is what we will explore in the next section.

## **6. Agency and self-change**

As we saw in the last chapter, the mixture of behaviourism and feedback mechanism that constitutes cybernetic theory is subject to easy criticisms such as the impossibility to account for ends that are not in view. The persistence in a definite behaviour depends on the feedback provided by the end-object in the environment. In this sense, the movement of the organism would not be independent from its environment and, consequently, there would be no way to make a relevant distinction between both organism and environment, which would lead us to conceive the cognitive system as an extended unity.

As I also mentioned, one way out of this problem is the idea that the criterion of normative feedback comes from an internal representation whose success is tested in its transactions with the environment. The idea of a feedback mechanism is still there and the negative regulations of the externalities in the world guides, under this interpretation, the behaviour of the agent. In this case it would be easy to identify an individual and its representations as distinct from the physical environment in which it is immersed. In the “real” zombie case that I described earlier, the individual’s identity is defined by the instructions that guide it and by its capacity to overcome the obstacle posed by the external world. When this zombie faces obstacles, it can change its bodily direction without necessarily changing the

representation of the object towards it is directed. It can also follow the same set of instructions in order to obtain different objectives.

I think that there is a deep presupposition in this kind of theories that might affect other proposals that have emerged against representationalism, namely, the idea of purposiveness as stability or the conception of life (or cognition) as homeostasis. The cybernetic theory of feedback and the developments of that idea in the mathematical theory of communication developed by Claude Shannon and Warren Weaver have an explicit commitment with a state of equilibrium that is regulated by reducing the “noise” in the external world that prevents the system from attaining its end.

There are other ways to see this homeostatic point of view in the description of living beings that are closer to our own theoretical interests. Thomas Fuchs, for example, talks about the temporal dialectics between cyclical life and linearity in physical time. I will explore that in the next chapter, but for now I can mention that there is a tendency in the organisms to repeat patterns of action according to the cycles of the natural world in which they live. To “repeat a cycle” in this context is something very complex, but – in a nutshell – Fuchs’s main point is to deny that the organisms live a linear time in which the future is always new and the past is already gone for good. In life, there is always a tendency to “return” to a state of familiarity and stability (Fuchs, 2018b).

In any case, this living circularity is much more than just reducing the noise in order to attain an externally given purpose. Certainly, there are actions of the organism that we can describe as “reducing the noise” or persisting in the face of obstacles in order to get to some definite end. However, in the constitutional state of individuality that I am trying to describe here, agency becomes patent precisely because it is an active exploration with no definite end in principle. The problem with a purely homeostatic thesis is that action is self-neutralizing as it gets closer to equilibrium: the more successful is my movement, the less I need to move. But if we admit a theory in which movement is essential to life, then there must be something wrong about this idea of success.

One way out of this feedback approach to purposefulness is the idea of transduction proposed by Gilbert Simondon. I will also explore this idea further in the next section but, for now, I can say that – contrary to feedback reactions – transductive processes are in constant growth and are also internally motivated. As is the case with real communication, the transmission of information is not a progressive advance towards perfect inactivity but rather a source of further complexity. Information is rather a source of motivation for more and more complex communication. Purposive action does not get to a state of pure rest when the end is attained but rather generates new problems when old problems are solved. In the same vein, error is not merely the motivating factor to make the system insist in one pre-established goal but it can also work as a reason for changing the goal itself and redirect the purpose of the system.

Feedback mechanisms are plastic and changing to some extent but individual autonomy demands a power for growth and internal purposiveness. What differentiates a feedback system, like the Zombie-Golem from a living being is this capacity for self-motivation and constant self-renewal. The organism is not a system that can meet its ultimate goal and remain

unmotivated until it receives some further external command. It is a system that, by fulfilling some concrete tasks, opens itself to a world of new possibilities to which it is constantly trying to make sense and posing new autonomous goals. The objectives of the living being are not robust static states of satisfaction, they are also potential indicators of further action.

## 7. Continuity

A key presupposition in Jonas's analysis is the temporal continuity of the individual. When he says, for example, that animal movement is reversible, his argument depends on the continuity of the "core" that remains the same. When I move my arms or when I move my head, those movements do not imply a substantial change in my own individuality. Movement of body parts and displacement movement are different from growth in that respect. But even in the case of growth, some sort of continuity with the previous state is needed in order to classify changes as growth and not as complete destruction and creation of a new state of things. How can the individual remain the same through changes? Or rather, *how can the individual change at all* and not just simply disappear every time there is a new state of affairs? Those questions were my concern when raising the problem of the "Strawsonian bacterium."

One problem that I believe needs some clarification is the point of view from which continuity is proposed. The difference between ontology and epistemology – in spite of seeming clear-cut when formulated – is usually obscured in the description of individuality. Jonas was very aware of this problem and that is why he is so interested in the problem of living individuality where "we are faced with the ontological (not only epistemological) problem of an identity totally different from physical identity, yet grounded in the transactions among substrates of physical identity." (Jonas, 2010: 192) Addressing this problem from the point of view of the philosophy of the organism demands an analysis both of the external facts of nature and the subjective experience of the living individual. We have to start from ourselves and then go outside into the realm of the natural world in order to appropriate that knowledge in our own self-knowledge.

What I think is missing in Jonas is a more emphatic approach in the transcendental, phenomenological point of view. While he vocally recognizes the need for an ontological description of experience, he seems much more interested in the dialectical process of living constitution *via* needful freedom. For him, an entity that has a conatus – that is, an entity that persists in its existence – and that is also capable of projecting itself beyond its own particular existence, can be said to be a living individual (see Jonas, 2010, especially sec. VI of ch. 9). However, to identify a living individual and to describe its persistence through time involves being myself such a kind of individual. I can recognize the continuity of external beings because I remain myself continuous in the process, because my observation is always *mine*. This aspect of mineness is precisely what remains the same through all changes or rather, *it is the thing that changes, it is the subject of all variations and the agent of its own maintenance and projections*.



However, the importance of the question raised by Galen Strawson is that mineness is not intrinsically continuous. Perhaps my sense of being the subject of experiences can unify synchronically the diverse experiences I am having right now, but something more needs to be said about the unity of all my experiences now and all my experiences before. As we saw, for Strawson the experiencer at  $t_0$  is different from the experiencer at  $t_1$  and there is no intrinsic way in which they can be said to be unified. My “past self” saw things that are not accessible to my “present self” and that will not be accessible to my “future self” immediately. The objective unity of the metabolic material whole that struggles to remain the same against the tendencies of the environment does not exclude the possibility of a multitude of “selves” that come and go within that unity.

While I believe that it is true that my “present self” does not have the same experience as my “past self,” I think that this problem makes sense only when we forget the difference between transcendental and objective subject. If I reflect on my own experience and try to build representations thereof, I could easily divide it in discrete unities comparable among themselves. In this reflective exercise, I can conceive of my experiences through time as if they were different individuals that cannot relate to each other if not by the external intervention of a narrative. However, if I start from my experience *as I live it* in the present, I will find that it is a historical experience that presupposes a lived past and an anticipated future. I never live my present as if I was born just two seconds ago or as if I was going to die just now: my actions, my projects, *my life as I live it* is always an experience of a continuum in which I recognize that I have lived through many things before my current situation and in which I also recognize that all those recollections are projected into future actions.

My point in the next chapter is to show how that historicity of the individual is constituted. For now, I can say that the environment plays a crucial role in making my own history possible. I know that I was not born two seconds ago because I am familiar with the world around me and I engage with it as I have been engaging during a long period in which I learned to recognize the horizons of that world. I also know that I am not going to die just now because I move knowing that the world around me will respond to my actions according to my anticipations, because my movements are always projected into the future and this projection is possible thanks to the confidence that I have in that the world will respond as it normally does. Thus, though it is possible to think in less than ephemeral entities whose individuality dissolves every second, the continuity of the animal individual that I am is evinced in the familiarity with my own body and my environment.

### III. PERSISTENCE OVER TIME: HABITS, NORMATIVITY AND UMWELT CONSTITUTION

My main objective in this chapter is to go deeper into the problems raised in the last section of the previous one, namely, the problem of change and the problem of continuity. Both problems are related to the idea of continuity as the last feature of individuality I will explore. This is a crucial point in my project since it synthesizes my proposal and projects it into new possibilities for further research. In a nutshell, I will show here that the individuality of a natural living being remains the same through time, not in spite of changes – as if something stable remained behind the superficial flux of events – but thanks to them. The individual and incommunicable unity that is constituted dialectically by an environment from which it escapes but also depends, appropriates its own changes to its own identity and constitutes itself as a historical entity without the need of a narrative. From the paradox of needful freedom, where the individual depends on what is external to it in order to remain internally independent, we jump to the paradox of changing identity where the individual remains the same by changing.

I want to defend in this chapter that two concepts are essential in order to understand this new paradox: time and normativity. There is a special conception of time applied to the constitution of living individuality and from this idea of time, it is possible to put forward a notion of normativity that allows the subject to appropriate its environment, to make it its own, to render the succession of events in which it participates into a living autobiography. In sum, I will show that the temporality of the living subject, at its most basic level of existence, is directly connected to the practical needs that guide its action; I will also show that this temporality is sedimented in the habits that allow the individual to make the world a home, a habitat, and thereby, to turn the surrounding environment into a testimony of its own historical existence.

In order to articulate these ideas, I will follow these steps: first, I will make clear some basic notions of time, particularly, the idea of biological and motor-intentional time according to Carlos Montemayor's classification (Montemayor, 2010) and will show the transition from homeostasis and assimilation to homeodynamics and adaptation; then I will go deep into the normative and affective notions behind these theories and will explore the affective aspect of living time; finally, I will explore the limits and possibilities of the notion of antifragility applied to the development of living beings and will articulate under it the notions of time and normativity.

## 1. Circadian Time

### 1.1. The mechanistic conception of time and the “paradox” of living identity

In order to understand the continuity of the living individual, it is important first to define the concept of time that is to be applied in the analysis. The most widespread idea of time in modern culture is that time corresponds to what is represented by the clockwork machine: it is divided in discrete homogeneous unities that advance linearly from past to future in an ascending scale. Past and future events, if they exist, belong to a dimension of existence different from the present time, which is instantaneous and diaphanous. There is no intrinsic connection between the discrete instants, and the events occurring in each one of those instants do not seem to have either a connection among themselves. The only possible connection between the discrete instants is extrinsically imposed by the mind, either by learned association or by the a priori structures that constitute it and enable it to understand the succession of instants.

In this model, the continuity of living things is practically self-contradictory. If an entity at  $t_0$  is identical to an entity at  $t_1$  it is because it has conserved all its properties in both stages. But if a change occurs in the entity in this lapse, there is no reason to believe that both are the same. Given that in our experience, living things are constantly changing, it is difficult to harmonize that experience with the idea that they remain the same. One option – the Cartesian option – is to conceive of a substance that remains unaltered and that somehow appropriates all the different entities that occur at different times. In this sense, the entity at  $t_0$  is different from the entity at  $t_1$ , but they both belong to some kind of a-temporal substance that integrates them without being itself subject to changes. Another option – the Humean option – is to state that our cognitive systems just integrate entities that resemble each other (the entity at  $t_0$  is not the same but it is very similar to the entity at  $t_1$ ). Maybe we also associate temporal with spatial continuity and that leads us to believe that entities that remain in the same space or that seem to us to follow a certain continuous path in space are also continuous in time. However, that would demand from us a permanent tracing of the movements of the observed object in order to recognize its identity. If I lose my object of perception from sight just one instance, it would be difficult for me to guarantee that it remains the same when I see them again.

The main problem with the Cartesian option is how to integrate the subjacent unchanging entity that remains identical with its changing manifestations. How do they belong together? Can the substance exist without its manifestations? If so, how do these manifestations contribute, if they contribute at all, to the constitution of the substantial entity? On the other hand, the Humean option leads to a problem that Hume himself identified and that we recalled in the first chapter: what integrates the bundle of perceptions? In fact, the problem of the bundle of perceptions is referred to my own identity, so it becomes even more problematic in the description of changing objects: if I am not myself a unity, how is it possible to conceive diverse entities as constituting a unity through time? In other words, if the consciousness that actively associates diverse perceptions and unifies them is not itself unitary, how is that integration possible? Both options are the extreme opposites in a theoretical background in which time is understood mechanistically. Within this background, change and permanence are contradictory and need an external intervention in order to

harmonize them. As in the case with complex static unities that appealed to an external intervention from a designer or a process of natural selection, permanence in time from a mechanistic point of view also requires the external intervention of hypostasized entities or human cognition. One possible synthesis for each thesis is the Kantian idea of transcendental time, but this idea, as we saw in the first chapter, depends on the transcendental unity of consciousness and, as long as this transcendental unity remains obscure, the integration of complex temporal unities remains so as well.

As with other problems that we have already discussed such as wholeness and spatiality, the origin of these confusions seems to be the theoretical presuppositions that we substitute our experience with. We try hard to reduce our experience of time to our representations of temporality and – if we decide to maintain the latter fixed – it is inevitable that the former will remain in a state of confusion and this will ultimately lead us to neglect experience in favour of our theoretical presuppositions. In other words, it seems that we need to sacrifice our experience of living beings as changing autonomous unities in order to maintain the theory of time as a linear succession of instants. But I think that by privileging experience over our theoretical presuppositions it is possible to solve the supposed paradox without straightforwardly rejecting the mechanistic theory of time. This is why it is important to return to our experience of time as we live it.

## 1.2. Circadian cycles and homeostasis: biological time

When life appeared on earth, the rotational cycle of day and night was already established for a long time. Every form of life has its own synchronization with these cycles and they constitute a fundamental aspect of biological processes currently known as the circadian cycles (from the Latin “circa dies”, which means “around one day” referring to the period in which many vital cycles can be identified)<sup>37</sup>. The regularity of daily cycles makes possible a predictable succession of events, which allows the organism to anticipate the regular changes in its environment and adjust its “inner clock” in consequence: states of wake and sleep, hormonal rhythms, metabolism, and even behaviours related to niche-construction, mating, and hunting, follow a general pattern corresponding to the cosmic cycles of the earth and the celestial bodies affecting it: “the circadian clock’s influence ranges from the molecular biochemical level to the formation of ecosystems.” (Montemayor, 2010: 43) Depending on the particular structure of each living individual, the response to daily cycles is different and it is this difference what constitutes the diversity in biological processes and living experiences. In spite of there being a universal principle of regulation for all living beings, the particular synchronization of each species and each individual in its own situation makes time relative to each organism and, therefore, block any possibility of a universal uniform measurement of time.

It is important to take into account that the adjustment of the organism with the environment is not mediated by mental representations. It is rather a rhythmic harmony encoded in the biological constitution of the organism since its very beginnings. However, this circadian

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<sup>37</sup> When using the term “circadian” I am also including the ultradian and the infradian rhythms. The difference between these three concepts, as far as I understand it, is merely relative to a fixed measurement – a daily cycle – and I do not believe that it signifies any major conceptual difference that merit a distinctive use

time does “constitute an important *constraint* on time representation because of the scope of its influence on temporal behavior.” (Montemayor, 2010: 44) The rhythmic harmony between the internal and the external cycles is the most primitive “temporalization” of living processes and remains latent in the daily activities of all organisms. As living beings, we are all conditioned by this primitive biological temporalization and its influence persists even in our culturally mediated existence as human beings. In fact, as Thomas Fuchs points out, harmonizing the culturally built linear time and the biological cyclical time is an essential part of our human modern existence (Fuchs, 2018: 56ff)

Fuchs himself offers a radical conception of cyclical time as the original temporality of the living body. It is in modern culture that the idea of linear homogeneous time was introduced. Before that, the social representation of time was much more cyclical, in harmony with natural processes. The irruption of linear time has created a tension between the lived natural temporality of biological cycles and the demands of a technologically re-oriented social structure that privileges acceleration and constant novelty. This tension has even derived in mental pathologies such as mania or depression in which the lived present and its natural rhythms are de-coupled from lived time and life itself is either lived as extremely chaotic and accelerated, or it is suspended in a static time in which action is impossible.

Unlike artificial linear time, cyclical time is marked by a constant re-enacting of a natural dynamic of satisfaction. The organism is in a state of equilibrium that eventually is disturbed, causing a feeling of distress and a desire to resolve it in order to return to the original calm. It is important to remark here that subjective experiences of urge and satisfaction are integrated to the biological processes of metabolism and energetical cycles: "This cyclical dynamic of lack, urge, expectation, desire, lust, and fulfilment is both the subjective side and the motivating force of the processes of self-preservation which constitute animal life. They lay the basis for the corresponding cyclical temporal experience, without already bringing about an overarching linear time perspective" (Fuchs, 2018: 50) This dynamic of returning to a point of equilibrium when there is a disturbance evokes the idea of homeostasis under which various physiological processes are described. It also brings with it all its problems, as we will see later, but let us continue with Fuchs's description.

Given that linear time is a cultural elaboration, the ideas of past and future are only accessible when explicitly represented in discourse. The lived body has its own rhythmical temporality preceding these cultural products. Moreover, Fuchs argues that the cyclical time of the lived body is independent of any external constraint: "In experiments with complete exteroceptive sensory deprivation in an isolation tank, subjects usually experience feelings of time extension or timelessness; nevertheless, the basic sense of temporal continuity remains intact, obviously because the constancy of internal bodily experience is not suspended." (Fuchs, 2018: 50-51) Subjective time seems to be exclusively dependent of internal experiences such as arousal, boredom, tiredness, and so on, which are connected with the intensity or decline in the rhythmic movement of inner cyclical processes such as the heartbeat or breathing. Given that the circadian rhythms depend on the harmonization with external cues such as light and temperature, this theory of independent subjective cycles might seem strange, but I think that the point Fuchs is trying to defend here is that circadian rhythms persist even in the absence of the social and technological indicators that pervade our daily lives as modern subjects. Another interpretation – not inconsistent with the previous one – is that the cyclical

mechanisms of self-regulation persist during certain limited time even without external cues. In any case, it is important to remark that the inner regulation of the living body is one of its essential characteristics and the ground of every further experience of time.

Another critical point that Fuchs wants to defend is that the pre-reflexive and relatively independent cyclical regulation of the living body models the experience of the present time. As I mentioned before, one of the basic tenets of the mechanistic conception of time is that it is divided into discrete instants. The present in this sense is just a punctual unity that is complete in itself and that has no essential relation with the other instants that precede or succeed it. In cyclical biological time, on the contrary, the present is structured in a complex unity: "The present moment is not a mathematical point on a timeline; rather, it is extended in the form of intervals, in which events are rhythmically combined into meaningful groups" (Fuchs, 2018: 51) These meaningful groups have a short span (usually around three seconds according to the examples offered by Fuchs), but they govern the expectations of the agent and thereby his action. As Husserl and other phenomenologists argued, the experience of presence involves anticipation of the immediate outcome of my action or of the movement of the thing perceived and involves also a retention of my immediately previous experience that allows me to prefigure my future action. The vital structure of expectation, action and fulfilment depends precisely on this capacity of retaining the motives of my own action and protenting it according to my expectations.

Furthermore – and this is the most prominent aspect of the opposition between linearity and circularity of time – the present can be (and is in fact) re-lived many times through the course of our life. The linear structure of time establishes that the past is gone forever and that the future must be new, completely different from what has happened before. Fuchs uses the Bergsonian distinction between the remembrance-image (*souvenir-image*) and the memory-habit (*mémoire-habitude*) in order to distinguish respectively an explicit representation of the past from a re-enacting of past experiences in the present. "Thus, explicit remembering directs itself back into the past; implicit, body memory, conversely, contains the past latently as a presently effective experience in itself — it is our lived past." (Fuchs, 2018: 54) Memory as re-enaction is, according to Fuchs, a testimony of our cyclical experience of time. The things that we have experienced in the past are not gone but they are constantly returning in order to bestow meaning to our current experience: "Primarily formed in early childhood, habituality modifies and alters itself in the course of life — body memory displays a lifelong if waning plasticity. Nevertheless, the temporality of existence remains bound to a basic cyclical structure — it is also repetition in every moment, the recurrence of the familiar and the similar. The surprising and the new can only emerge against this given background." (Fuchs, 2018: 54-55)

The experience of the present is therefore structured as a complex unity. Again, the present is not a discrete punctual instant but a continuum in which the past and the future are integrated as a whole. Thus, we can shed some light on the idea of continuity of a changing individual without falling into paradoxes. The concept of circadian time that includes a notion of recurrence against linearity and a notion of "specious present" against discreteness allows us to give some consistency to the idea of continuity through changes. However, the complex unities that constitute the present experience of a living entity are still in need of a broader integration that remains vague in the theory of Fuchs. In his own words: "action and

perception are integrated into respective meaningful units within extended temporal windows that lend a ‘width’ to the present, though obviously these windows or intervals are somehow connected.” (Fuchs, 2018: 51) I want to examine precisely this “somehow” in the following sections of this work, but let me first examine critically the idea of homeostasis that seems to be implicit in his conception of cyclical identity. Although there is a sense of equilibrium that guides the temporal structure of subjective experience, the physical and cognitive constitution of the living individual is subject to radical changes that need to be accounted for.

### 1.3. From homeostasis to homeodynamics

Temporal unities in Fuchs’s theory are not discrete and punctual but they are still transient and do not correspond to the lifespan of an organism. Moreover, the “speciousness” of the present time, as Fuchs describes it, is restricted to an anticipation over an expected circadian cycle. Accordingly, the state of equilibrium that is constantly actualized is a kind of presupposed principle that guides the finality of every action and that appears time and again while the organism is alive.

This idea takes us back to the conception of homeostasis that I have discussed earlier. There seems to be a presupposed state of equilibrium that each individual strives for and that it “actualizes” in its own existence. In other words, there seems to be a formal static end that guides the particular development of living unities who aim at the realization of their particular form. Simondon labels this notion of life as an heir of the Aristotelian idea of “hylomorphism.” I will not discuss whether his interpretation of Aristotelian metaphysics is really accurate, but let us take his notion of hylomorphism as Simondon understands it and see how it can be overcome by a more dynamic approach to the process of individuation of living entities.

In a nutshell, hylomorphism presupposes that the form of a living individual is its perfected state and that the material instances – that is, the concrete living individuals – are directed towards that formal perfection. The idea of homeostasis, as well as other related conceptions of life – such as certain interpretations of autopoiesis theory that we have already explored – abstract the material structure of living individuals from their formal organization and describe life as an essentially self-organizing process that tends to a definite equilibrium. In this sense, the temporality of life is basically circular because it tends to a stabilizing state of order to which the organism tends to return every time it is forced to fall away from it. The actions of the organism are therefore directed to the attainment of the perfect state of equilibrium by rejecting as noise every deviation. The mathematical theory of communication proposed by Shannon and Weaver and the cybernetic notion of feedback mechanisms conceive communication and action precisely as an interaction with the environment directed to the reduction of the useless or noisy elements that lead the system astray from its stability. The idea of circadian rhythms and circular time seems to fit very well into this schema of regularization.

According to Simondon, this theory only takes into account the two extremes of the process of individuation: the perfect individual and the prime matter that needs to be perfected. But nothing is said about what is crucial for him, namely, the individuation process itself, which

is precisely what makes the transition from matter to form possible. James di Frisco thinks that this is also the problem with theories that conceive life as metabolic closure systems in which “the transformation and degradation of chemical components, that each metabolite or enzyme needed for the maintenance of the system is produced by the system itself, apart from an influx of energy.” (DiFrisco, 2014: 500-501) In these theories, the formal organization is taken as the perfected form and the material constitution is only an instantiation that does not need to be accounted for.

One of the reasons for this conception (or misconception) of living beings as actualized forms is that life is viewed as analogous to machines. We have already approached the various implications of this analogy, particularly when exploring Kant’s theory of natural ends. The idea here is that the notion of form as an abstracted perfected point of reference for living beings is very useful to understand artefacts. In designed machines – more specifically, in industrially produced machines<sup>38</sup>– the form precedes its material instantiation. It is easy, for example, to conceive a software that is only defined by its formal algorithm without the programmer taking into account the possible material instantiation of his code. It seems as if the formal design precedes and determines the material structure that makes it possible.

Against these hylomorphic notions of life, di Frisco remarks that the chemoton model proposed by Tibor Gánti is much more in consonance with the actual process of individuation of living beings. According to this model, both living beings and artefacts are machines, but what differentiates them essentially is their material structure. Artefacts are structured in a discrete and rigid set of material component, whereas living individuals are fluid and their reactions depend on qualitative factors, like chemical composition and affinity (DiFrisco, 2014: 516). In this sense, the chemical components that constitute a living being are crucial in the description of the system. The form that the living being takes cannot be abstracted from the chemical features and possibilities of its components, and its individuation depends on the possible reactions that can emerge in the interaction between the organic individual and its environment. “With Gánti’s bottom-up approach, one does not start from a flat notion of matter, which then necessitates locating all of the important “lifelike” properties in the relational organization of the system. Instead, starting from the *nomos* of matter in a more “lifelike” state, we see an intermediary order between matter as described by mechanics and life fully organized.” (DiFrisco, 2014: 519) In this sense, a new description of living matter is necessary: it is a kind of matter that does not follow blindly the pre-established instructions of an abstracted form (as we could conceive the material components in an artefact), but that is already endowed with certain principles of organization inherent to its own structure. In this sense, we need to know the particular nature of the individuation process in living beings as different from other physical entities but, at the same time, belonging to the material world.

We have stated that living individuals are complex material wholes whose laws of constitution go somehow beyond the basic laws of physics without contradicting them. Now, this “beyond” is problematic and need some further clarification. In one sense, it can be thought that we have a complete physical individual to which “something else” is added that gives it its particular organization. This “something else” can be a mysterious force, or an

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<sup>38</sup> It is not so clear in the case of artisanal products that involve a progressive constitution emerging from the interaction of the artisan with his prime matter.



algorithmic code, or some property that emerges once the right physical combination is obtained. In his analysis of individuation, Simondon has a completely different point of view and proposes an alternative that conserves the materiality of organisms without reducing their complexity: the neotenic individuation of life.

In order to understand this alternative, we have to recall the Simondonian theory of individuation that I briefly exposed in previous chapters. According to this theory, in every process of material individuation, there is a seminal individual that increasingly liberates its own potential when it interacts with the elements in its environment: “We mean by transduction a physical, biological, mental, social operation by which an activity propagates gradually [de proche en proche] within a domain, founding this propagation on a structuration of the operated domain from place to place: every region of the constituted structure serves to the next region as principle of constitution, with the result that one modification expands progressively at the same time as this structuring operation.” (Simondon, 2013: 32) The example that Simondon uses to illustrate this idea is the process of crystallization: a pre-crystalline solution, rich in potentials, crosses some threshold thanks to some reactor (a piece of dust, for example) and it begins to restructure itself expansively throughout the solution. This structuring is determined by the chemical potentialities in the solution itself, it is not a pre-coded process: “Contrary to *deduction*, transduction does not look outside for a principle to solve a problem in a given domain: it takes the resolving structure from the very tensions of this domains, as the oversaturated solution crystalizes thanks to its own potentials and according to the chemical species that it contains, not by the contribution of some external form.” (Simondon, 2013: 32) The basis for an intermediate conceptual point between mechanistic matter and abstract form is now settled, the next step is to understand how transduction works particularly in the case of living beings.

The progressive propagation of the potential form is temporarily linear. Once the crystalline solution has exhausted all its potential, the crystal is obtained as a final result and the process of individuation ends. Time is not an absolute measurement imposed from the outside but it is defined by the development of the initial potentialities: “time emerges from the pre-individual as the other dimensions according to which individuation is executed.” (Simondon, 2013: 34) In this sense, it is possible to identify three elements in the individuation of physical entities such as crystals: an initial state full of potentialities, a pre-individual in which transduction takes place, and a final state in which the individual is complete. One way to understand biological individuation as going “beyond” physical individuation is to say that somehow a biological property emerges once the material individuation process is finished. But this is not how life works. In fact, it is the opposite: life is possible precisely because it retains the process of individuation in its pre-individual phase. This is what Simondon calls “neotenic” individuation.

A purely linear temporality means that the initial and final point of the living being are identified as the potential and the perfected states of that being. This would lead to the bizarre idea that death is the perfected state of life and that all our actions in life are directed towards the achievement of death. There can be an existentialist interpretation of this idea under the notion of being-towards-death, but that notion depends on a conceptual elaboration and on a particular philosophical point of view about life. As Fuchs remarks: “in any case, ‘being-towards-death’ as an existential condition is only a human predicament.” (Fuchs, 2018: 60)

In terms of the very idea of life that we are exploring here, it is evident that our existence – qua biological entities – is not linearly hierarchized in the sense that every stage is the function of the next one in the temporal order, and they are all oriented toward the last stage. In a crystallization process, for example, the last stage is the perfected state, a kind of ‘telos’ in which the process results. In a living process, the last stage is death, but the organism arrives there against its own telos. Living beings endeavour to persist in their own existence, to not advance toward their final stage. Against this linearity, the recurrent processes of life, the interiority of the living equilibrium defines the existence of living beings.

Just as any material being, a living individual begins also as a potential that can propagate its own possibilities by a process of transduction. Now, according to Simondon, this pre-individual state of propagation, this dynamic transduction does not end in a definite process of crystallization: "According to this point of view, vital individuation integrates in physical individuation by suspending the course [of the process of individuation], by slowing it, by rendering it capable of propagating at the inchoative state. The living individual would be, in any way, at its most primitive levels, a crystal in its nascent state that amplifies without stabilizing itself." (Simondon, 2013: 152) Stabilization for a living being means death, and that is precisely what the organism is trying to avoid in its metabolic processes. By maintaining itself in its pre-individual, dynamic state, the organism avoids death and keeps its own life. The dynamic tension of constitution is never resolved in a final state that would constitute the perfect, finished living individual that does not need to move further or to keep its dynamic because it has already attained its final form. The constant tension is necessary to keep the system alive in its own state of quasi-paradoxical dialectic between stability and change. This is how change becomes an essential feature in the continuity of the individual: it does not remain the same living individual *in spite of* change but *thanks to* it. The internal state of dynamical stability is what prevents the system from succumbing to the rigid linearity of external time.

With this in mind, we can revisit the idea of circadian equilibrium as the basis of temporality in the living body. We can conclude that the circular process of living equilibrium is not the following of a pre-determined form imposed from the outside. On the one hand, circadian processes are defined by the material structure of the living environment and by the way in which this structure is ‘recapitulated’ in the internal clock of the organism that works according to the configuration of some definite anatomical structure, for example, the suprachiasmatic nucleus that, in the case of mammals, governs the circadian processes. In this sense, there is no abstraction of form from matter, there is no mechanical clock that imposes a formally rigid measurement of time from the outside to which each organism must adapt. The circadian time of each organism is determined by the properties of its own physicochemical structure such as its size, its metabolic rate, etc., and those properties are in consonance with the physical properties of the environment: “Biophysical and biochemical oscillators are part of the spectrum of biological periodicities that even extend into geological time.” (Lloyd, Aon, & Cortassa, 2001: 136) On the other hand, the homeostatic processes of the organism are ways in which the organism stabilizes with respect to its environment. They are one of the various “strategies” by which the living individual “slows down” the process of individuation and avoids getting to the end state of equilibrium. This is how the differentiation of organism and environment gets a temporal dimension in which inner temporality is at the same time free and dependent on external temporality: the organism is

free because it has its own temporal pace and its own internal cycles, but it is dependent because those cycles resonate with the cycles of the environment and they synchronize with the external physical processes in order to anticipate and respond to them.

Given this dialectical relation, the homeostatic circularity of inner life is one way in which the organism defines itself with respect to the linearity of the external environment, but it is not the only one. In so far as this recurrence keeps going, the organism remains the same through time, but the individuality of living beings is layered in various hierarchies, some of which need to disrupt the tendency to equilibrium in order to keep the organism alive. Homeostasis, understood as “the relative constancy, i.e., stable steady states, of the internal milieu’s physiological status” (Lloyd et al., 2001: 136) depends on a pre-stimulatory state to which the organism returns after being affected. Against this idea of a fixed point of return for the living system, arises the notion of homeodynamics according to which “intracellular processes through their dynamic self-organisation may exhibit not only monotonic states (fixed points), but also a capacity for bistable switching threshold phenomena, waves, gradients, mutual entrainment, and periodic as well as chaotic behaviour.” (Lloyd et al., 2001: 136) In homeodynamic systems, the tendency is not to return to a point of pre-stimulus stability but to converge into a particular “attractor” that results from the dynamics of the systems themselves. In other words, the system stabilizes itself not only by returning to its original point of equilibrium but by generating new equilibria that emerge in the fluctuations of the organism. In this sense, a new conception of linear time is applied to living phenomena: it is not a tendency to a thermodynamic equilibrium that would result in death but the development of potentialities that result in increasing complexity and in the constitution of new potentialities.

One way of understanding the interaction and the emergence of the multiple dimensions of inner temporality is by the distinction between assimilation and accommodation, coined by Jean Piaget (Piaget, 1952) and used in developmental psychology. In brief, *assimilation* is the process in which the system uses an existing schema in order to adjust the external disturbances to it. If we remember the example of the Golem-Zombie in the previous chapter, it is an extremely assimilative system: every object that it deals with is either rejected or adjusted to the pre-programmed schema that governs the Zombie’s actions. What Simondon understands as a hylomorphic system (or interpretation) is exactly the same: the rigid form remains unchanged and the instantiating matter is merely accidental. Everything tends to adjust to a pre-defined state. That is how homeostasis can be understood in a very broad sense. However, when the system is incapable of adjusting external stimuli to its pre-determined schema, it needs to *accommodate* to the new situation, that is, it must change itself in order to deal with the new situation because its old schemata do not work. According to Piagetian theory, accommodation is the first stage of adaptation of infants and the re-adjustment of motor and representational schemata resulting from accommodation come later in the developmental process. Accommodation is not contradictory with assimilation but emerges from and overcomes it. It is also possible to believe that assimilation persists as the basic strategy to deal with the world around us and, only when our schemata fail, we resort to accommodation.

We will return to this point later, but for now, let us keep in mind the idea of various layered “strategies” for equilibrium that configure our living existence as individuals. Circular time

is certainly a crucial element in the constitution of internal temporality, but it is not the only and not even the defining one. The basis of our existence as living individual is the possibility of differentiating internal from external time by a dialectical process of dependence and independence. As in the case with metabolism, living internal rhythms need the external temporal cues of the environment in order to exist independently from those. We have only talked about circadian rhythms in which the relation of dependency is very clear, but we will also explore the chronological adjustment with the external world in future sections.

## **2. Motor-intentional time**

### **2.1. Meaning without semantic truth**

Now that I will introduce the idea of temporal modalities – past-present-future –, I would like to emphasize that these are to be understood as action-oriented and, therefore, relative to the concrete situation of the agent that is the subject of the experience of time. The conception of circadian time brings to mind some passive adjustment to the cycles of the environment. In what follows, we will try to understand a more active adjustment that highlights the dialectics between change and identity that defines the living individual.

Usually, the metaphysical discussions on the nature of time depend on the idea of how to understand the meaning of temporal propositions, that is, the question of what makes a proposition with temporal modalities true, for example, “the Battle of Lepanto took place in 1571” or “the independence of Colombia is earlier than the independence of Venezuela.” This approach presupposes a referential notion of content in which what matters is whether some judgment counts as true or not. As Adrian Cussins puts it: “Referential contents are the contents of judgements and their characteristic normativity is the normativity of guidance in judgement. This is generally the normativity of truth guidance: the point of the activity of judgement is to judge truly.” (Cussins, 2012: 19) According to Cussins, referential content is usually mediated by a “veil” between representation and representer, which disconnects the intention as it is grasped and the action that follows the intention. But it is a mistake to reduce content to referential content: “One can grasp the intention (and so grasp its conditions of satisfaction) without knowing of any particular action whether or not it satisfies the intention. So having an intention – under the assumption that there is only referential content (“referentialism”) – is not cognitively sufficient for action. But having an intention is cognitively sufficient for action, so we had better reject the referentialist conception of content: there is more to content than referential content.” (Cussins, 2012: 20)

If we apply this reflection to the representation of time, the referentialist approach would lead us to believe that the content of our representation of time is limited to our grasping the truth condition of particular propositions referring time and it is incapable of bestowing the subject an agency over his temporality: past, present, and future are just “external” facts that the subject can represent and whose truth conditions he can grasp but respect to which he can do nothing and upon which there is no possibility of action, or even of direct experience. The logical tradition has imposed an idea of meaning that is inseparable from the idea of truth as understood within a referentialist background, but – as Cussins’s and other enactive approaches to cognition want to defend – meaning can also be applied to structures of action and it can emerge in our direct active engagement with the world. The referentialist

conception of content presupposes a reflective act of cognition that is the origin of the “veil” between the subject and the object, or the representation and the representer. In representing a proposition and understanding its meaning exclusively in terms of truth conditions, the agent becomes an observer and disengages from the content of his representation in order to grasp it objectively, from what can be called a “third person” point of view. If we want to understand how experiences, particularly, temporal experiences have meaning, it is important to extend the idea of intentionality – the fact that conscious stand for something – to include not only tokens of mental reflection but also situations in which the agent has the opportunity to act: we need to go from reflective, theoretical intentionality to motor intentionality.

Merleau-Ponty is one of the main exponents of the idea of bodily motor intentionality as independent and even constitutive of theoretical intentionality: “The motor experience of our body is not a particular case of knowledge; it provides us with a way of accessing to the world and to the object, a “praktognosis” that has to be recognized as original and that can be originary. My body has its world or comprehends its world without having to go through “representations”, without being subordinated to a “symbolic” or “objectifying function.” (Merleau-Ponty, 1945: 164) The content of “bodily representations”<sup>39</sup> is, therefore, constituted by the motor capacities of the body. The motor interpretation of the world enacted by my own body is not encoded in a formal-syntactically structured symbol but in my predispositions to movement and action. In consequence, the representation of time is much more immediate and context-dependent than in the case of circadian synchronicity: “unlike the outputs of the circadian clock, in the case of representations of time concerning duration and temporal order (motor-intentional time), the timing mechanism outputs its measurements with considerable speed, and it is finely tuned to the sense organs.” (Montemayor, 2010: 48)

This quality of speed, let us recall, is also one of the components of animal motility that Hans Jonas points out as distinct from plant movement. His idea is that the organism is richer in stimuli and opportunities of action but it is also more constrained by the demands of an increasingly complex environment: “The ability to respond quickly to changes and opportunities in the environment means an immense increase in the powers of life. But success in this respect cuts both ways: it launches the organism upon a mode of life in which it is irrevocably committed to quickness.” (Jonas, 2010: 203) Purely circadian time is not sufficient to sustain this ability for rapid responses proper of bodily intentionality. That is why a more structured cognitive control of temporality is needed: “Coordinating action depends on measuring and computing time through cognitive mechanisms. The circadian clock is not designed to coordinate real-time action (e.g., escaping from a predator, calculating time for collision, etc.). A cognitive clock is required to perform that job.” (Montemayor, 2010: 50) In sum, we are then not limited to the stable temporality of circular time but our temporality also extends to an immediate present that demands a concrete decision for concrete action. The meaning of linear motor time is not the truth value of an

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<sup>39</sup> Many authors – maybe Merleau-Ponty himself – would reject the term ‘representation’ in order to account for bodily consciousness. I do not think there is anything wrong with this term and I see it as particularly useful if we want to remark the difference between the world as it is in itself and the world as the organism interprets it. Furthermore, I agree with Cussins’s idea of “epistemic responsibility” behind his use of the concept of representation as something that goes beyond the subpersonal level and is consciously assumed by the agent (see Cussins, 2012: 21-22).

objective proposition, but a guide for action in a tense situation in which the subject is engaged.

## 2.2. The sense of hearing and the layering of temporality

I want to elaborate on the suggestion that our sense of temporality as individuals is layered in at least two temporal levels: a cyclical assimilative and a linear assimilative. We have exposed in broad terms how the cyclical time is governed by circadian rhythms and how it is one way in which the difference between the inner and the outer in the organism is manifested. I will develop the nature of motor-intentional time throughout the remaining of this section, but at least we have some idea that it is a kind of linear time. One way in which both layers of temporality can be shown to interact and constitute a unity in cognition is the case of the sense of hearing. Cyclical rhythms and linear anticipations are apparent in auditory experience and it is no wonder that authors like Husserl illustrated the structure of temporal passive synthesis – retention-protection –with examples that report auditory experience. Let us explore briefly some philosophical and cognitive descriptions of this sense.

Hans Jonas, we have already seen, deals with the contrast between touch and sight in his analysis of individual freedom. In that very description, he defines hearing as a sense whose nature is exclusively temporal and particularly passive. Regarding temporality, the looseness of the heard object prevents us from completely individuating an object by means only of our hearing it. Sounds are presented to us in form of events, not of fixed objects, and it is only by associating them with a visual or a tactile object that the cognitive individuation – and thereby the identification of a spatial unity – possible. Otherwise, the pure acoustic experience is a purely temporal sequence: "The acoustic "object" created [by the synthesis of acoustic events] is a time-object that lasts just as long as the act of its synthesis lasts, that is, as the sequence of hearing itself does (or its recreation in fantasy), with whose progress the "object" part for part coincides. It has no other dimension than that of time." (Jonas, 2001: 138)

With respect to passivity, the experience of sound is particularly dependent on the external cue, unlike seeing and touching that clearly involve active engagement with the external object whether by means of exploration or by means of active attention: "In hearing, the percipient is at the mercy of environmental action, which intrudes upon his sensibility without his asking and by mere intensity decides for him which of several qualities distinguishable at the moment is to be the dominant impression. The strongest sound may not be the vitally most important one in a situation, but it simply seizes the attention from among the competing ones. Against this the freedom of selective attention is extremely limited." (Jonas, 2001: 139) We may indeed connect this passive aspect with the impossibility of constituting an acoustic object parallel to a visual or a tactile one. As we learned from the experiments with blind or blindfolded patients that were asked to individuate or identify a tactile object with a visual one, the task is conditioned by the possibility of actively exploring the object they were asked to identify. Only when they were given the opportunity to actively engage with the object, were they able to succeed in their task. Now, if this opportunity of active engagement is limited or null, the individuation of the object would remain impossible and this is precisely the case with the perception of auditory events: they could only acquire

some meaning when synthesized in a temporal sequence. It is important to remark that this “passive synthesis” of the acoustic object has a complex structure that is crucial in the process of individual constitution. The development of acoustic, and particularly musical cognition, is very useful to illustrate as an example the way in which our inner sense of time works.

The passive and temporal experience of hearing is acquired at the earliest stages of development and is thus one of the early constituent factors of our cognition: “Our sense of hearing is the first of the five senses to develop. The first sounds that we hear in the womb introduce us to the rhythms and patterns of human activity and prepare us for the physical world of linear time into which we will soon be born.” (Sills, 2010: 289) The auditory system is structured in layers with different paces and that allow a complex ordering of acoustical information from the outside world. Before being born, we humans – and mammals in general – are capable of sensing the rhythms of the heartbeat, breathing, digestion, and footsteps of our mothers and we can even register the emotional connotations of those sounds: “Movements – allied to emotions such as joy, fear, or anger, which are transmitted biochemically – are the first movements to be associated with *meaning*.” (Sills, 2010: 293) As pre-born babies, we are completely passive to the reception of these acoustic patterns and their meanings, and that gives us a primitive sense of Otherness, of an external world to which we synchronize our internal feelings.

In new-born babies, the complexity of the acoustic environment increases and the need for a more elaborated structuring of our musical cognition becomes necessary. The baby establishes some preferences and tends to assimilate the sounds in the environment to her own predispositions: “We find it easier to process *regular* sound events and tend to regularize those that are slightly irregular.” (Sills, 2010: 294) Infants thus develop an ability to recognize and group distinct patterns of sound in meaningful unities that evoke particular emotions. These unities are enriched by our particular cultural environment: “At first, meaning comes from the direct association of musical movements with external situations or moods. As these veridical connections accrue, they form a schematic collection of musical and extra-musical rules that subconsciously shape our perception of emotional meaning in music.” (Sills, 2010: 296) By exposing ourselves to increasingly complex patterns of sound, particularly musical patterns, we improve our sense of temporality and the appreciation of sequential patterns: “The recognition of repetition and recurrence develops from a perspective that is linear and chronological to one that is multi-dimensional and holistic.” (Sills, 2010: 297)

The passive reception of temporal rhythms still seems limited to cyclical time in our analysis. But even these cycles have an internal structure that demands a dense comprehension of time and an understanding of a sequence. When hearing a rhythmic pattern or a melody, I am not hearing discrete sounds one after the other; I am having the experience of an “enduring sound.” As I suggested earlier when discussing Fuchs’s positions on cyclical time, the experience of circularity is connected to the idea that time perception is continuous, not limited to the discrete perception of the immediate present but somehow connecting the present with the immediate past (retention) and the immediate future (protention). This idea is connected with Husserl’s theory of internal time in which the experience of the present is a continuous unity containing retentions and protentions. However, it is important first not to confuse retention and protention with memory and imagined expectation: the continuous

nature of time in lived experience is not a mere act of association between the present perception and the remembered and expected sounds. It is only by reflection that I can isolate a single tone as a discrete present and then recognize other earlier or later tone and then connect them as extrinsic unities.

Consequently, we should neither conceive of the past-along-with-present experience as some perception that literally co-appears with what I hear or see: it is not that in hearing a tone, for example, I am also hearing at the same time some faded resonance of the antecedent tone: “There is no simultaneity between the retentional aspect of consciousness (which is present) and that which is retained (which is past). The just-past tone doesn’t remain present in consciousness, like some reverberation; rather it is presented to consciousness as just-past, or as Brough has put it: “Retention does not transmute what is absent into something present; it presents the absent in its absence.” (Zahavi, 2010: 321) The idea that time is continuous, that present is “specious” means that in the experience of present objects, I am also experiencing the absent past and the absent future that give the horizon of our immediate present experience.<sup>40</sup> It is important here to remark the qualitative difference between the present as primal impression and the past and the future as absent: the three modalities are not at the same ontological level in experience. “The retention that exists “together” with the consciousness of the now is not “now,” is *not simultaneous* with the now, and it would make no sense that it is.” (Husserl, 1991: 345)

This is contrary to the A and B theories that prevail in the debate on how to give truth-functional meaning to temporal propositions and it is thus important to insist in renouncing to a referentialist conception of meaning in order to understand how time is experienced. On the one hand, A theory establishes that propositions referring past or future events are not to be distinguished from propositions referring present events if not by an extra-temporal property of “pastness” or “futureness” added to the original proposition. On the other hand, B theory conceives of temporal events as related by being “earlier than” or “later than” each other: there is not even a need for “extra properties.” (See Markosian, 2016) In both cases, there is a sense of simultaneity that allow ascribing temporal or relational properties to the propositions studied.

Retention and protention are part of the immediate experience as such, they are not representations of events stored in our memory or created by our imagination that would bring the past to our consciousness as if it were a present experience. In other words: past, present, and future experiences are not to be understood as the content of propositions whose truth value is to be found in each case. There are neither the content of self-reflective experiences that we represent in our imagination when we take our own mind as the object of our thought.

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<sup>40</sup> I think that this is why it is useful to understand the experience of time from the example of auditory perception and not, for example, from visual perception. The horizon of visual perception is in part visible as a blurry background from which the attended object is differentiated (of course, not all the horizon is reduced to the unattended background, but it certainly is a part of it). In this sense, it is easier to believe that the horizon “co-appears” with the object as an “extra” visual perception. In auditory perception, it is never the case that the horizon is co-present with the object because the whole experience, the perceived event, is the object. At most, there can be some co-appearing sensations that count as noise background but they still make part of the acoustic event experienced. However, this is a much more complex discussion and it merits a separate study



This, as we saw in the first chapter, presupposes an original pre-reflective consciousness. What we have in immediate experience is a primal impression that appears in a continuous horizon of antecedent and consequent conditions. We are not experiencing time as if we were making it the object of our consciousness: we *are* ourselves this lived temporality. The perception of rhythm, melodies, and other sensory objects presupposes our own subjective temporality that is not itself perceived but is the basis of all perception. Temporality, and its “specious” structure, is *transcendental*, it is not the object of our conscious reflection, but the condition of possibility of every conscious act (see chapter 1). To understand temporality as transcendental means, therefore, to understand it not as the flow that my consciousness perceived, but rather to understand consciousness itself as a temporal flow.

By understanding inner temporality as transcendental, we renounce to the idea that the perception of a temporal object is double: perception of time and a perception of the object. “Rather, to say that an experience is constituted in inner time consciousness means that it is brought to awareness by its own means. It is called *inner* time-consciousness because it belongs *intrinsically* to the *innermost* structure of experience itself.” (Zahavi, 2010: 334) Objects of consciousness may appear as having different temporalities, and we can even have the idea that some objects are a-temporal given their relative permanence with respect to others. Consciousness itself, however, is inescapably temporal and does not reach to the outside world if not as a temporally conditioned phenomenon: “Whereas we live through a number of different experiences that arise, endure, and become past, the structure of protention-primal impression-retention might be considered an invariant field of presencing, or even better as an unchanging field of presencing (primal impression) and absencing (retention-protention).” (Zahavi, 2010: 335) The living individual is not only a thing that remains through time, but it is itself the very basis of the temporal character of external objects.

But this temporal character of the transcendental subject is not an empty form as in the case of the Kantian interpretation of time as one of the elements of transcendental aesthetics. It is neither the absolute subjectivity of self-affection that we explored in the first chapter and that is the ultimate basis of individuality (temporality included) and that is capable of independent self-reference. Temporality is always manifested in the experience of external objects: “Inner time-consciousness has no self-manifestation of its own, but *is* the very non-objectifying, pre-reflective self-manifestation of the experiences.” (Zahavi, 2010: 336) In that sense, subjective temporality is always structured in relation to the temporality of the external world. It is in the dialectics between inner self-timing and external processes that it is possible to understand the objects as enduring in time and the subject as capable of having immediate experiences that are both of presence and absence. The early assimilation of rhythms and sound patterns actualizes and structures the capacity for time perception and allows both the representation of circular stable patterns and the anticipation of novel experiences in a more linear fashion.

The simple dilemma between circular and linear time is thus overcome by a much richer understanding of time that allows us to recognize at the same time the regular patterns that constrain our sense of familiarity and also the open possibilities that are contained in every

single acoustic event that we perceive. Passive repetition of musical loops, for example, is crucial in the constitution of habits and rituals, a topic that we will explore later. The passive assimilations of rhythmic sequences that shape our acoustic experiences and give them a sense of regularity and adequateness are also the basis for a sophisticated accommodation to new experiences, to a much active organization of our auditory experience. The temporal regulation of rhythms is hierarchized in three layers: exogenous rhythms, which are generated by purely external factors; exo-endogenous rhythms, in which the internal rhythms are synchronized with the external cues (Zeitgeber); and endogenous rhythms, which are spontaneous and independent of the immediate external Zeitgeber (Balzer, 2009: 34) The linear apprehension of time thus emerges from the circular one and the autonomous production of sound proceeds from a previous passive reception of regular patterns. Circular and linear, passive and active do not suppress each other but are constituent elements of the temporal structure of subjectivity.

As I suggested, music is only an example that illustrates the temporal structuring of subjectivity. However, it is a very telling one because it is connected with our embodied subjectivity, first by giving emotional meaning to different rhythmic and generally auditory patterns, but also by connecting the perception of sound with the production of movement: “From birth we respond to sound with *movement*, communicating with our caregivers by showing awareness of emotional signals, and turning our heads, for example, when attracted by change and novelty.” (Sills, 2010: 295) The rhythms that we passively assimilate in hearing are reproduced not only in our imagination by acts of musical composition or remembering but also and particularly by our own bodies that move in response to auditory stimuli. Tactile experiences usually involve just a local movement of our bodies – mostly the hands – and visual experiences sometimes do not seem very connected to a particular bodily movement. But in hearing we can have a sense of our whole bodies in movement: by dancing when we listen to music, by moving our heads when something calls our attention, our bodies when we are approaching to or going away from a particular sound, etc. Thus, by giving us this sense of our whole bodies, auditory experience can be easily transposed to bodily experience: the rhythms of our steps, of our breathing, of all those cycles that we constitute very early in our development, are the basis for more complex and unexpected movements in our going around the environment.

This transition from hearing to movement also illustrates the transition between passive and active experience of time<sup>41</sup>. The reception of rhythmic patterns and stable units of meaning allows us to anticipate and modulate emotionally the sounds we hear. But hearing remains mainly a passive modality of perception. Even our being able to enrich the meaning of the acoustic object depends on our receiving the cues from the environment: I perceive the sound and then give some meaning to it, but I have a very limited ability to select my acoustic experiences, - something that is much easier to do with visual or tactile perception – they are imposed to me by the environment<sup>42</sup>. It is true that we are capable of producing sounds

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<sup>41</sup> Here I am not using Husserlian terminology as when he speaks of “passive” and “active” synthesis. I am taking those concepts at face value as one involving pure receptivity and the other involving active engagement. In this thesis, I will not deal with phenomenological active syntheses, at least not directly.

<sup>42</sup> Maybe when I decide to play a song in an electronic device or to hear a concert, I am somehow deciding what to hear, but my decision is limited to let a particular acoustic event affect me during some definite time. The experience remains mostly passive. Of course, there is no reason not to believe in an active

ourselves, from the most basic – clapping, howling, smacking – to the most elaborate ones – musical compositions, conversations. However, this active production of sounds rests on a much more basic capacity, namely, the capacity of being the agents of our own movements. From a temporal point of view, we can say that my experience of the “presence” and the “absence” of a given object – that is, my experience of primal impressions with their retentions and protentions – is structured by the external object itself and my capacity to recognize it. When this experience becomes active, I am the agent of the primal impression that constitutes my immediate experience and I am thereby capable of structuring what counts as relevant retention and protention. I just do not expect the next note to come in the melody I am hearing: I produce it by moving my hands, my whole body.

### 2.3. The specious present: the emergence of the past-present-future schema

The referentialist conception of time which, as we say, defends some ontological equity between the past, the present, and the future – they are all facts whose truth conditions are to be discovered – entails also a deterministic metaphysics. The past and the future are “there” somehow and their existence is independent from our own present point of view. Since they exist as independent facts – whether as relata in a given sequence or as facts with a given temporal property – all we need to do is to discover their meaning in terms of their truth conditions, and that involves representing true propositions and differentiating them from false ones. There is no action involved, nothing that we can do to change the past or the future. Things that already happened can be known, things that will happen are known with less certainty but they are still “there” and their truth conditions are already established whether we know them or not. Past and future are just the same as present but with an extra feature or relation.

Even if we accept that this is the picture that works best for science or, in general, for referential-descriptive language, it is clear that that is not how action works. When I act, I am determined to modify my future and even, in some sense, I am also capable of manipulating my own past. In order to understand the temporality of action, we need to see how continuity is enacted and how the living individual constitutes its own duration. This is why the idea of the present as “emergent” as exposed by G. H. Mead can be useful for our interests: not as an absolute fact but as a situation that is relative to a given system of reference. “It is idle, at least for the purposes of experience, to have recourse to a “real” past within which we are making constant discoveries; for that past must be set over against a present within which the emergent appears, and the past, which must then be looked at from the standpoint of the emergent, becomes a different past.” (Mead, 2002: 36) From an agent point of view, the present is, as Mead called it, “the locus of reality” from which the past and the future acquire their practical meaning.

Let me insist in two general aspects of the active experience of time or, rather, the temporal aspect of agent experience: first, it is constrained by short intervals demanding rapid responses that are not governed by a stable circadian clock; second, it encompasses two kinds of intentionality: a consciousness of what is present and a consciousness of what is absent,

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experience of sound analogue to an active visual or tactile experience, but certainly, it is much rarer and maybe requires necessarily artificial intervention.

the latter being the intentionality directed to the experience of retention and protention or past and future<sup>43</sup>.

The first aspect, immediate constraint, makes us realize that we need to overcome the idea of circadian time as the only time of the living body without forgetting that circadian rhythms are still one layer of the structure of time experience: circadian cycles remain as a decisive factor in our daily lives, but they are not the time measurement mechanism that we use in the case of immediate action, this measurement depends on a kind of “stopwatch” clock: “This clock measures time at a scale that is much shorter than that at which the circadian clock operates, and its calibration depends on external and internal frequencies.” (Montemayor, 2010: 48) Unlike the uniform regularity of a circadian clock, the “stopwatch” clock that governs action can change the acceleration of time depending on the demands of the immediate environment and of the agent. “Attention is very relevant because the stopwatch, unlike the circadian clock, can be activated by the agent (for example, by attending to a particular event).” (Montemayor, 2010: 49)

The second aspect, the presence-absence structure of time intentionality, is based on the idea that the only temporal reality that exists for our active body is the present time. We do not perceive directly the past or the future, even though we could grasp present and future objective facts by means of conceptual representations. Our lived present is not even a fact, a single instant that we can think about separately from other instants. It is better described as one section of a trajectory that is necessarily larger than itself: all my experiences are lived as succeeding and preceding other experiences that are not directly accessible to my consciousness but that are implicated in it. Now, the way in which those absent pillars of my present consciousness appear to me depends on my particular situation. Every experience that I have is an experience of the immediate present that necessarily presupposes the consciousness of a double absence of past and future: there is no experience without an antecedent, except perhaps for a hypothetical “singularity” of which we are not aware in our adult life and which we could only theorize about<sup>44</sup>; and there is neither an experience without an anticipated consequence, we do not experience our own death – even if we plan it –, in natural circumstances our life fades out until it is no more<sup>45</sup>. In sum, time experience has no end and no beginning, it is an ever-constituting phenomenon. As Merleau-Ponty puts it:

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<sup>43</sup> I would have preferred to use “past” and “future” as exclusively referentialist notions of time, whereas their equivalents in the field of action and experience would be retention and protention. However, it is impossible to make this terminological decision coherent with the terminology in the literature I am using – including the authors of phenomenology –, so I prefer to retain the terms “past” and “future” remarking that their practical meaning is completely different from their semantic truth functional meaning.

<sup>44</sup> As I pointed out in the first chapter, anthropomorphism and, more particularly, adult anthropomorphism is unavoidable in the study of experience. If there is such a thing as the “singularity” of experience, the *primaevae* act of consciousness without an antecedent, we cannot understand it but from our own adult perspective. As Daniel Stern remarks regarding the study of early infant consciousness: “the subjective life of the adult, as self-narrated, is the main source of inference about the infant’s felt quality of social experience. A degree of circularity is unavoidable.” (Stern, 1998: 17)

<sup>45</sup> Ok, it is much more complicated than that, but concede me at least that the normal experience of an adult human being and the projected experience of this individual unto other experiencing animals normally involves the presence-absence structured as retention-immediate experience-protention. The limit cases of birth and death are just that: limit cases. Their complexity deserves a much deeper study, but that is not within my purposes in this thesis.

“Becoming and not being, not being ever constituted, is essential to time.” (Merleau-Ponty, 1945: 474)

Both aspects of rapidness and consciousness of absence combined lead us to the idea that time experience is in a continuous and rapid process of emergence. It is important to insist in viewing the present that we are talking about, not as an observed fact, but as a lived active experience so that we do not confuse the experience with the reflection about that experience. By focusing on how we move intentionally, it is easier to understand why our present is always thrown forward into the future and bootstrapped by our own past experiences. Furthermore, it is apparent that in our actions what counts as future and past depends on our present situation and on the manner in which we shape our actions: “Then, neither the past is past, nor the future is future. It only exists when a subjectivity comes to break the plenitude of the being in itself, to draw a perspective there, to introduce there the non-being. A past and a future gush forth when I extend towards them.” (Merleau-Ponty, 1945: 481) It is in my concrete situation that I “decide” what counts as past and as future, it is my immediate interest what defines and prefigures the past in order to shape future action: “We orient ourselves not with reference to the past which was a present within which the emergent appeared, but in such a restatement of the past as conditioning the future that we may control its reappearance.” (Mead, 2002: 46)

The past is not a set of stored events that I resort to by selecting the relevant ones given my current situation: it is the set of conditions that I agentively bring forth in order to shape my future. Of course, the emergence of the past in my present action depends on what actually took place before, that is, there is some irrevocable past that conditions the options I have at hand. But this conditioning is not deterministic: by bringing the past into the present, I am not following a causal line of succession, I am rather bringing forth a new situation. “The past is there conditioning the present and its passage into the future, but in the organization of tendencies embodied in one individual there may be an emergent which gives to these tendencies a structure which belongs only to the situation of that individual.” (Mead, 2002: 48) Being an agent means – among other things – being capable of shaping one’s own situation and, thereby, organizing our own past towards an intended future. This future-oriented organization has its own *desired* outcome and, consequently, a normative structure that allows to understand our own actions as successful or failed with respect to our intentions. In what follows, I will explore in-depth this normative structure of action.

### **3. Normativity and change**

#### **3.1. The normative presupposition in identity through change**

Following Adrian Cussins, I said in the previous section that meaning has been mostly restricted to semantic meaning, that is, to the understanding of the truth-value conditions of a proposition, but that there exist other possibilities for meaning related to action. In order to understand both semantic and practical meaning, Cussins uses the notion of representational content that involves both a mode of presentation and a normative property. In general terms, we can say that a norm is simply what measures something as successful or not. In the case of referential content, the normative property is related to truth conditions, and the relation between the content and its referent is conditioned by the role it plays in fixing the truth-

value of the expressions it belongs to. This is an a-temporal relation where the conditions of normativity are ontologically pre-determined and fixed. To restrict normativity to semantic truth-conditional normativity is connected to the restriction of the concept of norm to a set of pre-determined conceptual criteria of satisfaction, often explicitly expressed in the form of written or spoken rules, by which it is possible to evaluate something as right or wrong.

In the case of practical content, it is guided by what Cussins calls “mundane normativity,” and its conditions are in consonance with subjective, temporal conditions as those we explored in the last section. Unlike referential content, practical content is not determined by a fixed (cold) ontology but by an active (hot) engagement with the world: “the kind of normativity that we need [for direct active cognition] is a normativity of getting about well in the environment; that which permits being well-guided, or having efficacy, in the environment; *correctings* in activity rather than conditions of correctness, or that which permits affective sensitivity to ‘how things normally go on around here’” (Cussins, 2012: 26)

In connection with the problem of temporality that we are currently dealing with in this section, to get about well in the environment involves also to project our future actions according to our present situation and our antecedent conditions. We are agents that act autonomously in the determination of our own ends, and our actions are teleologically oriented and have conditions of efficacy (Korsgaard, 2009: 108). This efficacy is future-oriented in the sense that we expect our actions to be satisfactory and meet our own autonomous ends. In this sense, as Giovanna Colombetti puts it, “the organism is endogenously driven to explore the world, and during its exploratory activity it continuously anticipates sensory inputs and prepares for further action.” (Colombetti, 2013: 104)

To define the living individual as an agent means that it is not merely a flow or a process from which an individuated unity emerges spontaneously. *Living individuals, as agents, are defined by their practices, by the way in which they cope autonomously and efficaciously with their surrounding world.* As Heidegger recognized, we are not beings that store information and use it when we need to act, that is, we are not primarily passive receptors of information but rather beings who *care* about our surrounding world and, therefore, see it as something with a meaningful purpose: “my engaging coping with things is primary – things present themselves to me as governed by in-order-to relations, and the environment in which practical life takes place is essentially a “totality of involvements” (Bewandtnisganzheit) or network of such in-order-to relations.” (Crowell, 2001: 244)

That things be ordered to an end presupposes a transcendental background of unitary teleology. That is, the orientation of particular actions is subordinated to the possibility/necessity of ordering things to an end and that possibility/necessity is conditioned by our tendency as living beings to maintain our existence: a dog jumps in order to catch the ball, but it also jumps because it is what dogs do – because it is being itself in jumping, it is a way in which it actualizes its own individuality: to see the ball as an object in-order-to-which it is directed is part of what makes a dog the individual it is. This is not a mere instinct of survival and it is neither part of a life project that the dog has designed for itself by means of reflection. It is an autonomous realization of its own individuality constituted by the way the dog perceives the world, by how it *cares* about it, and how it can take the situations that surround it and transform them in order to make them part of its own individual history. In

order to understand better this point of caring, let me now return to an idea that will allow me to connect the current dissertation with what I explored at the beginning of the first chapter: the affective nature of individuality.

### 3.2. Affectivity, time, and normativity

Let us go back to the difference between a narrow and a wide conception of a rule. The former, as I pointed out, conceives normativity as the success or failure in meeting some pre-determined rules that are expressed conceptually, usually in the form of explicit prescriptions: “thou shalt not murder,” “thou shalt call ‘sheep’ that animal that bleats and eats grass,” and so on. Now, the normativity of action that we are exploring now is not guided by those presuppositions, it is guided by our felt experience, by our emotions: our assessment of the surrounding environment is emotional. Nonetheless, it is important not to transpose the normative procedure of explicit rules to the field of emotions: we do not assess the environment and then assign a definite emotion to that assessment. It is our emotions themselves the assessing factor. Our affective body tells us directly what can be right or wrong in our surrounding environment.

This is the idea behind Giovanna Colombetti’s theory of emotional assessment. She tells us that emotion theorists realized very early that the behaviourist picture of the organism as a mere system of response was wrong: “individuals respond not to stimuli per se but to *appraised* stimuli.” (Colombetti, 2013: 85) While this idea is powerful and gives us a very accurate picture of the relation between the organism and its environment, the studies in cognitive science still presupposed a separation between cognition, evaluation, and emotion that, in consequence, divided the process of stimulus assessment in a cognitive part (the perceived stimuli), a normative part (the assessment) – which is also cognitive to one point – and an emotional part (the affective reaction). The latter is particularly viewed as different from the other two: “Bodily arousal is typically an effect of appraisal that does not exert any causal power on it – it is a *by-product* of appraisal.” (Colombetti, 2010: 151) First of all, she resorts to enactive cognition in order to dispel the separation between cognition and assessment: “organisms, according to the enactive approach, continually evaluate the world in relation to their needs and purposes. In other words, from an enactive perspective, cognition in its simplest forms is already a form of appraisal.” (Colombetti, 2010: 101) This is in agreement with what we have insisted on focusing on the subject as an agent.

Now, the other wall that Colombetti wants to break is that between emotion and cognition in general, and her argument goes then one step further: if all cognition (at least all practical cognition) can be understood as a development of acts of assessment, then all assessments can be understood as emotional responses. The general division between cognition and emotion has been questioned by recent developments in neuropsychology that show the confluence between emotional and cognitive functions in areas like the amygdala. But then a new division needs to be broken down: the division between brain and body. The unity of emotion and cognition is not merely a problem that takes place in the central nervous system and then spreads to the body or receives inputs from it. Brain and body are part of the self-organizing system that constitutes the living individual: “the whole organism regulates itself via a close coupling of brain and body, in which each responds to the other in the service of the organism’s continuation.” (Colombetti, 2013: 103) Emotion is a faculty of the whole

body, it is not restricted to be a definite mental or physiological state, such as sadness or joy, but rather can be characterized “as the capacity that we share with other living systems to make sense of our environment in virtue of our being self-organizing and adaptive organisms.” (Colombetti, 2010: 150) The continuum between emotion, assessment, and cognition is sustained by the unity of the whole organism that in its having emotions assesses the world and by assessing its world gives it its meaning.

To unify emotion, cognition, and assessment in the organism implies that the cognitive assessment of the world expressed in emotions is not merely a felt sensation but also a movement or a disposition to move. “The experience of fear [for example] *is* at the same time an experience of danger, which is world oriented and evaluative.” (Colombetti, 2013: 109) This leads us back to the idea of practical content, that is, of meaning as action. What we perceive and evaluate is something that we act upon.

But, more basic than that, our assessment is something that we express by moving our own bodies in expressing affection. The movement that has a given direction – what I have already referred to as “taxis” – presupposes kinetic movements that are intrinsically connected to our experience. In other words, we have kinesthesia, experiences of undirected movement, before we know where is it good or bad to go in our environment. That is the idea behind Maxine Sheets-Johnstone’s motto that the “I move” precedes the “I can”. I explore the possibilities of my own body, I experience myself as being stressed, relaxed, at ease, and so on, before I can move confidently directed to or away from a given stimulus of my environment. “This dynamism [of kinesthesia] appears directly linked to that which orients us in our movements, that is, to the phenomena appearing in our sensory fields, and that in such a way that our energy is always focused on something, on what we are doing. I listen and I am stretched out in the direction of the lecturer. When I am writing, the energy of my sensory fields and the posture of my movement focus on what I am doing; that becomes the center.” (Sheets-Johnstone, 2011: 259) To stretch, to regulate my posture, to dispose my muscles to run, are all embodied emotions<sup>46</sup>, expressions of our self-affection that predispose us to move towards the surrounding world. The precedence of kinesis with respect to taxis that I mentioned earlier is here reconfirmed as the precedence of kinesthesia to directed response to environmental affordances.

Let us not lose sight from the aspect of temporality that is our main point in this chapter. Self-affection embraces the whole reality of our present time: we feel directly our whole body as a unity, and it is the quality of that feeling what configures our movement and, ultimately, our practices. We saw that the intentionality of time is structured as presence and absence. In this sense, our self-affection is somehow “a-temporal”: since the whole body is involved, there is nothing absent for it. My affection is not given to me as an object that I can direct my feelings to (there is no dualism between the feeling and what is felt), but it is somehow “pre-given” in a self-referential manner: “The feeling feels itself, it experiences itself, it is given to itself in such a manner that, through this being-given-to-itself that constitutes it, it appears to itself, not as given, but precisely as permanently already given to itself.” (Henry, 1963: 589) The future and the past *qua* feelings do not appear as absent, but as affections of absence. My present affection, referred to itself, encompasses the future and the past and expresses

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<sup>46</sup> Sheets-Johnstone actually would not use the term “embodied,” but I am still not dissuaded from using it.



them in bodily dispositions. The past can be a tension that I want to get rid of, the future can be a relaxed disposition of my body to the desired outcome, and so on. In self-affection I make the past and the future mine by appropriating my own bodily experience. It is in the unity of self-affection that the continuity of complex temporal states becomes a unified whole: the past and the future that are intentionally absent for my consciousness now become present in my affections, in what defines my incommunicable individuality (see Chapter 1).

But what motivates those particular dispositions, or at least their present actualization is my situation with respect to my surrounding world. The absence of the past and the absence of the future have an important asymmetry: the asymmetry between the irrevocable and the uncertain. In what remains of this chapter, I will try to describe the structure and the constitution of that asymmetry in a particular action. I will begin with the very possibility of adaptive change and then I will follow with the necessity of change for life.

### 3.3. The possibility of active change (adaptation)

We established that motor-intentional temporality “overcomes” circadian temporality by introducing rapid response and a presence-absence structure of temporality. I want now to connect this idea of motor-intentional temporality with the idea of dynamic individuation as a state of “neotenic” constitution that is in constant tension against thermodynamic equilibrium or material ultimate realization. What is implied in this dynamic conception is not only that it is possible for the system to change but also that it is necessary. To stop changing means death and, therefore, life needs a constant process of individuation in order not to surrender to the physical tendencies of its environment.

Physical change is perhaps the most apparent and common change in all living individuals. An organic whole is a complex unity, not only in terms of its static components but also in terms of its temporal development: what metabolic processes do is to transform the material composition of the individual in order to keep it alive. In doing so, the organism establishes a dialectical relation of needful freedom with the environment: it depends, for its own freedom and for the definition of its own differentiated identity, the elements of the environment that threaten that very identity. The components of the environment are transformed and the individual is in a constant exchange of matter and energy with its surrounding world. We have already explored those ideas in the preceding chapters.

Now, the problem with some interpretation of homeostatic metabolism – particularly, some interpretations of autopoiesis – might lead us to believe in some sort of physical discontinuity that is sustained by a subjacent functional invariability. An organism remains formally and functionally identical and all that changes is its material constitution, just like some kind of Theseus’s ship that is constantly changing its material part while conserving its form. This is a radical interpretation of formal unity that resembles the individuality of a candle flame and that can be easily refuted by simply pointing out the phenomenon of growth, something that is common to pretty much all living beings. But there is a much more sophisticated idea of homeostatic equilibrium and mechanistic hylomorphism that I want to address here: the idea of robust functional stability.

By the end of the last chapter, I promised that I would return eventually to the problem of the Zombie-Golem. In case you do not remember, it is a kind of monster that has some pre-determined instructions that guide its movements and that work as a guide for environmental feedback. Every time our monster finds noise in the environment, that is, every time it finds obstacles for following its original instructions, it will act in order to reduce that noise and to continue with its business. The point with that mental experiment is to show that it is possible to find complex changes in the materiality of the environment and still conserve some functional stability. The system uses some strategies to assimilate the environment to its original form. But that form itself remains unchanged and unquestioned. Nothing of this is new for those who have been reading this thesis, but let us now charge against this particular problem and to show a more radical notion of change involved in the idea of transductive individuation.

The normativity of machine-like structures is easy to describe since the goals are already determined by the designer or the user. I know what a coffee machine is for, and it would be easy for me to identify if it works or not. Even a more complex machine, capable of assimilating the complex changes in the environment – like a homeostat or a Turing-test machine with a huge database capable of anticipating millions of possible questions – remains invariable in its goals and with a pre-determined course of action. This is precisely where Simondon traces the limit between organisms and artefacts (a limit that we have already explored from various points of view): “the automaton can only adapt in a convergent way to a set of conditions by gradually reducing the distance that exists between its action and the predetermined end; but it does not invent and does not discover goals in the course of its action because it does not effect any real transduction – the transduction being the act of enlargement of a domain that is initially too restrained, an act that structures and expands itself gradually. Biological species are furnished with this capacity of transduction, thanks to which they can expand indefinitely.” (Simondon, 2013: 161)

A feedback mechanism – a designed machine capable of responding to a complex environment – changes only to reduce the disturbances from the environment, to reduce noise to a point in which action becomes ultimately unnecessary. It moves in order to stop moving at some point. The continuity of its actions is accidental and only in response to the disturbing inputs of the environment. This system can grow physically, but it does not grow in complexity. It remains as a *robust* system, as a system capable to resist and counter noisy inputs from the environment. In the case of the organism, growth is not only an augmentation of size but also an increasing set of possibilities of action. The organism adapts itself to the environmental cues, but it does not just return to an equilibrium point. It is able to create new conditions to respond to the disturbances of the environment: “Robustness implies endurance but not necessarily *adaptivity* which is a special manner of being tolerant to challenges by actively monitoring perturbations and compensating for their tendencies.” (Di Paolo, 2005: 437-438)

Although machines are exclusively robust, in living beings, robustness and adaptivity are not necessarily exclusive properties. In a very general sense, all living beings are robust because they tend to maintain their existence, not only by trying to remain alive but also by acting in accordance to some specific tendencies that define them as the animals they are, that is, they respond to particular situations as a dog would, or as a cat would, in accordance

to the regularities of the species. Debates aside, if we understand autopoiesis in a very general sense as an all-or-none condition, as the state of being alive or dead, that condition has to be robust so that other actions of the organism can be possible. However, this necessary robustness is not sufficient for defining, not only rapid responses and particular actions as we have seen, but also adaptive responses that create conditions that are preferable to others with respect to the animal well-being: “Only the subclass of autopoietic systems that are not just robust but also adaptive can we say that they possess enough operational mechanisms to distinguish the different implications of equally viable paths of encounters with the environment [...] a sense-making system requires apart from the norm given by self-construction, access to how it stands against the all-or-nothing barrier given by that norm.” (Di Paolo, 2005: 438)

In this sense, the organism is not only guided by what keeps it alive, but it also can create new norms of preferable situations and multi-valued selections. If the organism finds a way to cope better with the environment in a particular situation, it can also make that particular outcome a guide for future interactions: “by re-establishing an adapted state, possibly through the simultaneous repair of adaptive processes and change in the range and kind of acceptable relations with the environment, a successful cure may well *re-define* rather than simply *restore* the organism’s own normativity.” (Di Paolo, 2005: 440) This is how a linear perspective of time emerges from the point of view of adaptivity and how retentions are configured in the history of the organism: adaptations that are successful produce new norms that prefigure future actions. “The form of adaptivity is such that a given state always pre-shapes the next one without fully specifying it.” (Di Paolo, 2005: 444)

To adapt is to create norms and, thereby, to grow in complexity. It is also to create a history for the organism, an asymmetry between what has worked – or what has failed – in the past and what appears uncertain in the future. I will explore that in-depth when I get to the section about habits and habituation. For now, we have at least understood that homeostatic robustness – and, consequently, circadian temporal regulation – is certainly a necessary condition for individuality but it is not all that there is. The organism is a complex whole also in its normative dimension. There exists the possibility of having conflicting norms, conflicting goals and different values from which the organism has to choose in a given situation: “Without this possibility, that is, if all organismic values were the result of a unique value-generating process, i.e., a unique organismic identity, inner conflict would never arise and every disharmony of values experienced by an individual would originate only in the clash with the values of others.” (Di Paolo, 2005: 447)

Now that we have given a normative value to the past in the form of “sedimented” adaptations that work as guides for future action, let us now explore the possibility of normativity for the future. Not only organisms are not exclusively robust and can change in order to generate new rules. Moreover, change is in itself an improving factor. If fragile systems break down when confronted to change and robust systems resist change by maintaining their initial conditions, there is a third possibility in this relationship between the system and the unexpected changes: antifragility.

### 3.4. Antifragility: change “for the better”

As I have said in various passages of this thesis, a living body is primarily self-affective, it feels its own movement and its own emotions “before” it can intentionally direct to the outside world. I feel stressed or relaxed before I feel attracted or repulsed by things. I have a certain affective disposition of movement that prefigures my actual movement. One common source of the experience of tension in action is uncertainty. When facing the future, I experience a sense of risk that sometimes restrain my movement. However, it is important to overcome the tension and embrace risk if the organism is willing to expand its horizons, and thereby, its freedom of action. The quality of getting stronger when facing stressful situations is what Nassim Taleb has called “antifragility.” This concept shows that change is not only possible and even necessary for the organism to remain alive but also that it is a positive life enhancer. However, it also shows the normative limits of change and the interaction between robustness and fragility. “Typically, the natural – the biological – is both antifragile and fragile, depending on the source (and the range) of variation. A human body can benefit from stressors (to get stronger), but only to a point.” (Taleb, 2016: 54) Let us begin with the problem of limits.

As Patricia Schulte points out, the literature in biology still is wanting a precise definition of stress. There is, however, a consensus that the concept refers to something related to the organism’s response to changes in the environment in order to restore homeostasis. Within this background, Schulte proposes a definition that focuses on the relational nature of the phenomenon: stress is the intervening process between the stressor and the physiological response (Schulte, 2014: 24). This definition also allows for a generalization. Usually, stress is understood in relation to the glucocorticoid release, which is a physiological response typical of vertebrates. But now it can be seen as a general organismic response, even at the level of invertebrate organisms. Nonetheless, stress responses are not merely homeostatic, they are rather allostatic or, as I defined it earlier, homeodynamic – that is, they are processes in which the system achieves stability by changing. The limits of stressful responses are defined by the ratio between the demands of the stressor and the energy supply of the organism: “‘Allostatic overload’ is the point at which the animal starts to suffer serious negative physiological consequences as a result of the activation of allostatic mechanisms.” (Schulte, 2014: 24) In other words: if the organism’s response exceeds its sources of energy, it may lead to inadequate responses and even to dangerous situations for the organism. It is not always possible to adapt to the demands of the stressors.

Schulte proposes to understand stress in a broad evolutionary sense as an environmental condition that affects negatively the performance of the individuals of a given species. It is thus a condition that applies to general populations and not to individuals and that, therefore, can only be overcome by variations in the whole population. In those variations, the system can adapt in the long run to stressful environments and they can “learn” to perform successfully given their phenotypical possibilities of adaptation and possibilities. However, I think that we can understand also this process – at least metaphorically – at the level of individual behaviour. Furthermore, even if it is true that stress can affect performance negatively and perhaps lead to “allostatic overload,” I think that it can also lead, within certain limits, to an improvement in performance. This is where the concept of antifragility enters the picture. Let us conserve the general relational definition of stress and let us keep

in mind the limits of allostatic overload and underperformance so that we can understand better this novel idea.

With the idea of adaptivity we established that the system creates its own rules as retentions that guide future action. But given that we are not in a referentialist background with conceptual concepts, how are these rules learned? How it is that the organism can use the information obtained by its interaction with the environment and translate it into a guide for action? Furthermore, how does it acquire that information in the first place? By facing risky situations is the answer, by stress: “your body gets information about the environment not through your logical apparatus, your intelligence and ability to reason, compute, and calculate, but through stress, via hormones or other messengers we haven’t discovered yet.” (Taleb, 2016: 56) It is the tension produced by the changing situation in the environment and the response of the individual organism that creates the information to be interpreted. It is in this tension that the ‘surplus’ of meaning emerges, it is precariousness what triggers the search for meaning (see Weber & Varela, 2002). There are, of course, some innate patterns of movement and guides for action that somehow work as the basis for the initial responses of the organism. The specific response that works as the general background for the identity of the individual is at work in this initial framework. But only in the interaction with the environment does the organism transcends these original rules and enriches its own possibilities.

When the organism throws itself into the uncertain, into the “protented” action, it has a set of rules as a basis. However, these rules do not work in a deductive manner, they do not produce necessary consequences but only give some general criteria to face uncertainty. When some stressor situation appears in the environment, the organism’s response is a tension that make performance more difficult than in normal situations. The available strategies to face uncertainty are not enough to assimilate the environment and the organism is forced to act in spite of the risk and the tension resulting from it. It is then that the action of the system, the change of rules can enhance its own future possibilities. When faced with new situations, the system learns to deal with them and enlarges the probability for future successful responses. In fact, it is usual that the system naturally overreacts in order to anticipate uncertainty: “A system that overcompensates is necessarily in overshooting mode, building extra capacity and strength in anticipation of a worse outcome and in response to information about the possibility of a hazard.” (Taleb, 2016: 45) It is this overreaction what makes the system grow in complexity and what also gives it more freedom.

Here, the dialectical tension between surpassing the capacity of response of the system and underusing that capacity is apparent. Extremely stressful situations can make the organism collapse because they demand more resources than those it has at hand. But the absence of manageable stressful situations also hinders the growth of the organism and makes it more vulnerable to unexpected challenges. It is only those stressful interactions that the system can respond to by recovering and creating new grounds for future actions what count as antifragile. If the stressor surpasses the capacities of the system, it ends up being damaged. The system is in constant tension between avoiding the Scylla of inaction and the Charybdis of overload.

Another interesting point of antifragility is that it is relative to what counts as a whole system and it depends on the hierarchy of fragile units of the system in order to work. “So antifragility gets a bit more intricate – and more interesting – in the presence of layers and hierarchies. A natural organism is not a single, final unit; it is composed of subunits and itself may be the subunit of some larger collective.” (Taleb, 2016: 65) To face a risk and to respond to a stressor situation usually involves the destruction of some subunits of the system in order to enhance others. At the level of supraorganic systems such as populations or societies, it is necessary for some individuals to risk and lose so that others can win. A very basic fact like reproducing and taking care of the offspring shows that biological individuals can put in risk their own individual lives in order to meet specific ends. But, since our focus is the biological individual, and particularly the living individual understood as an agent defined by its practices, I will focus on the fragility-antifragility hierarchization at that level in that perspective.

The constitution of rules for action is not an accumulative and unidirectional process. As I mentioned earlier, there are conflicts among different systems of normativity: I can, for example, postpone my metabolic needs in order to meet my reproductive goals. In a less general sense, I can learn some rules for action that remain sedimented as retentions that guide me in my future interactions. Those rules are the unities that constitute my practical individuality. In this sense, it is possible that some new rules enter into conflict with other rules already sedimented. The process of antifragility demands that I ‘unlearn’ the weakest patterns of behaviour, the most fragile rules, in order to give place to new strategies for coping with the environment. There are lots of criteria for normativity that go far beyond the dichotomy between “harmful” and “helpful,” and there can be inner conflicts among those criteria in order to “decide” which one is to survive the antifragile adaptation. What is anticipated as harmful by some particular adaptation can become helpful by other adaptation that has more force. If all rules in conflict were equally strong, it would be almost impossible for the system to grow in complexity and generate new rules. All its norms would have to be consistent irrespective of the situation and the demands of the environment, and that is a very difficult criterion to meet.

What this teaches us is that not only the past prefigures the future but also the future modifies the past by offering us situations that demand radical responses and anticipations that break with pre-established rules that might have worked in other situations but are not fit for the situation at hand. The tension between inactivity and overload keeps the system in a constant process of individuation and self-improvement but within certain limits. It cannot underperform or overperform according to the boundaries of its own individual capacities. The linearity of time is not a perpetual advance into the unknown and the more complex, it is rather a reiteration or a revision of the actions that have worked in the past.

As long as we can exploit our capacities without exceeding them, we can remain confident that we are doing good in the game of life. In spite of the necessity for change and novelty in the system, there is always a search for stability that allows us to appropriate normatively our environment, that is, that allows us to identify properly what is good and what is wrong, that tells us with some degree of certainty whether a given action would be successful or not. The limits of antifragility are not only given by the physical capacities of the system to respond to stressors but also by the cognitive capacities of the system that allow it to regulate its

environment, to identify the possibilities of the surrounding world. There are extremely complex situations that we cannot anticipate no matter how we overreact. There is where we trace some normative limits according to the possibilities of our own bodies and of the meaning that we can assign to our surrounding world. There is a need for space where I can feel confident, a space of familiarity that guarantees to some extent my anticipations.

### 3.5. The familiar environment

I have talked about stressors and how they, within some limits, help in making the organism better fit to anticipate and deal with uncertainty. Now, the organism is not all the time facing extreme situations to which it has to respond by modifying its own learned adaptations. Radical changes in the process of individuation are rather rare and demand a rate of energy that can exceed the limits of the organism. Actually, the organism tends, if not to strict homeostasis, at least to some state of familiarity where it can unload the tension of “thinking” or projecting what to do next. Innate mechanisms and learned adaptations normally work for a long time and do not need constant revision. Facing an extremely challenging stressor, or what Taleb calls a “Black Swan,” is not only rare but undesirable, and the organism will tend to avoid those situations precisely by establishing a better system of anticipations.

Charles Sanders Peirce illustrated this situation with his definition of the concept of belief. Though he is usually interested in the field of logic and scientific creation – a field that surpasses the theme of this thesis – his pragmatist project attempts to ground even the most abstract activities of the mind in the practical dealings of the individual with its environment. For him, “there is no distinction of meaning so fine as to consist in anything but a possible difference of practice.” (CP, 5.400)<sup>47</sup> This is why his definition of the concept of “belief” is so wide that it can apply both to the pre-conceptual and to the conceptual practice. Thus, he focuses on the idea that “our beliefs guide our desires and shape our actions.” (W3, 247) and, therefore, takes the action as the criterion to identify what really counts as a belief and what is its nature. Beliefs are the background that help us to carry out our actions, the ground for concrete practice.

Doubt is the opposite of belief but, again, it is not just simply a mental state, a theoretical reflection on the possible logical inconsistencies of the objective, observed world. If belief is what promotes action, doubt is what hampers it. In terms of bodily experience, a belief is a state of easiness that makes bodily movement flow, while a doubt is a state of tension that intensifies the demand for energy from our bodies. This is why we have a tendency to get rid of the former state: “Doubt is an uneasy and dissatisfied state from which we struggle to free ourselves and pass into the state of belief; while the latter is a calm and satisfactory state which we do not wish to avoid, or to change to a belief in anything else.” (CP, 5.372). There is a kind of inertia that drive us to remain in a state of familiar belief and to keep the sources of our anticipations unmoved. “Thought in action has for its only possible motive the attainment of thought at rest; and whatever does not refer to belief is no part of the thought itself.” (CP, 5.397) That tendency ends up leading to inactivity and this is where the tension arises against the need for action and resolution that we as antifragile organisms have. There we have another way to express the tension: if the system has no “doubts” it cannot grow in

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<sup>47</sup> I am using here the classical edition of *The Collected Papers of Charles S. Peirce* (Peirce, 1958)

freedom and becomes too fragile to anticipate unexpected outcomes, but if the system has no firm “beliefs” it will end up overloaded by the amount of energy that it requires to solve the problems specified by the environment.

Beliefs are then a way to deal with our situation as individuals in the world. However, that situation always remains precarious because the world is always too complex to handle. Solving a particular problem requires tools that bring on new more complex problems. Our future projections, our protentions, cannot achieve a state of complete satisfaction at least while we remain alive. Once more we are facing a paradox: we want to solve problems and, in order to do so, we have to create new ones. The background of our beliefs – according to Peirce’s definition – allows us to have some strategies that can work to a point and that we will keep conservatively unless the weight of the doubt is too heavy to ignore. But how exactly are those strategies sedimented in our behaviour? How do we acquire the system of “beliefs” that allows us to feel comfortable for action? The key to answering these questions lies in the concept of habit: “The essence of belief is the establishment of a habit, and different beliefs are distinguished by the different mode of action to which they give rise.” (CP, 5.398) What we have been talking about up till now regarding temporal identity can be synthesized with that concept. It is there that the dialectics of change and identity is expressed and it is there where the individual identity through time really lies. As Clare Carlisle puts it:

“The principle of habit involves both constancy and change. On the one hand, it is through habit that beings – whether human, animal, vegetal or mineral – hold their shape through time; they *remain the same* (or approximately the same) even in movement, for they repeatedly follow certain patterns and sequences. In this way, habit forms part of an individual’s stable identity – and it may even constitute this identity. On the other hand, we can acquire habits only because we are changed by our actions and experiences. Habits develop when a repeated change, such as a movement or a sensation, *makes a difference* to a being’s constitution.” (Carlisle, 2014: 17)

Let me go deeper into that concept.

### 3.6. Habits

The key to understand habit is repetition. Strategies are sedimented in our behaviour because they are the product of meaningful repetition. We are faced with a stressor and solve the problem at hand by acting in a certain way. This action, this particular pattern of movement is repeated in similar situations and, if successful, it increases its probabilities of being sedimented in our bodily memory. This might lead us to consider habit in two apparently inconsistent ways: it is either a mindless repetition that shrinks the agency of the individual and replaces it with automatic, mechanical movements; or it is the ground of free action without which agency itself would be impossible. As we have made with past dilemmas, this one is solved neither by choosing one of the horns, neglecting the other, nor by a Gordian cut that ignores the problem altogether. It is solved by keeping the tension between the extremes. In this case, we need to understand habit both as a factor in leading the individual to inaction and meaninglessness but also as the ground for every meaningful response to the environment. Habit both conceals meaning but it also makes meaning possible. It is, as



Carlisle puts it, a kind of *pharmakon* that can be both healthy and poisonous depending on the situation and the dose.

Before understanding how the aforementioned tension takes part in the constitution of habits, it is important to understand two forms of repetition: active and passive. We can get habituated to something because we are exposed repeatedly to it – for example, when we get used to the weather of the place we live in – or we can get habits by acting repeatedly upon something – for example, when we look for food every day at a certain spot that we found once and now reckon as a safe source of supplies. In both cases, the constitution of habit involves an openness to incorporate the repetition in our system of practical beliefs (again, we are using Peirce’s definition here), and also a resistance to change that prevents our habits from slipping away and guarantees future repetition. Both active and passive repetitions make part of our system of habits and they are layered in our experience. But it is in active repetition that our agency is involved and that is why I want to focus on it.

In order to act autonomously, we need a firm ground of belief that allows our body to move confidently. As a system of beliefs, habit is also the foundation for future action. It constitutes the retentive phase of our present situation and it is the ground from which we project into future action, for our protentions and our “overreactions” to unexpected situations: “the identity of a habit depends on how it might lead us to act, not merely under such circumstances as are likely to arise, but under such as might possibly occur, no matter how improbable they may be.” (CP, 5.400)<sup>48</sup> But, as I mentioned in the last paragraph, habits can also be the result of actions. Although there exist some instinctual bases that might work as a normative basis for behaviour, it is the active capacity for constituting habits what makes an individual more distinct and, thereby, freer. Habit can work as a criterion to distinguish different species but also to establish different degrees of individuality: “A habit of growth, amongst other features, distinguishes the rhododendron from the clematis, and similarly a habit of migration distinguishes one species of bird from another. But in the case of those organisms which have managed to flourish within and adapt to different environments, habits are more specific to breeds, tribes and communities [...] It seems, then, that although the concept of habit applies to a very broad range of beings, habit itself develops in the case of more sophisticated and highly functioning animals.” (Carlisle, 2014: 14) If the species is the form of the individual, and if we understand this specific form as a basis and a result of habit, we can then overcome the idea of form as a pre-established static determinant of material individuation and understand how it is constituted also in the concrete life of the individual. The idea of basis both as the source and the product of action is what makes it not only a dialectical process but also a circular one: habits are self-perpetuating (Carlisle, 2014: 7), they make action possible and are enhanced by action itself. Though habit depends on constancy and repetition, it is not a passive assimilation to a static form: it is a dynamical and ever-renewing process.

Carlisle also quotes Hegel to refer to the idea of habit as a “second nature,” which helps us to understand better the dialectics of habit as an obstacle and a condition of freedom: “In habit the human being's mode of existence is 'natural', and for that reason not free; but still free, so far as the merely natural phase of feeling is by habit reduced to a mere being of his,

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<sup>48</sup> As I will clarify later, the variation of the circumstances has some limits in the practical domain.

and he is no longer involuntarily attracted or repelled by it, and so no longer interested, occupied or dependent with regard to it." (Hegel quoted in Carlisle, 2014: 16) Habit is a constraint but it is *my* constraint. It reduces my autonomous action but it also depends on my autonomous re-actualization and confirmation of it. Even it can make the strange familiar and the familiar strange: "Habit is a principle of nature, albeit one that pushes beyond the boundaries of the natural, and so tests the distinction between nature and culture or artifice. Habit can normalize the artificial, and make what is natural strange and uncomfortable." (Carlisle, 2014: 16-17)

Repetition also creates a new tension between active engagement with the world and passive affectivity of it. The more we repeat an action, the more we find ourselves in a similar situation, the easier it gets for us to act. But with repetition we also lose the element of novelty that makes the situation something that affects us vividly. This might lead to a kind of "automatization" where our subjective involvement diminishes – without ever disappearing - and our responses might fall out of our control. That is what makes doubt even more uncomfortable and difficult to deal with: we are not only trying to incorporate a novel problem from the environment but we are also trying to block an automatic response that is not working. This is why it is so important that some habits or basic beliefs be fragile so that we can discard them when they are not useful. The affirmation of our own subjectivity, the enhancement of our freedom via antifragility is not only a struggle against the external world but also against our sedimented habits without losing ourselves completely. Dewey defines this property of being fragile and robust at the same time as plasticity: "the possession of a structure weak enough to yield to an influence, but strong enough not to yield all at once." (Dewey quoted in Carlisle, 2014: 21)

As usual, I have to insist here in that we should not miss the point of temporality in our current exposition. Habit, as the constituent factor of retentions is the embodied equivalent of memory: "Habit makes us historical beings - and in this respect it is very different from memory. If memory is an image of the past, habit is the past's repetition in the present. Our habits are not souvenirs, but the living embodiment of our history. Habit is a forgetful appropriation and retention of the past: the dark, vibrant underside of memory." (Carlisle, 2014: 25) It works the same way for imagination or future projection: in habit I can identify my situation as typical and anticipate what will happen. It is habit what replaces representations of the past and the future and enacts them in present action. Our immediate experience is the actualization of habit, the repetition of something already learned or the struggle to acquire new habits. The present is what exists and the past and the future appear as absent and sedimented by our habits. Those habits are also expressed and felt in our own bodily affects. Effort, stress, automatization, looseness, all those are experiences sedimented by habit and emergent from our contact with the external world.

But how are those habits actualized? Are they exclusively bodily sensations or learned bodily dispositions? And how are they actually sedimented in our individual history? Do they remain stored in our brains, in our bodily memory? In the last section of this work, I will introduce one more dialectical relation. This time I will deepen the dialectics between organism and environment and will see how to make sense of our world is also a way to make sense of ourselves. Habits are (literally!) materialized in our surrounding world, when we inhabit it, when we transform it into a habitat.

## 4. In-habiting the world: the constitution of familiarity

### 4.1. The materiality of the world

I have written of the world in very general terms: as an essentially distant phenomenon, as the “other” in the dialectics of needful freedom, as the space where we move and perceive things, as the place where I can find stressors, etc. Now it is time to address the world as a meaningful environment, as the starting point and the end of our individual practices. If we start from the active subject, the other point in the dialectics of constitution is the *material* world. That is, I do not understand the world as an idea or mental representation, neither merely as the result of intentional action. I understand it as an independent reality that can be modified by the subject but also establishes conditions and possibilities for those very processes of transformation. The reality of this material world puts the subject in a situation of precariousness – something that I have mentioned before – which threatens its own existence and also boosts its creativity and even makes possible its own life. By saying this, I am only repeating what I myself have already said throughout this work, so let us be more concrete about what do I mean specifically by materiality.

Paul Carlile and his colleagues define materiality starting from the conventional definition offered by the Oxford English Dictionary (OED) and interpreting in such a way that it can correspond to a framework of practices and organizations. The first meaning of “material” according to the OED is “the quality of being composed of matter; material existence, solidity.”<sup>49</sup>, Carlile and his colleagues take this as a reference to what we can do with things, with things as made of tangible stuff. In this sense, materiality means affordances, that is, it means the limits and possibilities that the world offers to our actions. Though in this case, materiality is a relational property, there is more weight on the manipulated world, not in the agent: “while the idea of affordance cuts across the subjective/objective barrier and introduces the idea that the actor and the environment make an inseparable pair, it also highlights the importance of “stuff” in structuring our world.” (Carlile, Nicolini, Langley, & Tsoukas, 2013: 4) Thus, the materiality of our surrounding world is, in this first sense, the different kinds of stuff that can open to us depending on their independent structure. We can decide to work with wood or to walk on the pavement, but we cannot decide the hardness of the wood or the solidity of the pavement.

The second meaning of “material”, according to the OED is the opposite of formal. Here the authors interpret it as what is concrete, what is instantiated in a definite situation. This does not necessarily refer to the “stuff” the object is made of but rather to how it is a constituent of the activity of some individual or group. It is in this meaning that we can identify, not the general affordances that the environment offers, but the concrete intervention upon the environmental affordances, the actualization of the possibilities that the world horizon offers to us. It is in this concreteness that the uncertainty and the risk take place as concrete experiences.

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<sup>49</sup> All the definitions of the OED quoted here are taken from the article of Carlile and colleagues (Carlile et al., 2013)

The third and last meaning of “material” has to do with consequentiality and significance. This is a meaning in which the subjective has more weight. It is related to what we care about, what *matters* to us. It is related to the world of values and the normativity of actions. Beyond affordances and concrete actions, this perspective of materiality qualifies actions and affordances as desirable or undesirable, as successful or failed.

The three concepts are inevitably intertwined and cannot be analysed as completely separate parts. However, I will try to present materiality from three points of view, each one emphasizing one aspect at a time while keeping the other two in the background. In the case of affordances, I will explore the constitution of possibilities in the environment and what is the particular materiality (or materials) of the external world. Regarding particular action, I will expose an “embodied” conception of abduction and will try to understand the retention-protection structure as a risky novelty that actualizes habits and also goes beyond them sometimes. Last, I will take the notion of normative assessment as the ground of a familiar world, of a habitat in which the organism is at home and in which all that is good and wrong is guaranteed. Here I will also explore the transition from kinesis to taxis. Once I have explored these three aspects of materiality, my last point is to connect this reflection with the idea of living individuality both in its temporal and its spatial dimensions.

#### 4.2. Affordances and the material world

The material conditions of the world are usually neglected in the analysis of consciousness. One reason for this is the very idea of materiality that we have inherited from modernity and that is reflected in the study of physics. Our conceptual tools to understand matter are abstract and usually referred to what is extremely big – astrophysics – or what is extremely small – microphysics. The objects of our consciousness and, more generally, the objects of our daily lives are uninteresting from the point of view of those who study galaxies or those who study particles. Trees, rivers, mountains, etc., are not the objects of general physics. If they happen to be, it is just as an instance of more general laws of matter.

When we think of stuff in our daily experience, we do not think about atomic weight, main astral sequences, spin, and so on. We think about things being heavy, soft, warm, cold, edible, movable, in short, we think about what James J. Gibson popularized as *affordances* of things. These properties depend to an “intermediate” field of physics that refers not to the immense nor to the minute but to what corresponds to the size of living beings. It is a world of objects relative to the organism that perceives and behaves toward it. The description that Gibson gives of what are affordances is sometime confuse. There are passages where he emphatically says that “the environment does not depend of the organism for its existence” (Gibson, 1986: 129), and opposes to the idea of a subjective world for the organism. There are also other numerous instances where he understands the idea of affordance as a relational concept that involves the existence of both the organism and its material correlate. Let us try to understand this supposed confusion in a critical manner.

Gibson offers some concepts and descriptions to understand the material world of the organism or the environment – as opposed to the material world of physics. In general terms, it is necessary that the material world has a plastic structure that includes both stability and change: “A wholly invariant environment, unchanging in all parts and motionless, would be

completely rigid and obviously would no longer be an environment. In fact, there would be neither animals nor plants. At the other extreme, an environment that was changing in all parts and was wholly variant, consisting only of swirling clouds of matter, would also not be an environment. In both extreme cases there would be space, time, matter, and energy, but there would be no habitat.” (Gibson, 1986: 14) Now, when we try to understand this plastic structure, we can have two main groups of properties. On the one hand, Gibson understands the properties of “environmental” matter as being solid, liquid, and gas (in physics there are more states, and they are understood intrinsically, as properties that have nothing to do with the organisms perceiving or acting upon them). On the other hand, he understands the structure of the environment as comprising medium, objects, and surfaces. The properties and the categories interact to configure a space where affordances are possible.

The medium, in general terms, allows the organism to move, to perceive information by transmitting light and sound waves, and makes some basic biological functions like breathing and eating possible. It is structured as gas or liquid so that it can allow movement and transparency. It also offers some general properties such as gravity that define the physical structure of the organism and determine its axis of reference for movement and perception in general. We usually ignore that vision, hearing, and movement depend on the physical structure of the world (at least in the case of vertebrates, and particularly, mammals). The physical qualities of oxygen, of water, of light, make possible our organic and cognitive functions. A very formalistic definition of the mind and its properties usually neglects this fact and understands perception as a purely algorithmic process whose physical instantiation is irrelevant. Even some “embodiment” theories ignore – maybe for reasons of methodology – the fact that a living body is not only a system of movements and sense-making but also, and especially, a material object in a material world that has to act in accordance to the laws of physics. We should not only recognize that all mental states are “somehow” materially instantiated. We have to recognize too that this material instantiation needs some basic conditions that can be described in the language of “intuitive” physics.

This same idea can be also shown in the concept of surface. A surface is the point of interaction between substances and media. We have not defined substances yet, but let us say for now that they are permanent, invariant, solid things that we find in the environment, unlike the medium which is usually in a liquid or gas state. The surface brings liquid/gas and solid into interaction and thus configures the double possibility of permanence and change that is necessary for cognition. This is evident in the case of the physical ground that the organisms walk upon. “It is the ground of their perception in behavior, both literally and figuratively. It is their surface of support.” (Gibson, 1986: 22) Surfaces absorb the light from the medium and make objects visible, it is also what gives sound vibrations their peculiar characteristics and what makes, in general, the objects accessible to the subjects.

Finally, the concept of substances is precisely where the concept of affordance emerges. Substances are more or less solid objects that show some invariants that can be identified and acted upon. As we saw in the second chapter, in the case of tactile experience, for example, some solidity and permanence of the object are necessary to identify it. Substances appear in our peri-personal space and are the pole of interaction towards which we are directed. With this concept, it is also possible to identify why Gibson did not want to recognize the subjective aspect of affordances. Let us quote him on the interactive nature of these qualities:

"An affordance points two ways, to the environment and to the observer. So does the information to specify an affordance. But this does not in the least imply separate realms of consciousness and matter, a psychophysical dualism. It says only that the information to specify the utilities of the environment is accompanied by information to specify the observer himself, his body, legs, hands, and mouth. This is only to reemphasize that exteroception is accompanied by proprioception - that to perceive the world is to coperceive oneself. That is wholly inconsistent with dualism in any form, either mind-matter dualism or mind-body dualism. The awareness of the world and of one's complementary relations to the world are not separable." (Gibson, 1986: 141)

What Gibson wants to avoid is the idea that affordances emerge as the imposition of a disembodied subject over an inert, meaningless matter. As if the physical valueless world were there and the immaterial mind intervenes to assign meaning. Affordances emerge in the interaction between our material mind and our material surroundings. They depend on the physical structure both of body and environment. What counts here as "subjective" and as "sense-maker" is also material. This is why Timothy Ingold questions the very concept of materiality: to affirm that there exists a whole dimension of matter would mean that there would also exist a subject that can characterize it as a totality by being "outside" of it. What there are for Ingold, and this is how he reads Gibson: "The surface of materiality, in short, is an illusion. We cannot touch it because it is not there. Like all other creatures, human beings do not exist on the 'other side' of materiality, but swim in an ocean of materials." (Ingold, 2011: 24)

However, while we can accept that the affordances and, in general, the meaningful aspects of the environment necessarily arise as the interaction between the material body of the organism and the material structure of the environment, we should not lose from sight that there exists an asymmetry between the subject capable of affectivity and meaning, and the object, which is a distant world that appears as the "non-subjective." The affordances are not in our minds and in our self-affective subjectivity. There is nothing in our inner exam that leads us to assign properties to the world without first interacting with it. However, that the world is *for* the organism, that it is *for* me and that I can assign some normative value to it depends on me being an individual essentially capable of being affected by the environment. As I established in the first chapter, we are essentially materially complex wholes, but what gives unity to that whole is the experiential capacity of feeling through it: I am a whole body not only because it is a complex composition but also because I can feel through my whole body and move my body as an agent. If affordances emerge in the interaction with the subject, a capacity for movement and for recognizing the values of this interaction is still necessary. There is indeed a physical interaction between the emergence of affordances, but it is more than that – or maybe we would have to re-define materiality so that it includes those chunks of matter capable of subjective experience.

In sum, the material conditions of our planet in particular make us the individuals we are in the environment where we exist. It is true that if there were no organisms, the medium, the surface, and the object as such would not exist at all. However, we can acknowledge that there are some pre-given physical conditions that are necessary for any living being to exist.

In fact, properties like permanence and change, solidity and plasticity, are also properties of our own material bodies and we could not exist as we are if not for the particular matter that we are made of. We move because there is a ground, but also because our bones and joints are sufficiently solid to resist and step on it. Our solid bodies, with their particular capacity of being affected by the world, move in a definitely structured environment and find therein the possibilities for their actions. Let us move now to see how this occurs in the case of concrete interactions with the environment.

#### 4.3. Transductive “proto-abductions”

Within the background of modern science, it was believed that physical events were caused by precedent conditions with a force of necessity. Nowadays we know that it is not a metaphysical necessity but rather a statistical regularity that reduces the probability of things being otherwise almost to null. In any case, the concepts of cause and effect are similar (though not identical) to the logical antecedent and consequent in an implication. Given the cause, the effect follows deterministically (or with probability so high that it is possible to make predictions). How is it possible then that in physical interactions the antecedent conditions generate uncertain results? On the other hand, we are also used to think of the mind as the seat of freedom, perhaps only restrained by the laws of classical logic. How can be our mind so certain of the contingent openness of the world? My mind can think without contradiction that the effect of my sneezing at 10:00 AM is an earthquake in Bogotá. If I can imagine and project things being completely different from what they are now, why are we so relatively sure of the future outcomes of the world?

Affordances are a basic form of cognition and they arise in the interaction of a physical body with its physical environment. They are part both of the world of the mental and the material but not as a separate mind that “animates” matter as we saw earlier. Affordances are not the implementation of a formula on a material token, neither do they represent a physical event expressed in the laws of physics. How is it then that this interaction generates emerging situations that are not necessarily contained in its original conditions and are also predictable to some extent? Answering this question demands understanding matter and mind very differently from how it has been understood in modern philosophy, but maybe in a sense that is closer to our everyday experience and, therefore, to our common use of those words.

The question about how something new emerges from antecedent conditions has been addressed by many philosophers in the modern era and is, according to Peirce, the defining problem of the science of logic. There are traditionally two methods to describe this emergence of new things from antecedent conditions: deduction and induction. In the former, the result is “already contained” in the conditions and therefore is obtained by necessity. In the latter, we have a statistically significant reiterations of the same conditions, which allow us to postulate a general law. Peirce proposes a new concept, abduction (or hypothesis), by which the general law and the result are known, and what we extract is the particular case. That is, if I see something and I know a general rule, I associate the general rule with the seen result and typify the observed thing within a general law: “By hypothesis, we conclude the existence of a fact quite different from anything observed, from which, according to known laws, something observed would necessarily result.” (CP, 2.636) In what follows, I do not intend to analyse the concept of abduction and its evolution in Peirce’s philosophy – which

is extremely complex and deserves a separate analysis – but will take it as it has been generally interpreted in philosophy of science. My idea is to contrast scientific modes of reasoning with practical syntheses of particular situations.

The context of theoretical science – where the concepts of deduction, induction, and abduction usually appear – is the referentialist context *par excellence*. The theoretical scientist is interested in determining what makes scientific propositions, particularly predictive ones, true. It is, therefore, important to work in this context with general concepts and objective methods of observation. What Peirce discovered with his proposal of hypotheses as the third method in obtaining scientific truths from other given facts was a rearrangement of the already established elements of scientific inquiry: general laws, cases, and results (CP, 2.626-2.630). The three elements can be expressed in propositional form and have an aspect of generality. Laws are universal, cases are types or subsets of universal laws, and results are observation propositions that belong to the logical space of reasoning. However, the pragmatist background of this theory and its developments allows for a “translation” into practice of these theoretical procedures: there can exist general principles of action, applied generalities in a definite context, and finally, concrete situations experienced in immediate perception. Let us develop this idea.

We have established before that successful adaptations become habits when we sediment them in our retentional history. Those habits constitute the guide for future action and are incorporated in our bodily experience by making our bodies more disposed to action when responding to habitual schemata. Habits are the “absent” element in the temporal experience of the immediate situation. What is present is our immediate experience itself, which is not a reflection on the current situation but a disposition to act. In this sense, habits can substitute somehow the “general laws” from which deductions are derived, while the immediate experience is parallel to the result expressed in observation sentences. Given that we have an analogue of these two elements, the one that is lacking is the case, which I will define here as the repeated experience. Let me explain.

In the first place – and in spite of authors like Peirce not bothering of making a clear distinction between both cases – habits are not universal laws. We have to remember that the normativity of propositional contents is their truth value. As long as there does not exist an inconsistency with other propositions accepted as true, a universal law can count as a true proposition. With habits, things do not work like that. In our practices, we are not interested in the truth value of our incorporated practices, we are rather interested in how in acting according to them we can successfully navigate the world around us and obtain the results that we are aiming at when moving intentionally.

Now, deduction can be used as a method of science because from the truth of certain laws we can successfully predict the truth of an observation sentence. But there is nothing like that in the context of practices. Not only there are no general laws in experience as such, but, even if we take habits as analogous to those, there is no possibility of extracting the analogue of results, namely immediate experiences. Immediate experiences are always present, they cannot be “deducted” because deduction is a predictive process that establishes necessary consequences from the antecedent laws. Immediate experiences cannot be predicted, they can only be lived. What we “predict” in practice, what we anticipate, is an absent state that



has resulted in the context of a habit. When I anticipate that biting the apple that I have in my hand will produce a sour-sweet flavour, my experience after biting the apple is not *present* to me right now: I anticipate sourness and sweetness based on past experiences (that are not present either as experiences but appear in my retentions) sedimented by habit, but in my present situation, those experiences do not appear as such. The conclusion of a scientific deduction is already contained in its premises, but the experience as such is not contained in the habit: I have to actually live the experience to know what it is like, I cannot predict it, I cannot bring the future to present without transforming the future itself into present experience. Deduction has no analogue in the field of experience.

It is the same in the case of induction. Induction depends on grouping a series of results, identify the case they belong to and extract from that grouping a general law. We are used to understanding induction as a passive process (maybe under the influence of Hume), but it can also be active, and that is the case in science. The researcher induces a law by repeating a given experiment, by isolating the relevant factors and modifying the “non-essential” conditions. Results are extracted from varying situations until we can establish a *ceteris paribus* principle that allows us to infer that the very same results will obtain in other contexts with a very high probability. Again, if the result is the analogous of the immediate experience, the inductive inference is impossible in the field of experience. I cannot group my experiences and assign them a quantitative frequency because what appears to me in the present is one unique experience. My past experiences appear in the present as absent and cannot be grouped in the same category with what I am experiencing now. Furthermore, I do not have the resource to an environmental modification in order to test whether the same result is obtained in different conditions. All I have to work with is my present experience in my immediate situation. There is no analogue to induction in experience either.

Finally, in the case of abduction, the scientist proposes a theory in order to accommodate the result observed within a general law. Usually, this is a resource the scientist uses when he finds a surprising fact and wants to interpret it under a rule that makes it obvious (see CP, 5.189). A surprising fact is usually a failure in the normal course of explanation that demands new hypotheses or the application of hypotheses already theorized. Surprises are unexpected but there is a tendency to regularize them in order to keep science working, and science usually works very well. So, we have a result (a single one or many) and try to subsume it under a given law. It is not a necessary inference, but it is the precedent of a normalized theory. If we keep trying to find an analogy, an “abduction” in experience would be a case of introducing an immediate experience within an established habit. It is my contention that there *is* an analogue to abduction in the case of experience. I will call it a “proto-abduction” for lack of a better name.

What arises here is the question about the analogue of the third element, the case. We know that habits and experiences correspond to laws and results. The case, let us remember, is a particular instance to which a rule can be applied. If I have it as a rule that all men are mortal, the Greeks are an instance of the class men: everything that I predicate of the men, I can also predicate of the Greek. Now, if I have general habit, a general rule of action that anticipates a certain outcome given an antecedent, what is the case? The case is the repeated experience, it is the re-presentation taken in a literal sense. What I do when I “proto-abduce” in a given situation is to recognize my current experience as *the same experience that I had before and*

*that led me to a successful course of action.* What motivates me is not a feeling of surprise but of astonishment: “In a world of becoming, even the ordinary, the mundane or the intuitive gives cause for astonishment – the kind of astonishment that comes from treasuring every moment, as if, in that moment, we were encountering the world for the first time, sensing its pulse, marvelling at its beauty, and wondering how such a world is possible.” (Ingold, 2011: 64) *My experience remains in its uniqueness and its novelty but it is also adjusted to the habitual. I live it as present, but recognize it as equal with an absent experience, I re-enact it, I take the past and re-present it in my present experience.* I also re-present the future, so that my immediate action can be safely anticipated.

The power of repeating is, therefore, what gives origin to habit and thereby to the experience of time in memory and imagined expectations. It is also the source of the immanent unity of our living body and, ultimately, the source of the individuality of our living existence. As Michel Henry puts it:

“The unity of our body is the feeling of immanence in all the modes of our concrete life of this power of producing and repeating, it is the *immediate experience* of this ontological power. Furthermore, this unity. Furthermore, this unity is that of ontological knowledge, it is in the latter and through it that the unity of the world is constituted; ontological knowledge is itself transcendental unity which is the foundation for and which, on the transcendental level itself, confers on each of our movements and our acts this characteristic whereby this movement or this act is lived by us as one and the same power whose exercise cannot be reduced to the determination of this act here, of this movement here, to the individuation of a knowledge whose being would be destined to disappear with time. In its original being our body eludes time, as does absolute subjectivity, it has no other relationship with time than that of constituting it.” (Henry, 1975: 99)

In my re-presenting the experience, I am not only repeating my habitual world but also repeating myself in action: a re-presentation in this case is not a picture in my head but a re-enacting of my habitual movements in my familiar environment. Unlike scientific abductions that infer cases in order to subsume concrete results under a general law, “proto-abductions” interpret current experience in the light of a history of sedimented habits. They are not the result of a formal inference but of a transductive process, of a historically self-constituted individuality. As expressed poetically by Kahlil Gibran: “You are your own forerunner, and the towers you have builded are but the foundation of your giant-self. And that self too shall be a foundation.” (Gibran, 1920: 7) It is in these proto-abductions that I “tame” my unique individual present and make it part of a familiar environment historically built. It is thus that my habits constitute a habitat and that my world-directed acts become acts of self-production.

#### 4.4. The familiar world and the habitat: from kinesis to taxis

Gibran tells us that the towers we have “builded” are the foundations of our giant-selves. I think that there is an interesting suggestion that complements the idea that we explored in the last section: my self grows giant not only because of the growth of my own physical body but also because of the things I build with it. In this last section, I want to explore this aspect of world-building. Our habits create habitats, we do not simply incorporate habits in our

individual bodies, but we also in-habit the surrounding world by making it familiar to us and by appropriating its affordances as possibilities for us. This is where we can recognize the environment not as a set of affordances that somehow is “waiting” for us to actualize it, but as an “Umwelt,” as a world that surrounds a given organism and becomes meaningful *for* this organism.

The concept of “Umwelt” or surrounding world was central in the philosophy of Jakob von Uexküll. He used it to describe the experience of the organism as opposed to the scientific experience. The latter works with “neutral” objects that are observed from an objective point of view and abstracting from their particular relations. “Because no animal ever plays the role of an observer, one may assert that they never enter into relationships with neutral objects. Through every relationship the neutral object is transformed into a meaning-carrier, the meaning of which is imprinted upon it by a subject.” (von Uexküll, 2009: 92) Here we find the problem that Gibson precisely wanted to avoid: the idea that subjectivity somehow “bestows” meaning upon the world. It is strange that von Uexküll says, at the same time, that the organism never enters into any relationship with neutral objects and immediately afterwards says that the subject imprints upon the neutral object a meaning. Let us try to clarify this confusing language.

The “neutral object” is an abstract entity to which certain true propositions regarding its physical structure can be assigned. The relationships that it can establish with other objects are merely accidental and do not belong to its original nature. Now, even if there are some objects whose nature is essentially relational (microparticles, for example), there is a kind of relationship that needs to be abstracted from the definition of every neutral object: the relations that emerge in concrete practice. Neutral objects are not *for* someone or *for* something. They are not *intended to do* anything. They are just there as facts. It is possible to describe a concrete practice with the language of facts – for example, pointing out at the mass of the bodies involved, their weight, their velocity, their chemical composition, etc. – but it is impossible to make these descriptions of practices *qua* practices, that is, *qua* meaningful interactions that carry a definite meaning. To “imprint meaning upon” a neutral object is not to modify something that is there by some sort of magical blow, but to see things from a different perspective. Or rather, to see things from a perspective at all, to assign them a meaning, an objective, a subjective quality, an *Ich-Ton* – a subjective tone – as von Uexküll called it. Moreover, this is not even a question of levels of description but of kinds of experience: objects are not neutral because I am engaged with them, I am being *affected* by them and I also intend to transform them according to a definite finality. To have an object in view in my practice means to *care about* that object and it is then that neutrality becomes impossible.

Now, in order to avoid an idealistic assignment of meaning from the subject to the object, von Uexküll points out the relational nature of meaning and uses repeatedly musical metaphors to illustrate it. “As the two parts of a duet must be composed in harmony – note for note, point for point – so in nature meaning-factors are related contrapuntally to meaning-utilizers.” (von Uexküll, 2009: 98) The affordances of the environment become real affordances when they enter into the world of concrete practice of the subject. The object becomes movable when I move it, it becomes edible when I eat it, etc. There are no affordances before there are organisms interacting with them. There might exist a world

structured in a way that allows for potential interactions, but they become concrete possibilities of action only in reference to a concrete living body with intentions and ends.

This leads us to the idea of constitution of affordances. Neither the objects are affordable *in se* nor do I have the anticipated results of my interactions with the environment already imprinted in my head. Before I know that something is actually edible, or pleasant, or disgusting, I have to interact with it. Of course, there are instincts and habits that re-present me the objects as having certain qualities so that I have some degree of confidence to interact with them. But there is always the risk of making a wrong “proto-abduction” and identify as “the same situation” something that demands a different response from what I have already tried before. There are also situations in which I am not sure about what to do next. Situations in which the astonishment is so great that the risk of re-presenting the situation in a certain way is extremely high and the action is so difficult to carry out that I try to avoid it.

This uncertainty is what defines the situation of wandering animals that are lost (not all those who wander are lost, the saying goes, but these ones are). Every movement is risky, the body is tensed and there is a high energy invested in identifying the details of the environment as well as trying to adjust the best bodily posture. This is the state of *doubt* as defined by Peirce: a state of irritation that we want to get rid of in order to return to a state of belief. It is only by taking the high risk of interacting with this environment and when we “register” the adequate responses and sediment them in our habits that the risk weakens and the movements become more fluid.

Rather than the subject imprinting meaning into the environment, meaning arises in the interaction with the environment. The organism learns to incorporate the possibilities of the objects around and these very objects open their own possibilities, their own horizons. It is by this interaction between an active body that takes risks and a structured world of possibilities that the world becomes progressively familiar and the risk – and the tension derived from it – reduces. This is where the undirected movement, the wandering kinesis becomes taxis: the organism now can direct its movements towards an object – or away from it – that has become familiar. It is thus that re-presentation becomes less uncertain and that it becomes easier to repeat past experiences in our present action. The world becomes my home, my world. The environment becomes part of my own history of interactions: I know that it has been there before as it is now, I know that I have already been there. I have made the world the object of my habits, it is my habitat where I can move confidently, where I can anticipate the outcomes without taking very high risks and without spending too much energy in registering every detail. A sense of astonishment and uniqueness of my own experience always remains, but every new experience emerges in a background of familiarity that allows me to direct more determinately my own movements. I am in my own habitat, my home, and it is a reflection of myself.

I want to finish by making a brief analysis of the concept of production in this context. The interaction from which meaning emerges and that is re-presented in every repeated experience is a productive creation of meaning, we produce meaning by in-habiting the world, by making it our home. As Timothy Ingold puts it: “Producers, both human and non-human, do not so much transform the world, impressing their preconceived designs upon the material substrate of nature, as play their part from within in the world’s transformation of

itself. Growing into the world, the world grows on them.” (Ingold, 2011: 6) This is the kind of production that is lost in contexts such as the industrial capitalist structure. Poiesis is understood, from Aristotle onwards, as the action that is directed to “other” and this gets to its extreme when the worker’s force is totally alienated in a product that does not make part of his own history. “For both Marx and Ortega, what we are, or what we can be, does not come ready made. We have, perpetually and never-endingly, to be making ourselves.” (Ingold, 2011: 7) To produce our own habitat, to build our own home of familiarity is to produce our own identity, it is there that we find a genuine auto-poiesis.

By extending our identity in our surrounding world, by materializing our habits in the objects around, we imprint on them our own history and, thereby, become able to recognize our temporal continuity in the temporal continuity of the surrounding objects. It is an extended autopoiesis of our living selves, not in the sense that the trees and the rivers become subjects of experience – we are still at the centre of active production, and the world remains as a distant “other” with potentially open horizons – but in the sense that they become part of our history. We recognize that they have been there before because we were with them before, we produced them as part of our own identity. We know what the objects are and how to move with respect to them because we can re-present what happens when we interact with them. The realization of my identity is the production of my environment by in-habiting it, by introducing in it the norms that guide my action and that allow me to repeat myself in a familiar environment of perpetual self-recognition. This is how I know that I am not an instance of experience but a historically constituted self that persists over time while remaining the same self-affective unity. Once again, the paradox of immediacy and permanence is solved by turning it into a tension: the tension that makes us living individuals.

## CONCLUSION

My intention in this thesis has been to offer an analysis of living individuality not privileging the conceptual metaphysical point of view but rather focusing on the existential-phenomenological description of the experience of being an individual. I have begun my description of individuality by proposing the self-referent – self-affective and self-moving – subject as the starting point, as the incommunicable instance of individuality that grounds all further characterizations of individuality. Immediately thereafter, I have remarked that this radical subjectivity is embodied in a material unity that has an internal composition whose stability is complex and precarious regarding the conditions of the surrounding physical world. By joining these two features of self-reference and complex unity in a continuum, I wanted to point out that the analysis of individuality cannot be completely carried out from the “first-person” nor from the “third-person” point of view. I begin with a theory of the self in order to reject all theories that pretend to do away with experience when dealing with the phenomenon of life. However, subjective analysis has its limits. As Merleau-Ponty famously noted in his review of the Husserlian notion of reduction, it teaches us that “in order to see the world and to grasp it as a paradox, it is necessary to break our familiarity with it and this break can only teach us the unmotivated eruption [jaillissement] of the world. The biggest lesson of reduction is the impossibility of a complete reduction” (Merleau-Ponty, 1945: viii) In other words, when we try to make a completely subjective description of our experience, the world “erupts” spontaneously and our only option is to include it in our descriptions.

This is what the paradox is about: in order to understand the meaning of our self-referential subjectivity, in order to make sense of our immediate experiences in the present, it is important to go “outside ourselves” and identify the external conditions of our own existence. Only humans can do that and it is only by a deeper analysis of our human condition that we can accomplish this task. This demands a serious consideration of the relationship between science and experience. Not only the analysis of experience demands some familiarity with the current state of science but - as Husserl emphatically stated by the end of his life - it is crucial to understand the role of experience in the foundations of science. Moreover, it is important to study other “mundane” determinations of our subjectivity beyond science, namely culture, politics, religion, and so on.

In the second chapter, I introduced the distinction between the inner and the outer that immediately follows from the self-affective material nature of the living individual. Being a complex material unity capable of self-reference means - for the living individual - also being a differentiated unity open to a world that both threatens and enables its own existence. Openness to the world results in a dialectical process of self-affirmation and dependence or, as Hans Jonas called it, needful freedom. It is here where the “quasi-paradoxes” that constitute living individuality are more apparent. I say “quasi” because they can be described more as a tension between two contradictions than actual contradictions, which are logically impossible. The subject and the world are both opposed to each other and co-dependent: life is precarious because it emerges in a physical world where its probabilities of existence are low but, in order to make those probabilities higher, it needs to interact constantly with that very physical environment. When the tension between the subject and the world ends, life

ends too, because it is defined precisely by the dialectical process of needful freedom. This is why it is important to understand the difference between the living subject that is capable of self-affection and self-movement and the world that follows its own physical laws. None of these poles can be reduced to the other as long as life takes place. By recognizing this tension, I think it is possible to reject both idealism and materialism - and also subjectivism and objectivism - in the conception of life.

But the world is not merely the opposite “other” that gives the individual its identity by means of differentiation. In the surrounding world, it is possible for the organism to find others with which it shares a common nature. Intersubjectivity is a new level of differentiation where the dialectics of needful freedom is complemented by a new dialectical process of identification and differentiation. It is a process that can be traced back to various animal forms that are capable of communication and joint action, but which gets to its more sophisticated phase at the level of the human being, who is capable not only to recognize other animated beings but also other individuals with a subjectivity of their own. The constitution of this intersubjective field is a very complex task but it is also an inescapable research project if one is willing to give a complete theory of living individuation and, particularly, human individuation. My aim was to give the basis of such a theory but, as I am trying to show, there is still a lot to do.

Finally, in the third chapter, I introduced a theory of temporal continuity of the individual that is rooted in the habits that emerge from its interaction with the environment. This is the most ambitious chapter of my thesis and here is where I synthesize my whole proposal. Given that the self-referent individual is the starting point of my research, the temporal nature of individuality is essentially “presentist” in the sense that it gives existential preeminence to the immediately present experience: the past and the future only exist as “absences” that co-appear in the present experience. Accordingly, the problem of identifying or integrating the past and future experiences with the present one - the problem of finding the “thread” that unites all punctual temporal instances of experience - makes no sense in this context: the present is all that exists and there is no such thing as a past or a future experience that is ontologically equal to what I am immediately living right now. It is important, nonetheless, not to mistake experiential presentism for semantic presentism. The conditions that make a proposition with temporal modalities true are not dealt with here and exceed the scope of my research. All I am saying is that our experience of the present is not at the same level as the other temporal experiences that appear as absent.

However, it is also important to keep in mind that “absence” here does not exactly mean “non-existence.” The past and the future do appear as conditioning elements without which the present experience would make no sense at all. Our present experience is “historically” conditioned. The things that I perceive, the environment where I move around, even my own body, they are all phenomena that I perceive as having a past and a future and it is in this recognition where the form of the things around me and my own movement is grounded.

Moreover, my surrounding world and my living body have a history that emerged from systematic repetition, from habits. I can cognize and recognize the things around me and, particularly, I can give them some value in order to guide my own navigation around them. Giving value, assessing the environment, are all ways of constituting the meaningful structure of the environment and they all depend on my power, not only to relate dialectically with my environment but especially, my power to *care about* the things I found therein. To possess

habits is to create patterns of meaningful relationships with the environment and also to assess the things around us and identify what do we care about. All these processes have a history, they refer to an absence that is nonetheless lived in our immediate present. This is another way to see clearly that it, in order to understand ourselves and our experience, it is necessary to transcend our own immediate subjectivity.

Inhabiting the world, that is, making sense of our surroundings by means of habits is what allow us to move around the space with a purpose and to identify particular objects as the target of our actions. However, this power of moving towards objects can have different degrees of complexity. The field of biosemiotics studies the biological structures of sense-making and the various layers of complexity in the recognition of the environment by analysing the semiotic elements involved in life processes (Favareau, 2009). The objects that guide my action are not simply immediate attractors or repellents that refer to beneficial or damaging results but they can also refer to other objects or other animals. Every habitat has its own complexity relative to the species or the material composition of the environment or the particular history of the individual. As I said, the habitat emerges in the dialectical relationship between the organism and the environment, but it also involves complex interactions between the organism with other organisms and between the objects among themselves and with the organisms.

Finally, I described the “specious present” that defines the immediate existence of the individual as a structure of practice that orients the movement of our bodies. The absent past and future are revealed in the familiarity with which we can recognize the surrounding environment and the easiness with which we can move our own bodies and anticipate the outcomes of our actions. However, in the particular case of human existence, the meaning of the world is not restricted to practical meaning. One of the features that define human language is displacement, that is, the possibility of referring to situations or things that are not present. While it is possible to identify this power in other animals such as bees or ravens, in the case of human beings, displacement does not necessarily lead to concrete action and can be still meaningful (see Montemayor, 2010). For example, the waggle dance of the bee is a guide for immediate action, but this is not always the case of human discourse. The powerful structure of language is an essential part of our identity, it is what allows us to build our personal histories and to relate with the history of other individuals or communities. Not only that, but we can also receive the meaningful narratives of past generations and bestow it to future ones thereby building a tradition and a living culture to which we belong and with which we identify ourselves.

Having said this, it is clear that my analysis in this thesis is far from a complete description of the living individual, let alone the human individual. Given the problems I have enumerated in this chapter, I think it is impossible to address a full theory on that topic in a single work. My point, nevertheless, was to set forth the minimal conditions for undertaking the task of describing the experience of being alive. The questions that remain on the horizon are extremely difficult and interesting and I reckon that there are lots of open possibilities for discussion. The whole point of this work is to remind those who want to explore that horizon of possibilities that they should not forget the minimal conditions of our individuality. The journey into the perennial questions that have perplexed philosophers for centuries should



begin, I believe, with a reminder of our humble origins as limited and precarious individuals struggling to stay alive.

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