THE THOUGHT OF PROCESS IN HEGEL AND WHITEHEAD: LIFE AND VITALITY

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

TOPRAK SEDA KARAOSMANOĞLU

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF ARTS
IN
THE DEPARTMENT OF PHILOSOPHY

OCTOBER 2020

Approval of the thesis:

THE THOUGHT OF PROCESS IN HEGEL AND WHITEHEAD: LIFE AND VITALITY

submitted by **TOPRAK SEDA KARAOSMANOĞLU** in partial fulfillment of the requirements for the degree of **Master of Arts in Philosophy, the Graduate School of Social Sciences of Middle East Technical University** by,

Prof. Dr. Yaşar KONDAKÇI
Dean
Graduate School of Social Sciences _____

Prof. Dr. Ş. Halil TURAN
Head of Department
Department of Philosophy _____

Prof. Dr. Murat BAÇ
Supervisor
Department of Philosophy _____

Examining Committee Members:

Assoc. Prof. Dr. Elif ÇIRAKMAN (Head of the Examining Committee)
Middle East Technical University
Department of Philosophy _____

Prof. Dr. Murat BAÇ (Supervisor)
Middle East Technical University
Department of Philosophy _____

Assoc. Prof. Dr. Çetin TÜRKYILMAZ
Hacettepe University
Department of Philosophy _____

Assoc. Prof. Dr. Barış PARKAN
Middle East Technical University
Department of Philosophy _____

Dr. Refik GÜREMEN
Middle East Technical University
Department of Philosophy _____

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last Name: Toprak Seda KARAOSMANOĞLU

Signature:

ABSTRACT

THE THOUGHT OF PROCESS IN HEGEL AND WHITEHEAD:
LIFE AND VITALITY

KARAOSMANOĞLU, Toprak Seda
M.A. Department of Philosophy
Supervisor: Prof. Dr. Murat BAÇ

October 2020, 163 pages

The purpose of this thesis is to clarify the thought of process in Hegel and Whitehead in the context of life and vitality. The concept of life has a special place for both Hegel and Whitehead. While Whitehead treats the situation of life in nature as the capital problem of philosophy and science, the concept of life serves as an analogy for Hegel's philosophical system since it offers a model for thinking of development in general. The difficulty of unifying spirit and nature or objective world and subjectivity lies at the center of this study. In this regard, this thesis focuses also on mechanism, dialectical logic, the mind-body problem and on what can be thought. The mind-body problem is actually related to a more general debate on the difference between life and matter and leads us to the question of whether biology can completely be reduced to physics without loss. In this framework, this study will seek an answer to the question of what the concept of organism, the vitality and life are with regard to their processes of becoming or occurrence.

Keywords: Hegel, Whitehead, Life, Organism, Process

ÖZ

HEGEL VE WHITEHEAD'DE SÜREÇ DÜŞÜNCESİ:
YAŞAM VE CANLILIK

KARAOSMANOĞLU, Toprak Seda
M.A. Felsefe Bölümü
Tez Yöneticisi: Prof. Dr. Murat BAÇ

Ekim 2020, 163 sayfa

Bu çalışmanın amacı Hegel ve Whitehead'deki süreç düşüncesini yaşam ve canlılık bağlamında açıklığa kavuşturmaktır. Yaşam kavramının hem Hegel hem de Whitehead için özel bir yeri vardır. Whitehead yaşamın doğadaki konumunu felsefe ve bilimin temel sorunu olarak ele alırken, yaşam kavramı genel olarak gelişim hakkında bir model sunduğu için Hegel'in felsefi sistemi için bir analoji görevi görür. Tin ile doğayı ya da nesnel dünya ile öznelliği birleştirmenin zorluğu bu çalışmanın merkezinde yer almaktadır. Bu bağlamda, bu tez aynı zamanda mekanizma, diyalektik mantık, zihin-beden problemi ve neyin düşünülebilir olduğuyla ilgilenecektir. Zihin-beden problemi aslında yaşam ve madde arasındaki fark üzerine daha genel bir tartışmanın konusudur ve bizi biyolojinin fiziğe tamamen kayıpsız olarak indirgenip indirgenemeyeceği sorusuna götürür. Bu çerçevede, bu çalışma organizma kavramı, canlılık ve yaşamın kendi oluşum süreçleri bağlamında ne oldukları sorusuna bir cevap arayacaktır.

Anahtar Kelimeler: Hegel, Whitehead, Yaşam, Organizma, Süreç

in the memory of Mine

&

in the memory of Prof. Dr. Erdinç Sayan

ACKNOWLEDGMENTS

First of all, I express my deepest gratitude to my supervisor Prof. Dr. Murat Baç for his guidance, advice, criticism, teaching, valuable insight and kindness throughout the process. I would also like to express my gratitude to the jury members Assoc. Prof. Dr. Çetin Türkyılmaz, Assoc. Prof. Dr. Barış Parkan, Dr. Refik Güremen, and Assoc. Prof. Dr. Elif Çırakman for all their teachings, suggestions and comments. I also express my deepest gratitude especially to Prof. Dr. Ahmet İnam for his valuable teaching and guiding. I also especially thank my chemistry thesis supervisor Prof. Dr. Gülsün Gökağaç for her supporting me to study in philosophy. I also thank my all valuable teachers such as Prof. Dr. Mahinur Akkaya, Prof. Dr. İnci and Ali Gökmen for all their supports in my education life. I thank dear Leyla İpek and Nurgül Akgül for all their helps, valuable efforts, kindness and friendness. I am also grateful to my mother and father, to Sena to my *panther* for their invaluable support throughout this process. I want to underline at the end that the return of my education in philosophy is much more than a master degree, it has undeniably changed my attitude towards life.

I read Whitehead naturally not only to understand him but to save my own soul.

—Samuel Alexander

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

The word “teleology” refers to a way of thinking which grounds and explains life and the universe with final causes or purposiveness. In this regard, the living thing should have an inherent purpose or an organization associated with a purpose which does not exist anywhere in the matter that precedes it. In *Mind and Cosmos*, one of the few recent philosophical works on life, Thomas Nagel (2012) tries to clarify that, just as the material description of the brain is not sufficient for representing the mental life, the material description of the evolution is not sufficient for revealing the history of life. In Nagel’s opinion, life moves towards a purpose which has led to the emergence of consciousness in the human species and it may still have a long way to go. At this point, it is also worth noting that Nagel treats such a purpose as an incorporeal phenomenon.

> The great cognitive shift is an expansion of consciousness from the perspectival form contained in the lives of particular creatures to an objective, world-encompassing form that exists both individually and intersubjectively. It was originally a biological evolutionary process, and in our species, it has become a collective cultural process as well. Each of our lives is a part of the lengthy process of the universe gradually waking up and becoming aware of itself. (Nagel, 2012, p.85)

Similarly, according to British academic philosopher David Conway, it is not possible to explain existing forms of life in purely mechanistic terms. He opposes the materialistic explanations on “the first emergence of living matter from non-living matter” by emphasizing that “in being alive, living matter possesses a teleological organization that is wholly absent from everything that preceded it” (Conway, 2000, p.125).

If we briefly look at the historical background, it is appropriate to start from the Aristotelian view according to which scientific knowledge is actually the knowledge of causes. Aristotle thinks that the formal and final causes have an ontological priority over the material and moving causes in nature. In other words, they are the most fundamental principles for knowing the individual things and events. Under such a teleological vision of the world, he remarks that there is an end in nature and it is this end which orders everything and which makes everything that happens the best. In this regard, it is important to note that Aristotle does not believe in a universal teleology applicable to whole natural phenomena but, according to him, some natural things and processes are teleologically designed and "nature does nothing in vain" (Guthrie, 1933). For example, from the Aristotelian point of view, each structure observed in animals has an end and its functional explanation refers to the form of the animal. It is worth noting at this point also that, according to Aristotle, a complete explanation can only be given by taking into account the material, efficient, formal and final causes together. When analyzing movement, for example, the material cause is given by the intervening parts, the efficient cause by the heat of the heart, the formal cause by the morphology of the animal and the final cause by the goodness of the complete situation (Blits, 1999). In this way, the Aristotelian teleological view of nature treats natural substances and natural processes as ends in and for themselves. Aristotle emphasizes that there is no cosmic or supernatural force acting on living beings and there is no omnipotence that operates in nature; however, the source of mobility and directionality or the potential impulse resides in each animal. This means that there is nothing outside which directs the animals and they have their ends in themselves, namely, in their nature (Guthrie, 1933).

In fact, the idea of a purpose or end (*telos*) in nature is not original to Aristotle. Socrates and Plato maintain that nothing in nature and in the world can be explained by chance but the creations of nature occur since they are necessary and the best. According to Plato, the natural world is the end product of a designer or universal consciousness

that orders everything in the best possible place and he calls such a designer the "craftsman" of the cosmos, namely, the *Demiurge*. Then, as I have mentioned above, Aristotle thinks that the final cause is found in nature and it is immanent in things. At this point, it is worth noting that Aristotle's teleology is described as "immanent" or "internal" by some authors (Ayala, 1970) since it is defined through the end or function of the individual under certain considerations. This is opposed to Plato's view because, from the Aristotelian point of view, the operation of ends which can be considered as causes in nature does not depend in any sense on the action of a rational agent or that of a creator. In other words, Aristotle does not refer to a mental act or a conscious purpose but to the role that the part plays in the whole. According to Krieger (1998), "Aristotle's explanations resemble those that contemporary biologists use today, which do not contain references to an external creator" (p.7).

In later centuries, the influence of the teleological ideas of Plato and Aristotle permeated in the history of thought until the Renaissance. In the 17th century, the emergence of Cartesian mechanism began to explain the structure and function of organisms through analogies with the basic structure and function of the machines. According to René Descartes, teleological thinking rests on the skepticism of God's intentions and science has nothing to do with this type of explanation. Any scientific explanation, for Descartes, has to be formulated in terms of the mechanistic laws which are deductible from the perfection of God (Manning, 2015). The separation between the teleological explanations (explanations through final causes) and the mechanical ones, that is, the separation between the final causes and the material world has caused several epistemological implications in the world of science from the 17th century to the present day. At the end of the 18th century, Isaac Newton and Kant recognized that all of the natural processes must be explained solely explained by means of mechanical laws but the distinctive purposes and ends of human nature, the organizations and behaviors of living things in general, cannot be understood through a mechanical way of thinking. In this regard, Kant considers the formulation of a second principle as a

necessity so as to state that some events and processes cannot be explained on the basis of purely mechanical laws. From the Kantian perspective, while organisms obey mechanical laws, they also require a kind of teleological understanding (Ruse, 1999).

As I have briefly summarized so far, the relationship between purpose (*telos*) and life occupies a wide space in the history of Western philosophy. I will discuss in the following chapters that it has also a significant influence on the concept of life in the philosophies of Hegel and Whitehead. On the other hand, besides their teleological perspectives, they both make an emphasis on the concepts of "becoming" and "process" and, in the context this study, this is the most significant common point in the way these two philosophers deal with the concepts of life and vitality.

From antiquity to the modern era, the history of Western metaphysics can be conceived mainly as the study of substances. The idea that the world is made up of entities persisting over time is in general seen as being consistent with our daily experience. There is no wonder therefore that "substance" is the fundamental category in Aristotle for the study of reality. In this context, it is important to note that the initiator of the metaphysics of substance is Parmenides. He is the first philosopher who argues that we should conceive "being" as being eternally undifferentiated and immutable. Plato is another eminent thinker who bases his way of thinking on the metaphysics of substance. *Ideas* which can be considered as the central entities in his concept of reality are, by definition, immutable and eternally equal to themselves. Also, in medieval and modern philosophy, the situation does not seem to change significantly at least until the end of the 19th century.

Despite the large area occupied by the idea of substance, in fact, the idea of process metaphysics has always been present in the Western philosophical reflection even if in a minor form. From this perspective, what the fundamental components of reality are not the entities persisting over time but the processes of continuous becoming. The most obvious pioneer of this idea in the Greek world is Heraclitus who is famous with

his claim that everything flows. According to the ionic thinker, "this world, which is the same for all, no one of gods or men has made. But it always was, is, and will be: an ever-living Fire, with measures of it kindling, and measures going out" (Heraclitus, fr.30). In other words, for Heraclitus, every entity that exists is nothing but a transformation of an eternal fire which remains ever-present in these entities and causes their change and becoming by the means of a continuous movement generated by the opposition between forces. It cannot be denied that this vision can be seen as revolutionary for that time. On the other hand, it worth noting that Plotinus is another thinker who defends the ideas of process and dynamism in his own metaphysics. According to Platinus, the concept of *enérgeia* (*ἐνέργεια*) which means activity underlies the generation of every level of reality starting from its unique and transcendent principle (Hancock, 2012).

Later, in the 17th century, Leibniz postulates the monads as the fundamental elements of his own metaphysics and gives the process metaphysics a new aspect. From the Leibnizian point of view, "monads are ordered sequences of states of affairs consisting of the co-exemplification of properties during some period of time" (Seibt, 2012, para.8). It is important to remark here that, in order for the transition from one state to the next sequence to take place, it is necessary for monads to contain a dynamic principle or an active force which allows this passage. When we come to the 19th century, a common element which comes into prominence in the German idealists Fichte, Schelling, and Hegel is again that they give a decisive role to dynamism in the generation of reality. In regards to the process metaphysics, the most important innovation on Hegel's part is his consideration that the principles regulating the "becoming" of reality and its dynamism can fully be known through philosophical investigation. Precisely it is this idea that establishes the basis of Alfred North Whitehead's speculative philosophy.

In this study, I will try to clarify the thought of process in Hegel and Whitehead in connection with their concepts of life and vitality. We will see in the following

chapters that the ways both philosophers deal with the concept of life lead us to the criticism of the mechanical thinking. In Chapter 2, in the context of his *Science of Logic*, I will clarify how Hegel associates the faculties of understanding and reason with different concepts of infinity. We will see in this regard that while Hegel defines the infinite of the understanding as the bad infinite which is incapable of overcoming finiteness, he considers the infinite of reason as the only true infinite which he calls the good infinite. From this perspective, only the good infinite with its circular nature is capable of revealing the concepts of life and vitality. Since the mechanism does not possess circular organization and therefore the capability of self-determination, the mechanical thinking inevitably is lost in the bad infinite. In the light of these principles, I will try to show in the following chapters the way of thinking that Hegel introduces so as to go beyond the finite thinking of the understanding and thus to be able to explain life as a circular organization and self-referential process.

Alfred North Whitehead, an eminent philosopher of the 20th century, deals with the question of mechanism by drawing on concepts from Hegel and takes a step beyond him. Whitehead's active academic life consists of three distinct periods. While he studies during the first period (at Cambridge from 1884 to 1910) primarily on mathematics and logic, his studies in the second main period (in London from 1910 to 1924) can be evaluated in the framework of physics and the philosophy of science. Then, in the third period (at Harvard after 1924), he focuses his studies mainly on metaphysics. What the Whiteheadian process metaphysics intends is to merge the concept of life with the concept of nature and to interpret nature as a living creative process. It is therefore a significant part of an epochal movement on the issue of vitalism. As I have mentioned above, the history of Western philosophy is dominated by the assumption that the supreme reality is free from change and the immutable order is the final perfection. However, Whitehead considers such an immutable and static perfection as being illusory. From the Whiteheadian perspective, order is intertwined

with disorder in the world we live and we need to understand "how the unity of the universe requires its multiplicity" (Whitehead, 1968, p.83).

In this regard, we will see in the following chapters that Whitehead treats the concept of life as an organism and calls his system "the philosophy of organism". To state in a nutshell, the philosophy of organism is an attempt to show how "infinite requires the finite" and how "each immediately present existence requires its past, antecedent to itself; and requires its future, an essential factor in its own existence" (Whitehead, 1968, p.83). In this context, first, I will elaborate in Chapter 3 on the philosophical journey of Whitehead in the framework of the Hegelian questions and well-known traditional problems. As he remarks in Modes of Thought (1968), Whitehead agrees with Hegel that the notion of an isolated fact is a myth produced by finite thinking which is not capable of encompassing the whole. In other words, according to Whitehead, "no fact is merely itself" (Whitehead, 1968, p.9) and the consideration of a single or isolated fact does not give us its truth since it is what it is only in relation to its environment. Thus, Whitehead's understanding of vitality goes beyond the finite thinking like that of Hegel and I will try to clarify such an understanding in Chapter 4 by drawing on the Whiteheadian concept of "society".

As we will see in this study, the connection between knowledge and process is essential for both Hegel and Whitehead. According to Hegel, truth can only be possessed at the end of a process in which knowledge has itself as an object and the absolute thinking is at the same time the content of reality. In other words, he defines the absolute knowledge as "reason that knows itself" and the process of knowing as the self-realization of the absolute. Whitehead, on the other hand, remarks that knowledge is not only a process which develops in the mind of a knowing subject but such a process must also be an inseparable part of the object. This means that, from the Whiteheadian point of view, the object of understanding must also be subject to process. Meaning is revealed only through a process and existence is devoid of meaning in the static nature of things. Such a connection that Whitehead formulates

between understanding and process establishes the basis of his speculative philosophy. He treats philosophy as a never completing process of progressive enrichment of understanding and this character of philosophy is what distinguishes it from natural sciences. In this framework, as a result of this study, I will try to show the role of process and dialectical movement in both philosophers' concepts of life. In this way, I will also have a chance to elaborate on the purposiveness of organisms through the principle of self-realization which is considered by both Hegel and Whitehead as what characterizes life and vitality.

CHAPTER 2

UNDERSTANDING THE MECHANISM IN HEGEL'S *LOGIC*

According to Georg Wilhelm Friedrich Hegel (1770-1831), philosophy is an ordered system that must reflect and explain reality which he calls *Absolute* and develops over time in a dialectical process. The absolute is also called by Hegel *Spirit* (*Geist*) and it is determined by its own becoming. The starting point of Hegel's philosophy is the identity of being and thought, that is, understanding the real world as the manifestation of the idea, concept or spirit. In other words, through the dialectical process of history, spirit gains its self-knowledge which coincides with absolute knowledge and this is defined by Hegel as self-realization of spirit. For Hegel, history is more than a succession of distinct events. It is the collective process of self-realization of the spirit, it is the place where the spirit is manifested. The entire generation of the universe, history, is ultimately the self-becoming of the absolute, the entrance of the spirit into itself, the realization of the idea (Hegel, 2018, pp.263-265).

According to Hegel's system of objective (or absolute) idealism, the foundation of the world is this certain objective absolute idea that exists before the appearance of nature and human being. The dialectical nature of the idea implies a contradictory in itself and this contradiction allows it to move and negate itself, that is, to transform itself into its opposite. Nature is the absolute idea in the form of otherness, that is, the objectification or alienation of the spirit in space. In other words, it is the being-for-other and hence a process in the self-realization of spirit. The primary aim of Hegel is to unite the objective and subjective, the collective and individual. Life is more than matter; everything and everyone are moments of the absolute and this makes it

impossible to distinguish between thought and reality since thought is *being* (Hegel, 2018, p.47).

2.1 From Kant to Hegel: How to Think Life?

As I have mentioned in the introduction part, teleology tries to explain the universe in terms of purposes or ends. So as to discuss nature in the context of teleology, Kant's analysis of the relationship between *telos* and life found in the second part of *Critique of Judgment* is historically significant. While the first part of this work deals with the functioning of judgment in the aesthetic experience of nature and art, the second part develops a teleological interpretation of the sensible nature. The central aim of the *Critique of Judgment* is to link the world of theoretical reason with the world of practical reason in a systematic whole (*Ganzen*). Here, by positing a teleological conception of living nature, Kant goes beyond a mechanistic approach for understanding life.

According to the Kantian perspective, under reflective judgment, each natural entity has its end in itself —in the realization of its essence. Being an organism or a living being definitely means being intrinsically purposive (Kant, 2007, p.204). In accordance with its intrinsic purpose, the parts of an organism contribute to the life of it in a way of constituting an indivisible whole and, for Kant, organisms (*Organisierte Wesen*) are self-organizing. We can conceive the relationship between the parts of an organism only in relation to the life of it as a whole and this implies the internal form of that organism (Kant, 2007, p.187). In other words, Kant tries to emphasize that the internal form of an organism means also its internal organization which implies its self-organizing nature as an indivisible whole and this seems as an activity directed towards an intrinsic end. Thus, the intrinsic purposiveness of an organism is in fact the internal form of it, that is, the idea of the whole:

> So where the structure of a bird, for instance, the hollow formation of its bones, the position of its wings for producing motion and of its tail for steering, are cited, we are told that all this is in the highest degree contingent if we simply look to the *nexus effectivus* in nature, and do not call in aid a special kind of causality, namely, that of ends (*nexus finalis*). This means that nature, regarded as mere mechanism, could have fashioned itself in a thousand other different ways without lighting precisely on the unity based on a principle like this, and that, accordingly, it is only outside the conception of nature, and not in it, that we may hope to find some shadow of ground a priori for that unity. (Kant, 2007, p.188)

It is clear that, for Kant, being an organism means having an internal form which enables its developmental process, that is, its self-realization. Since the parts exist only through the whole and are identified in accordance with their function within the whole, each of them is treated by Kant as an instrument (*Werkzeuge*), namely, an organ (Kant, 2007, p.202). At this point, so as to clarify such a concept of intrinsic purposiveness related to the internal forms of living organisms, Kant compares living beings with works of art since art is another intentional activity directed towards an end. In an art work, just as in a living organism, all the parts form an indivisible whole in which each of the parts represents the whole. In other words, the whole has a perfection in which no part is superfluous. In this sense, an organism can be seen as the "analogue of art" (Kant, 2007, p.202). However, while an organ functions with the other parts or contributes to the production of the others and, therefore, each of organs exists only in a reciprocal relationship to the others, such dynamic relationships are not valid for an art work. Such instruments (organs) only imply the organization of nature which has no analogy with any other thing we know:

> Natural beauty may justly be termed the analogue of art, for it is only ascribed to the objects in respect of reflection upon the outer intuition of them and, therefore, only on account of their external form. But *intrinsic natural perfection*, as possessed by things that are only possible as *natural ends*, and that are therefore called organisms, is unthinkable and inexplicable on any analogy to any known physical, or natural, agency, not even excepting. (Kant, 2007, p.203)

According to Kant, it is not possible to explain the organization in living beings through any mechanical theory; thus, he introduces the concept of natural end (*Naturzweck*) to characterize them. So as to consider organisms from a teleological perspective, it is necessary to understand them as natural ends. The formal perfection of an art work or of technical production leads us to the idea of an executor (efficient cause[1]) who conceives it. On the other hand, in a natural organism, what determines the form and the relationships between its parts is the idea of the whole (final cause[2]) rather than an external executor and, therefore, this idea should be thought of as immanent to the parts. In other words, what gives rise to both an art work and a living being is having in themselves an end that is implied in the form; however, while the form of an art work is present in the idea of its executor, the form of a living organism is immanent in itself. In consequence, in Kant's perspective, a being is called a living being or a natural end only when it organizes itself (Kant, 2007, p.204).

Once we take into account the self-organizing character of living nature, when we try to explain an organism as a whole, the relationship between whole and parts cannot be explained from a mechanistic point of view, that is, mechanistic causality: "a thing exists as a natural end if it is (though in a double sense) both cause and effect of itself" (Kant, 2007, p.199). Kant affirms that the concept of whole, just as freedom, goes beyond empirical reality and thus it is not concept of the understanding (*Verstand*) but that of reason (*Vernunft*) (Kant, 2007, p.342). Hegel agrees with Kant that self-organizing nature of living beings goes beyond the mechanical explanation and he regards the concept of internal purposiveness introduced by Kant in the context of living nature as a great merit:

> One of Kant's greatest services to philosophy was in drawing the distinction between relative or external purposiveness and internal purposiveness; in the latter he opened up the concept of life, the idea, and with that he positively raised

[1,2] In Aristotelian thought, while efficient cause is the antecedent condition that brought the thing about, final cause is the purpose of the thing.

> philosophy above the determinations of reflection and the relative world of metaphysics, something that the *Critique of Reason* does only imperfectly, ambiguously, and only negatively. (Hegel, 2010, p.654)

In internal teleology, there is no intervention of an external factor. Therefore, for both Kant and Hegel, the best explanation of the internal end or purpose is given by living organisms. The end or purpose which is fulfilled by the organism is its concept and, in fact, it is the realization of itself and its activities. As Hegel underlines, life "is only as self-sublating reality that the self-preservation of the Notion is posited". It "is means, but not for another but for this Notion; it perpetually brings forth its infinite form. Kant already had defined the living creature as an end for itself" (Hegel, 1970, p.275). However, Kant makes a clear distinction between the sensible world and the intelligible world, namely, between *phenomenon* and thing-in-itself (*noumenon*) in the *Critique of Pure Reason*. Hegel criticizes such a distinction and goes beyond Kant at this point by trying to unite opposites, to overcome the dualism between subject and object. In other words, Hegel's internal teleology is not only treated as a reflective judgment but it is also expressed objectively:

> Being-for-other and being-in-itself constitute the two moments of something. [...] Both moments are determinations of one and the same [being], that is, of something. Something is in-itself ["an-sich" in Kant's sense] in so far as it has returned from the being-for-other back to itself. (Hegel, 2010, pp.92-93)

For Hegel, it is not possible for an organism to exist only as a thing-in-itself, that is, as being isolated from its environment and from other organisms. Each individual has not only an internal end but also a necessary role in the self-realization processes of other individuals. Hegel mentions that the internal movement of self-production is the main characteristic of life and it implies a process of self-determination which culminates in a comprehensive teleological system where all moments are interconnected (Hegel, 2010, p.666). An organism gains its identity through a continuous process of self-production which is called autopoiesis and which brings forth its infinite form. However, this infinite form is at the same time in an obligatory

relationship with the physical world of which material content is perpetually renewed through such relationships. In other words, Hegel underlines that what exists in itself and for itself carries at the same time its negation within itself and it therefore exists also for others (Hegel, 2010, p.92). Thus, what he emphasizes is a fundamental tension in living things. While a living organism as an idea is a closed process in itself on the one hand, it necessarily needs material nature on the other hand so as to maintain its self-production process: "life is the union of opposites generally, not merely of the opposition of Notion and reality. Wherever inner and outer, cause and effect, end and means, subjectivity and objectivity, etc., are one and the same, there is life" (Hegel, 1970, p.274).

It is important to note at this point that contradiction is the root of all movement and life. It is possible for something to move or to act only when it carries contradiction within itself. According to Hegel, an organism is a totality in itself and it at the same time carries its negation within itself as a result of its self-differentiation (*Selbstunterscheidung*). A living being necessarily interacts with its surroundings as we will see in detail in the following sections. While it has its subjectivity on the one hand, it assimilates the other within itself on the other hand through an obligatory relationship with its external world (Hegel, 1970, p.356). In other words, a living organism is not something isolated or closed in itself; it has also a self-alienation process through which it manifests itself in its otherness and from which it returns to itself. Such a return to being-for-itself from being-for-other is called by Hegel as negation of negation (negation of sublated negation) or double negation and, as we will see in Chapter 4, the living organism realizes its idea through this return.

Hegel presents logical life as the immediate idea which is a totality made up of opposing moments just as the relationship between body and soul in a singular living being (Hegel, 2010, p.679). While biological life is the exteriorization of the idea, logical life is what returns from alienation. From the Hegelian perspective, we can say that life progresses and updates what it is as both logical and biological life. As we

will can see throughout this study, for Hegel, an organism is an infinite process of self-determination rather than being determined by the other externally. Thus, being an organism means being an internal process of self-production and it is clear that there is no life outside the process. In other words, an organism consists of its own life process in which it is its own cause, own effect and the process itself: "the organism in its process outwards preserves inwardly the unity of the self" (Hegel, 1970, p.351).

We can see at this point that, since everything is activity, truth can only appear to us as a progressive process. While different moments of this process give us just some aspects of truth, truth can only be possessed at the end. The concept of process implies the concepts of becoming and movement. From the Hegelian point of view, while movement refers to the presence of contradiction, contradiction refers to dialectics, that is, dialectical movement. It is such a thought of process that allows us to comprehend truth—and also life—as a dynamic whole. Thus, as I will clarify in the following sections, mechanistic (finite) thinking is insufficient for apprehending the truth of life or that of the living organism.

For Hegel, as we know, the task of philosophy is to overcome the abstract opposition between subjectivity and objectivity. We will see in this chapter that the development of objectivity determinations occurs through mechanism, chemism and teleology. After a brief introduction to the *Science of Logic*, I will try to clarify that an organism continuously produces and develops itself while, according to Hegel, mechanism is constructed externally. As we have seen in this section, Kant treats organism as both cause and effect of itself. In the following sections, I will discuss also the causality relationship in detail from the Hegelian point of view and we will see that, in a living organism, cause and effect are a totality which cannot be analyzed separately. So as to complete this chapter and to understand the concept of organism, it is important to discuss also on the relation of whole and parts. For both Kant and Hegel, as we have already seen, an organism can only be explained as a whole. In an organism, the producer and the produced is one and the same according to Hegel and, as I will clarify

in detail below, whole and parts cannot exist here independently from one another. I have already noted also that a living being necessarily carries a contradiction in itself. At the end of this chapter, we will see that the internal purpose of every living being is to overcome this antagonism between its being and its environment so as to realize its idea. Then, I will try to make it clear in Chapter 4 that the internal telos of life is the conservation of itself, the maintenance of vital process and the perpetuation of the species by the means of the *genus process* (*der Prozeß der Gattung*). As a result of this study, we will see that Hegel treats life as a purposive process in the self-realization of spirit.

2.2 An Introduction to the *Science of Logic*

As it is well known, Hegel presents *Logic* as a science that defines the content of rationality and allows thought to become aware of itself. He mentions that "the method of philosophy must be set forth by Logic" (Hegel, 2018, p.501). In Hegel's way of thinking, reality is dialectical and science conceptually embraces it in its evolution. It is important to note that, for Hegel, science (*Wissenschaft*) is philosophy while philosophy is absolute knowledge. On the other hand, he calls natural sciences "positive science" so as to distinguish them from science which means philosophy. From the Hegelian point of view, natural sciences are the product of the understanding (*Verstand*) which is an abstract faculty. We will see in the following sections that the understanding analyzes only parts of reality rather than treating it as a whole and, thus, interests only in "dead" forms isolated from the concrete whole. However, Hegel's philosophy is an attempt for a comprehensive thought of whole and Hegel obviously underlines that the truth is the whole. In this sense, the Hegelian logic aspires to be the discourse of unconditioned reason whose development determines the absolute forms of scientificity.

In the context of natural sciences, Hegel defines mechanical relations as the absence of meaning. As we will see in the following sections, he classifies mental activities

consisting of external relations under the title of "spiritual mechanism" since such activities according to him are just mechanical operations which do not carry any meaning (Hegel, 2010, p.631). In other words, since such activities of human intellect are determined by formal rules or some well-defined steps which are only externally linked, they are proceeded by these rules or steps independently of meaning. In this regard, Hegel treats calculus as a mechanical operation that can be performed by machines (Hegel, 2010, p.181). From the Hegelian point of view, since calculation is an external operation, calculus is a non-conceptual thought and an analytical matter. On the other hand, logic is the only science that contains its own foundation: the speculative concept (*der spekulative Begriff* or *der Begriff*) and the absolute idea (*die absolute Idee* or *die Idee*). Hegel's dialectic-speculative logic is an investigation whose object is what constitutes its method. In other words, it is the science that studies the pure movement of the concept and it is treated by Hegel as true metaphysics that lies at the base of the entire system. Thus, it is important to note that the system of science presented in the *Encyclopedia of Philosophical Sciences* does not end in *Logic* and extends to the *Philosophy of Nature* and the *Philosophy of Spirit*. Logic is not the whole reality but the truth of reality, namely, ontology. Philosophy then affirms the knowledge of reality in its truth—through its dialectical journey.

Dialectics is a complex process made up of three movements which Hegel calls *affirmation*, *negation* and *negation of the negation* (affirmation, contradiction, and overcoming of contradiction). Each implies the negation of the other and makes sense in terms of the whole, that is, in the third movement that encompasses and contains the other two. At this point, it is important to introduce the term *Aufhebung* (sublation). For Hegel, it is the reconciliation of all contradictions in a more complex whole. A term or state is both canceled and lifted up through the process of sublation (Hegel, 2010, p.81). Existence constitutes an identity of all opposites: all contradictions are resolved in the self-consciousness of the *Absolute Spirit* which is predetermined from the previous phases of its development. Dialectics, according to this conception, is not

a method determined a priori but the structure of reality through which the method of thinking about it arises.

The dialectical development of the idea is manifested in the spheres of *being*, *essence* and *the concept* (*the notion*) respectively. Being is determined only by nothingness and, therefore, it is nothingness in itself (Hegel, 1991, p.395). Then, it appears at the level of essence since essence is the internal negation of the entire sphere of being. In other words, being negates itself qua setting itself as essence but essence here is still an illusion (Hegel, 1991, p.398). Essence is reflection opposed to immediacy and, thus, it is an unresolved contraction. Hegel interprets the positing (*Setzen*) of the self as a negative relationship of the self with itself, a relationship that results in differentiation or particularization (*Besonderung*) from which the self returns to itself. This reflective structure of the self corresponds to the Hegelian definition of the concept (*Begriff*) which is the "absolute unity of being and reflection" (Hegel, 1991, p.578).

The idea, then, is the unity of concept and reality and Hegel regards life as an idea (Hegel, 2010, p.673). We will see in Chapter 4 that, according to Hegel, the idea of life is the principle of all life and develops in three moments—as the living individual, life-process, the genus process. These moments correspond to the moments of sensibility, irritability and reproduction in animal life in the *Philosophy of Nature* (Hegel, 1970, p.433) and here Hegel studies life as the exteriorization of the idea. It is important to mention that the absolute idea is "the universal and one idea" which particularizes itself in specific ideas "which after all are constrained by their nature to come back to the one idea where their truth lies" (Hegel, 1975, §213).

I have already underlined that, for Hegel, truth can only be possessed at the end of the whole process. Hence, at the end of the *Encyclopedia*, Hegel makes a recapitulation of the entire dialectical journey from the point of view of the absolute knowledge. Knowledge has itself here as an object and the absolute thinking is at the same time the content of reality. The absolute knowledge is now defined as "reason that knows

itself" and, for Hegel, the process of knowing is at the same time the self-realization of the absolute as a logical idea, nature and spirit. Thus, while Hegel introduces the absolute idea in his *Science of Logic*, he develops in the second and third parts of the *Encyclopedia* his *Philosophy of Nature* and that of *Spirit*. So as to understand the transition from the logical idea to nature (and then to spirit) and to see the place of *Logic* in the Hegelian system, the final section of the *Encyclopedia* (Hegel, 1971, §§ 575-577) has a central importance since it exposes the triad of syllogisms in which his entire system finds its condensed expression. These three syllogisms represent the absolute process of the idea that thinks itself. The entire process is summarized in the last syllogism which includes the first two as its moments:

> The third syllogism is the Idea of philosophy, which has self-knowing reason, the absolutely universal, for its middle term: a middle, which divides itself into Mind and Nature, making the former its presupposition, as process of the Idea's subjective activity, and the latter its universal extreme, as process of the objectively and implicitly existing Idea. The self-judging of the Idea into its two appearances (§§ 575, 576) characterizes both as its (the self−knowing reason's) manifestations: and in it there is a unification of the two aspects: − it is the nature of the fact, the notion, which causes the movement and development, yet this same movement is equally the action of cognition. The eternal Idea, in full fruition of its essence, eternally sets itself to work, engenders and enjoys itself as absolute Mind. (Hegel, 1971, §577)

A syllogistic process is the mediation of two terms by means of a middle term and in a triad of syllogisms, each of the moments of the system successively plays the role of middle term. In such succession of the middle terms, each one retains the understanding achieved by the previous syllogism until reaching the absolute reason that knows itself. At the end, the absolute reason is what conceives the truth as a whole. Thus, it is clear that reason is the result of itself and the universal unfolding of reality results from its self-creation. Here we can see Hegel's concept of circularity which is in the center of this study and which I will explain in the following sections in detail. Hegel presents us the first two syllogisms as partial manifestations of the absolute.

Then, what is presented as the foundation is at the same time what must be proved as a result, and vice versa. Hence, for Hegel, circularity is not a method that we can use but a metaphor which expresses the dialectical rational process and the becoming of the reality which the rational process attempts to think about. Such a process does not assume any constant premises or initial absolute principles from which all reality can be extracted, but rather it is the self-founding activity of reason whose determinations refer to each other through the whole that they form. It is this circularity what differentiates the capabilities of reason from that of the understanding. The understanding is the faculty of the abstract universal concepts and we will see in this chapter that while the static and rigid concepts of this faculty is useful for practical life, it is insufficient to conceive the truth of life. Now, so as to understand Hegel's concept of circularity and the distinction between the understanding and reason better, I will try to clarify his concept of infinity.

2.3 The Concepts of Finite and Infinite in the Hegelian *Logic*

According to Hegel, as I will explain in this section, infinity is not the negation of the finite. In fact, he distinguishes two notions of the infinite: the false (the bad) infinite and the true (or good) infinite. Hegel starts from a quite orthodox notion of finitude which means having a limit. In this way, if we establish infinitude as the simple negation—as the opposite—of finitude, this means that infinitude does not have a limit, as Priest clarifies (1995, pp.116-117):

> Something is finite if it is determinate (in his terminology), that is, is limited or bounded by something else. Something is infinite (in the false sense) if it is not finite. The finite and the false infinite are therefore mutually complementary and bounding concepts.

Hegel underlines that such an infinitude is determined by the finite and, so, it is limited by it. The bad infinity means passing from one limitation to another each time as a "new act", a "monotonous alternation" (Hegel, 2010, p.121). This pass extends insofar

as the world of the finite is infinite. In other words, each finite becomes infinite so that there is an infinite for every finite. Here, we are dealing with an abstract opposition of the finite: the infinite is simply the non-finite (Hegel, 2010, p.122). A limited infinity is actually a finite infinity; therefore, it cannot be the true infinity (Hegel, 2010, p.119). The establishment of infinitude as the opposite of finitude results in the exclusion of one another. In the bad infinity, the beyond of the finite is the infinite. Hegel characterizes the advance to the infinite as a content generated by repetition (Hegel, 2010, p.113). At this point, regarding the bad infinity, we have reached two conclusions. On the one hand, since we establish infinitude as the simple negation of finitude which means having a limit, this means that such an infinitude does not have a limit. What finds no limit is something simply indeterminate because every determination is a negation, that is, a limit. Thus, the infinite which is the opposite of the finite is indeterminate. On the other hand, since it excludes finitude, such an infinitude is limited and determined by finitude.

In contrast to the bad infinite, Hegel proposes the good infinite that is separated from the idea of extension and succession of finites. In this case, the true infinite is not a simple negation of the finite but the negation of the simple negation that sustains the opposition between finite and (bad) infinite. The intention, here, is not to exclude the finite but to encompass it (Hegel, 2010, p.109). Hegel points out the immanence of infinitude within finitude; however, the finite here is not a limit but the overcoming of the limit. In other words, it is not for the other but for itself. The good infinite is thus one and not "many".

If I use a mathematical example taken from the section on quantity in *Logic*, the bad infinity that keeps the finite separate from the infinite represents a fraction like 0.285714... The true infinity, on the other hand, represents it as 2/7. In the first case, each added number appears simply as a new number which does not bring us any closer to the fraction as a whole. In the second case, the whole appears within the finitude of the fraction. Here, the infinity is part of the finite, or in Hegel's words: "the

infinite has eternally gone forth into finitude" (Hegel, 2010, p.213). So, the concept of infinitude does not consist of removing the limits so as to go beyond finitude, but rather it is located in finitude and it is the process of revealing the structure of the finite.

On the other hand, as I said above, to be finite is having a limit and this limit consists of its determination. Its outside is also determined as the negation of this finite if the finite is determined by its outside. In the progress to infinitude, when such a finite thing is limited by the other, it is determined by the other. Then, if this thing is determined by the other, that other thing is determined also by another. As we pass from one specific finite to another, there is always one more finite thing beyond each one. Thus, for each finite thing, its limit or determinateness is relative to the other beyond it and this goes so on to infinity (Hegel, 2010, p.113) In this regard, if we consider infinitude as an actual determined quantity, then defining a finite means limiting such an infinity. At that time, this determination can never be completed since a new "beyond" opens in each limitation. This is, for Hegel (2010, p.113), only the expression of an unresolved contradiction:

> The progress to infinity is therefore only repetitious monotony, the one and the same tedious alternation of this finite and infinite. The infinity of the infinite progress remains burdened by the finite as such, is thereby restricted, and is itself *finite*.

As we have seen above, the infinite progress to infinity is a limited infinitude in a monotonous alternation. Such an infinitude (bad infinity) cannot reveal the true concept of infinity since it is limited by the finite. It is the understanding that is restricted by such a limited horizon of the bad infinite (Hegel, 2010, p.109). In other words, the understanding is finite thinking which considers the bad infinity as something from which thought is not able to go beyond. The understanding strives to keep the infinite pure, that is, absolutely separate from the finite. Thus, it tries to maintain the abstract opposition between finitude and infinitude as Hegel (2010, p.109) clarifies:

> […] in fact, by just this negation the infinite is not already free from restrictedness and finitude. It is essential to distinguish the true concept of infinity from bad infinity, the infinite of reason from the infinite of the understanding. The latter is in fact a *finitized* infinite, and, as we shall now discover, in wanting to maintain the infinite pure and distant from the finite, the infinite is by that very fact only made finite.

To state in a nutshell, the infinity of the understanding is the finite infinity which is opposed to the finite. It finitizes infinitude by establishing it as the opposite of finitude so as to purify infinitude and separate absolutely from the finite. As I have mentioned before, according to Hegel (2010, p.111), this abstract infinity is affirmed as a simple negation of the finite, that is, as a finite infinity which is counted by the understanding as the absolute truth:

> [The infinite] as thus posited over against the finite, the two connected by the qualitative mutual reference of *others*, the infinite is to be called the bad infinite, the infinite of the *understanding*, for which it counts as the highest, the absolute truth.

Since it is finite itself, however, the understanding can only know the nature of the finite. For Hegel (1975, p.65), the great merit of critical philosophy of Kant is to affirm that the knowledge produced by understanding does not reach the truth. It is the philosophy of understanding which regards the bad infinity as something beyond which thought cannot go. On the contrary, Hegel (1975, p.94) underlines that there is a higher realm which is unreachable (transcendent) for the philosophy of understanding or for finite thinking.

In this regard, while the understanding produces only finite determinations (Hegel, 2010, p.102), it is reason which is capable of apprehending the true infinite. What distinguishes reason is that it is not determined from the outside but it determines itself, that is, it is self-determined. In other words, while self-determination is not possible in the space of finite determinations since a determined thing is always determined by another determined thing which is external to it, reason is not determined from the

outside—it is closed on itself (Hegel, 2010, p.119). The notion of autonomy, or self-determination, implies that the infinite object gives itself its own determination and, thus, avoids, the indefinite sequence of determinations (from the linearity of the bad infinity) through a circularity. Namely, while the infinity of the understanding progresses through an endless line, the infinity of reason turns on itself and appears as circularity, as Hegel (2010, p.119) clarifies:

> The image of the progression in infinity is the straight line; […] As true infinite, bent back upon itself, its image becomes the circle, the line that has reached itself, closed and wholly present, without beginning and end.

In conclusion, Hegel distinguishes the good infinite from the bad infinite, that is, the infinite of understanding (bad) and the infinite of reason (good) so as to show the way going beyond finite thinking. The circularity of good infinity is also the circularity of the System of Science by which Hegel describes the totality of reality, as I have mentioned in the previous section. In this regard, self-determination is Hegel's definition of freedom and it is what distinguishes the vitality from the mechanical. Thus, it is now an appropriate time for discussing the notion of mechanism.

2.4 Mechanism

As I have mentioned at the beginning of the chapter, for Hegel, life is more than matter and everything is included by the *Absolute*. The objective of the Hegelian system is to unite the objective and subjective, the collective and individual. In this regard, Hegel posits mechanism, chemism and teleology as the categories of objectivity. He understands nature as the alienated spirit from itself, thus, the moment of difference, the unresolved contradiction (Hegel, 1970, p.14). In this section, we will see that his speculative organicism is the criticism of the mechanism and that of the mechanical thinking which is the product of the understanding.

First of all, "mechanism is the immediate moment of dialectic objectivity" (Carlson, 2007, p.523). In the category of mechanism, Hegel explains how objectivity appears

immediately. A mechanically determined object is an immediate, indifferent object which contains differences which are indifferent to each other and are connected only by the external connections. In the formal mechanism, the object is the "unity of differents", and thus the action exerted on the other remains only as an external relation (Hegel, 1975, p.262). In other words, in the immediacy of objectivity, each object is external to the others and exists in its self-subsistent indifference. The mechanism therefore is an aggregate of indifferent differences or a set of moments outside of the others.

> This is what constitutes the character of mechanism, namely, that whatever the connection that obtains between the things combined, the connection remains one that is alien to them, that does not affect their nature, and even when a reflective semblance of unity is associated with it, the connection remains nothing more than composition, mixture, aggregate, etc. (Hegel, 2010, p.631)

In this category, the set of objects do not form a real unit in itself but only an appearance of unity. The mechanism is a purely external union of indifferent differences. Objects are outside of each other and they are self-subsistent things whose inner natures are independent of their relationships (Hegel, 2010, p.634). In other words, they are absolutely independent of the totalities in which they participate (Hegel, 2010, p.634). Hegel connects this external character of the connections, as well as of the laws that regulate them, with the general principle of determinism. It is "necessity of nature" (*Naturnotwendigkeit*) that the relations between the objects of a mechanism remain extrinsic and, consequently, do not concern the essence of the objects. The Notion which is immanent to the mechanism retains the internal differentiations and it is based on the external indifferent relationships. As Hegel himself states:

> In so far as it has the concept immanent in it, the difference of the concept is present in it; but on account of the objective totality, the differentiated moments are complete and self-subsistent objects that, consequently, even in connection

> relate to one another as each standing on its own, each maintaining itself in every combination as external. (Hegel, 2010, p.631)

To state in a nutshell, the mechanism constitutes a realm of connections between self-subsisting units that are external and indifferent. These units can, at most, form an aggregate, a composition, a mixture or a cluster since in the mechanism the determinateness of an object has been externally given by the other. At the end of this section, it can be noted again that Hegel understands philosophy as the conceptual understanding of the real world or the "whole" of reality. He thinks that what is important in philosophy is penetrating this world that appears to us as given with its multiplicity of differences, divergences and appearances. Philosophy is then to reach the truth of reality in its complexity and totality. With these considerations in mind, I will move on to the relation of whole and parts in mechanism.

2.4.1 The Mechanical Object

As we have seen in the previous section, in order a mechanism alone to be explanatory, any object to be explained should be merely an aggregate. In the mechanism, objects are absolutely complete and independent totalities and the whole is the sum of them. In other words, the differences are already totalities, they are self-subsistent and essentially objects which are not determined in contrast to the whole (Hegel, 1991, p.712).

When we look at to the Hegel's definition, the object is "the immediate being" indifferent to itself (Hegel, 1975, p.260). Since the object is the immediate being and since immediacy has no determined opposition in itself, the object is indeterminate in the first place. On the other hand, since the concept is essentially determinate, the object must have some determinateness. Therefore, it has a content of complete multiplicity and absolute contradiction. In this definition Hegel resorts to Leibniz's *monad*: "yet the monad is an object, partly in that the ground of its manifold representations" (Hegel, 1991, p.712). The object is both one and multiple. There is a

multiplicity of objects which all together are only one object (the objective world) and, at the same time, each by itself in isolation is a complete object, a totality. Each one is in itself an independent whole that is self-sufficient; however, each is also a part of the whole and, as such, each depends on all the others. Since it presents itself as multiplicity, such an undetermined determinateness is essential for the object. Hegel emphasizes that "because this indeterminate determinateness is essential to the object, the latter is within itself a plurality of this kind, and must therefore be regarded as a composite or aggregate." (Hegel, 1991, p.712).

As purely given, objects are indeed diverse and independent but, on the other hand, they are the parts of a whole, the subordinate elements of a more or less harmonious whole. The solution to this contradiction is the return of the object to the concept and its final identification with it. The first moment of this return is the mechanism. In other words, the mechanically determined object already contains the difference in the concept but these differences still behave as indifferent to each other and their union is only external to them (Hegel, 1991, p.713). The determinateness of such an indifferent object is a multiplicity which is internally differentiated, multiple determinations of internal differences are indifferent to each other and their unity is external.

At this point, what Hegel wants to show is that a mechanical object essentially obeys external determinations and does not manifests any form of self-determination. As we have already seen in the context of infinity, an object to be finite should precisely be determined from the outside (Hegel, 2010, p.112). Thus, in the domain of mechanism, all of the determinations are finite and the object is determined by the other rather than having self-determination. Hegel (2010, p.633) clarifies this character of mechanism in his *Science of Logic* in detail:

> Since the object is thus determinate yet indifferent to its determinateness, through itself it points for its determinateness outside and beyond itself, constantly to objects for which it is however likewise a matter of indifference

> that they do the determining. Consequently, nowhere is a principle of self-determination to be found. Determinism […] assigns for each determination of the object that of another object; but this other object is likewise indifferent both to its determinateness and its determining. For this reason, determinism is itself so indeterminate as to be bound to an infinite progression […].

Now, it is clear that each object is determined from the outside in the absence of a principle of self-determination. We know that the object that determines the other object is at the same time a determined object by another. Since this another object is also determined by another object, such a kind of determination goes to infinity: "the object has the determinateness of its totality outside it, in other objects, and these again outside them, and so forth to infinity" (Hegel, 2010, p.633). Such a linearity, which is the characteristic feature of the bad infinity, is obviously indeterminate. Thus, mechanistic (finite) way of thinking which necessarily arrives a linear chain of determination results only in an infinite progress towards infinity that Hegel calls bad infinity. Such a way of the understanding which gives explanations by always referring to something else turns the explanation into an "empty word" (Hegel, 2010, p.633).

2.4.2 The Mechanical Process

As we have seen so far, what Hegel underlines is that a mechanical object does not manifests any form of self-determination and obeys external determinations. This train of thought necessarily arrives in a discussion on causal relationship. Hegel states that mechanism consists in "externality of causality", where, "in the self-identity which the causal substance has in its effect, the cause equally remains something immediately external to it, and the effect has passed over into another substance" (Hegel, 2010, p.503).

In the domain of mechanism, there is no longer the determination of a substance but of an object. Since "the active object has this determination only by means of another object", as we have already seen, this linear progress results in the bad infinity due to the lack of the principle of self-determination (Hegel, 1991, p.715). Whenever we try

to explain an object, we are immediately thrown to another object; but this other object again cannot establish the explanation of the first. Since the determination always comes from outside, this object is also indifferent to it. On the other hand, causality is an identical determinateness of different substances. In other words, it implies that one object can effectively transform the other and these objects lose their indifferent self-subsistence so as to participate in a common identity. Thus, since in the domain of mechanism the objects only form an aggregate in which each sustains its self-subsistence, causality is only a subjective conception (Hegel, 1991, p.715).

Actually, Hegel explains the details when he speaks of the relation of causality. For him, "effect contains nothing whatever that cause does not contain" and "cause contains nothing which is not in its effect" (Hegel, 1991, p.559). It is clear that to be a cause implies to have an effect and to be an effect implies to have a cause. Also it is clear that if a cause is cause of an effect, it should be contained in that effect, as Hegel states, so as to be the cause of that effect, and vice versa: "a cause is cause only to the extent that it produces an effect; to be cause is nothing but this determination of having an effect, and to be effect is nothing but this determination of having a cause" (Hegel, 2010, p.494).

When we state that what does not present in a cause cannot also be present in its effect, it is revealed that the content of cause and that of effect are same. According to Hegel, here, causality is finite only as an expression in an effect, thus, cause and effect is identical and the distinction is only external: "as finite causality, on the contrary, it has a given content and, as an external difference, it runs its course here and there over it, this identical content which in its determination is one and the same substance" (Hegel, 2010, p. 495).

At this point, Hegel leads the issue to the determinate relation of causality. He mentions again that "cause is determinate in respect of its content and so, therefore, equally is effect" (Hegel, 1991, p.560). Due to such an identity of content and since

this causality is indifferent to the relation of cause and effect, it is clear that such a causality is an analytic proposition. According to Hegel, for example, "the rain makes wet" is an analytical proposition (Hegel, 1991, p.560). As we see obviously, while rain is the cause of wetness, wetness is the effect of rain and, here, the cause and effect have an identical content. Both rain and wetness are originally water, thus, this is a tautological consideration in which the same content is only repeated. In consequence, as positive sciences do, it is possible to calculate or predict effects from causes due to their identical contents and Hegel shows us that mechanical causality obeys the laws of determinism.

About Hegel's conception of the causal relationship, so far, we have seen that (a) there is nothing in the effect that is not in the cause and there is nothing in the cause that is not in the effect, (b) cause and effect are the same and their relation is only external, and (c) due to the such an external reflection, causality is an analytic proposition and it is a tautological consideration of a subjective understanding. All we can find here is a repetition of the same content and this does not provide us any further explanation (Hegel, 1991, p.560). So, again, we are not able to go beyond the limits of the understanding which leads us only to the bad infinity.

As we have seen in the previous section, an object that determines the other object is at the same time a determined object by another. Since this another object is also determined by another object, such a kind of determination goes to infinity. Now, such a linear chain of progress towards infinity is also valid for the relation of cause and effect: when an effect is explained by a cause, this cause should be explained by another cause and such a kind of explanation goes to infinity since this another cause should also be explained by another cause. Hegel underlines that when "we start from an effect; the latter has as effect a cause; but this cause has a cause in turn, and so on" (Hegel, 2010, p.498). Thus, as Hegel says, before a cause is determined as a cause, it is determined as an effect and, in consequence, it is finite since its determined from outside. At this point, we can obviously see the externality of causality as a result of

the absence of self-determination principle. For finite reflection, since every cause is the effect of another cause and since it has an effect which is at the same time the cause of another effect, the causal relationship here is always linear and results in the bad infinity (Hegel, 2010, p.499).

Hegel calls such a kind of causality *determinate causality* (Hegel, 2010, p. 499). In this type of causality, as I have already explained, a cause is the effect of another cause which is prior to it and, at the same time, it is the cause of an effect which follows it. However, here, the causal relationship is not circular and the same content is separated as being a cause on the one hand and as being an effect on the other (Hegel, 2010, p.499). In other words, something is an effect in relation to its pioneer and a cause in relation to its successor. Thus, the effect does not return to itself as a cause and such an absence of circularity (that is, the absence of self-determination principle) results in the bad infinity (Hegel, 2010, p.499). It is clear that in such a causal relationship which is assumed by the understanding, to exclude circularity leads us again to an indefinite progress toward infinity.

> Just as in the latter a cause becomes an effect which has another cause in turn, so too, conversely, the effect becomes a cause which has another effect in turn. The determinate cause under consideration begins from an externality and returns in its effect back to itself, but not as cause; on the contrary, it loses its causality in that process. (Hegel, 2010, p.499)

On the other hand, Hegel defines *conditioned causality* in which circularity is valid and the cause returns to itself again as the effect of its effect (Hegel, 2010, p.502). In other words, in such a causality, the same content is not separated as cause on the one hand and as effect on the other: something which is the effect of a cause is, at the same time, the cause of that cause. In this circular progress, we get out of falling into an infinite progress toward infinity:

> In conditioned causality, on the contrary, the cause refers back to itself in the effect, for the latter is as a condition, as a presupposition, its other, and its act is

> therefore just as much a becoming as a positing and sublating of the other. (Hegel, 2010, p.502)

Conditioned causality is therefore an infinite reciprocal action due to its circular form, while determinate causality is finite causality which results in a linear infinite progress towards infinity (Hegel, 2010, p.503). In other words, while conditioned causality is in the form of good infinity (of a closed cycle of determinations), determinate causality results in the bad infinity. As we have already seen, finite reflection excludes the circularity and such an exclusion results in falling into an infinite indefinite progress:

> That first cause, the one which acts first and receives its effect back into itself as a reaction, thus comes up again as a cause, whereby the activity which in finite causality runs into the bad infinite progression is bent around and becomes an action that returns to itself, an infinite reciprocal action. (Hegel, 2010, p.503)

In consequence, now it is clear to us that the mechanism consists of such a finite causality, an external relation between cause and effect. Thus, here, causality is a tautological consideration of a subjective understanding and it is only an analytic proposition. In this way, Hegel shows us that mechanical causality obeys the laws of determinism.

After this brief summary of causal relationship, we can return now to discussing on mechanical process. The logical process of the mechanism is made up of three syllogisms. In the first place, the singular objects, by their particular relationship, manifest their universal nature. In the second syllogism, a singular object gives rise to a system of universal objects by communicating its particular determination to others. Finally, in the absolute mechanism, it is the universal center that maintains the particular and singular centers in their respective relationships.

As I have already mentioned at the beginning of this section, in the domain of mechanism the objects only form an aggregate in which each sustains its self-subsistence, thus, causality is only a subjective conception here (Hegel, 1991, p.715).

The difference of objects is implied in the concept of objectivity but this difference remains external to the object itself. In other words, in mechanism, the objects are in relation as homogeneous objects: they do not differ except by the relations that we conceive between them and their difference is indifferent to them. In the system which they constitute, they remain as what they are outside of it. It is for this reason that the mechanical object presupposes another which determines it (Hegel, 1991, p.718). The object is determined from outside; so, it is product of mechanical process. Also, as a product, it is indifferent to its process of determination, that is, such a mechanical process is an external determination:

> […] an object only as product, for what it is, is only by virtue of the mediation of an other in it. It is as product that it thus is what it was supposed to be in and for itself, a composite, a mixture, a certain arrangement of parts, in general such that its determinateness is not self-determination but something posited. (Hegel, 2010, p.637)

In consequence, what Hegel underlines is that the object as product is only an externally determined aggregate. The principle of self-determination is absent in mechanical process and the determinateness of the mechanical object is posited from its outside. As we have seen repeatedly, the absence of the principle of self-determination implies the absence of circularity and this means that we fall into an infinite indefinite progress which is the image of the bad infinity.

2.5 Mathematics and Calculation

So as to conclude this chapter, Hegel's criticism of mathematics has a significant role since it is related to both mechanism and his concept of life. As we know, for Hegel, philosophy is nothing more than an attempt to access the absolute itself. Thus, first of all, he starts by criticizing the concept of infinity by distinguishing the bad and good infinities. For him, mathematics does not have a correct conception of true infinity, that is, of the absolute. Then, he argues that mathematics does not deal with what is

real since its object of study is space devoid of life, namely, space without time (Hegel, 1970, pp.38-40).

It is important to underline that, according to Hegel, infinity is nothing more than another way of naming the absolute which is the object of philosophy, while philosophy is nothing more than an attempt to access it: "The infinite in its simple concept can be regarded, first of all, as a fresh definition of the absolute; as self-reference devoid of determination, it is posited as being and becoming" (Hegel, 2010, p.108). As we have already seen, the bad infinity expresses itself only externally, while the good infinity expresses itself internally. In other words, while the bad infinity is extensive, the good infinity is intensive.

Hegel states in the *Science of Logic* that number is "in all instances an external aggregate, simply an analytical figure without any inner connectedness. And because it is thus produced only externally, all calculation is a generation of numbers, a counting or, more precisely, a summing up" (Hegel, 2010, p.171). Number, for Hegel, is a purely external identity and produced only by the addition of elements. In such an addition, there are no internal links and the elements are only put together. Thus, number is indifferent determinateness just like the mechanical objects, that is, it is determined only from the outside, through external relations.

In this regard, according to Hegel, it is clear that the sum operation is nothing more than externally putting some elements together. It is the production of an aggregate whose elements are only externally combined. Here, the unity is only an appearance just as it is in the mechanism. Thus, the sum operation is an analytical synthesis that produces nothing new:

> The sum of 5 and 7 is the conceptually unconstrained joining of the two numbers; one can call such a mechanical process of counting from seven onwards until the five ones have been exhausted an adding, a synthesizing, exactly like the counting from one onwards to five – a synthesizing, however, which is wholly analytical in nature, for the combination is only an artifact in which there is

> nothing, or to which nothing is added, which was not previously there in external fashion. (Hegel, 2010, p. 173)

At this point, it becomes clear that arithmetic is an expression of the bad infinity which is the external and extensive type of infinity. Calculation is a mechanical procedure deprived of concept and it does not produce anything new except externally combined numbers. According to Hegel (2010, p.172), "the concept of the sum has no other meaning than this: that these two numbers are requested to be combined and, indeed because they are numbers, externally combined, that is, in a way that is conceptually unconstrained or mechanically". Since it is an external operation, arithmetic is an analytical consideration just as the causality in the mechanical domain (Hegel, 2010, p.178). Thus, calculating is only operating in a mechanical way rather than thinking. Hegel affirms that since the object of mathematics is the exteriority of number, mathematical thought is an external thought:

> [...] thought finds itself engaged in an activity which is at the same time the utter externalization of itself, *a tour de force* in which it moves in an element void of thought, drawing relations where there is no capacity for necessary relations. (Hegel, 2010, p.178)

Such a mechanical mode of acting, for Hegel, is the mode of spiritual mechanism which is the counterpart of the material mechanism we have discussed in the previous section. Since the mechanism means having external relations whose togetherness constitute nothing more than an aggregate, it can reveal itself also as spiritual mechanism just as the material one. In other words, the mechanical way of thinking means operating, like mathematics, only by a set of formally defined rules and calculation is therefore a kind of mechanical activity:

> Spiritual mechanism, like its material counterpart, also consists in the things connected in the spirit remaining external to one another and to spirit. A mechanical mode of representation, a mechanical memory, a habit, a mechanical mode of acting, mean that the pervasive presence that is proper to spirit is lacking in what spirit grasps or does. (2010, p.631),

In his *Philosophy of Nature*, Hegel again underlines that "mathematics is essentially a science of the Understanding" (Hegel, 1970, p.38). According to him, "the past and future of time as being in Nature, are space, for space is negated time" (Hegel, 1970, p.37). Space finds its content in time and the self-awareness of space is its time. However, according to Hegel, time is more abstract than space since there is no "science of time" or "geometry of time" (Hegel, 1970, p.37). Mathematics is enough for understanding the visible laws of space, whereas understanding the laws of time requires self-conscious reason. In other words, for Hegel, mathematics is incapable of adequately apprehending the sense of time as the inner dynamism of the concept which develops the totality of the determinations of the spirit. Hegel affirms that mathematics deals with its objects "only qua quantitative, and among them, it does not include time itself" (Hegel, 1970, p.40). If the science of space is a science of the understanding (finite thinking), the science of time would have to be a science of reason (*Vernunft*). Thus, we can say that this science of time is philosophy itself. The object of philosophy is the real whole, that is, the Absolute. This Absolute which is in the form of the true infinity (the infinity of reason) manifests itself in Nature since the true infinity manifests itself in the finite and returns to itself from that manifestation.

At this point, I can again state the central question of this study: what is the difference that distinguishes a living being from a non-being? As a consequence of this section, we have seen that calculation is nothing more than a mechanical mode of acting since it only operates by the external relations; thus it is clear that it can also be performed by a machine without thinking as Hegel mentions: "since calculation is so much of an external and therefore mechanical business, it has been possible to manufacture machines that perform arithmetical operations with complete accuracy" (Hegel, 2010, pp.181-182). Thus, we can conclude that capability of calculating is not a characteristic distinguishing living thing from a machine.

2.6 The Relation of Whole and Parts

In the center of this study, what I want to show is that mechanism does not adequately explain vitality since in an organism the relation of parts to whole is not external. For this reason, it is significant here to discuss the relation of whole and parts. As we have already seen, in the category of mechanism, the set of objects form only an appearance of unity and they are absolutely independent of the whole in which they participate. Also, we already know that the concept of infinitude does not mean to remove limits so as to go beyond finitude. Rather, infinitude is located in the finite itself and it does not determine the finite from outside. Just as infinitude cannot exclude finitude, also in the relationship between whole and parts, one cannot exclude the other. Whole is not constituted of parts but projected from them.

In the category of mechanism, as we have already seen, objects exist with immediate independency and they are themselves self-subsistent instead of subsisting only in the totality in which they participate (Hegel, 2010, p.451). In other words, the parts of the mechanism are complete existents which are independent of the whole and unaffected by it. Thus, in the mechanism, whole is nothing more than the association of parts. Also, since the parts are absolutely independent, this association cannot be anything more than an external relationship to which they are entirely indifferent.

In the mechanical domain, parts do not need the mediation of the totality and do not presuppose the "whole" whose unity is only an appearance (Hegel, 2010, p. 444). The parts (the mechanical objects) are fully independent from any unity in which they are only externally involved (Hegel, 2010, p.451). The whole, here, is no more than the sum of its parts and it can be fully explained through the parts. In other words, there are no specific determinations of the whole upon the parts. It is possible, therefore, to build the mechanism from its objects. Here, there is no reciprocal conditionality or infinite circularity (good infinity) which I have explained in the previous section. Thus, it is clear that the relations established externally such as mechanistic relations are

thoughtless relations. On the discussion about whole and parts, Hegel (2010, p.455) states:

> That of whole and parts is the thoughtless relation which the understanding first happens to come up with; or, objectively speaking, it is a dead mechanical aggregate that indeed has form determinations and brings the manifoldness of its self-subsisting matter together into one unity; but this unity is external to the manifoldness.

In other words, in the relations established externally such as mechanistic relations, totality made up of parts is a mechanical and dead aggregate in which the relationship between whole and parts is lack of thought. Such parts (or objects), when they are put together, form only an aggregate (Hegel, 2010, p.451). In such relations, the whole is the sum of the parts and nothing more. In such relation, the whole is a "reflected unity" (Hegel, 2010, p.452).

> But further, the whole is equal to the parts but not to them as parts; the whole is the reflected unity whereas the parts constitute the determinate moment or the otherness of the unity and are the diversified manifold. […] But this, their "together", is nothing else but their unity, the whole as such. (Hegel, 2010, pp.452-453)

However, according to Hegel, the properties of a part cannot be understood in isolation from the whole. The parts as themselves are not equal to the whole but to the divided whole, that is, to the parts. In other words, whole is the whole of the parts and parts are the parts of the whole. The notion of whole presupposes that of part and vice versa. What is important in the relationship of whole and parts is that each of them is mediated by the other. Namely, each finds the foundation of its self-subsistence in the other (Hegel, 2010, p.460). Since parts do not exist outside whole, outside their relationship with the whole, it is not possible to construct whole from parts. This is a circular relationship which is the image of the good infinity and this means that *the whole is more than the sum of the parts*.

> The parts are diverse from one another. It is they that possess independent being. But they are parts, only when they are identified by being related to one another; or, in so far as they make up the whole, when taken together. But this 'together' is the counterpart and negation of the part. (Hegel, 1975, p.191)

As the main point of this study, for example, the members and organs of a living body should not be considered only as the parts of the body since they are what they are only in their unity and since they are by no means indifferent to the whole. If these members and organs are assumed as only simple parts as finite thinking does, then they are no longer living bodies but simply parts of corpses (Hegel, 2010, p.680). The external and mechanical relationship of whole and parts is not enough to know organic life in its truth. In other words, in organic nature, there is no purely mechanical relationship of whole and parts.

The understanding which is actually finite thinking as we have already seen, treats whole as an aggregate and reduces it to parts (Hegel, 1970, p.303). The aim of the understanding is to divide the whole and investigate its parts in isolation. As I mentioned at the beginning of the section, Hegel criticizes such a reductionist method. According to reductionist view, on the contrary of the Hegelian point of view, "the whole is nothing more than the sum of the parts". In other words, reductionism is the way of thinking of the understanding assuming everything as a mechanical aggregate which can be divided into its parts. However, according to Hegel, the understanding excludes the relations within whole, kills the organism to get to know it but, in this case, it no longer deals with "living bodies".

2.7 Chemism and Teleology

As we have seen, in the *Science of Logic*, the development of objectivity determinations occurs through mechanism, chemism and teleology. For the transition to the idea which appears first as life, the objectivity is completed as an external teleology. In his *Encyclopedia*, Hegel exposes the Philosophy of Nature in three major

subdivisions: mechanics, physics, organics. Here, he again mentions that "the first part of the Philosophy of Nature was Mechanics, the second part, in its conclusion, was the Chemical Process, and this third part is Teleology" (Hegel, 1970, p.275). Thus, it is clear that we should understand objectivity as the Philosophy of Nature; in other words, we should understand the Philosophy of Nature as a moment of the concept.

Objectivity is the result of the development of the concept that posits itself as the other. In other words, it is one of its moments of the concept rather than an independently given fact. Thus, here, we should understand the object (*objekt*) in the logical sense. In the mechanism, the object in its immediacy is the concept only in itself. In chemism, bodies interact in accordance with chemical principles thanks to opposition and mutual affinities which are valid for all living organisms. It is important to note that while in mechanism and chemism the concept exists only in itself, in teleology the concept exists for itself (Hegel, 2010, p.650). The end of this process, therefore, is the concept that frees itself from the object.

In his *Philosophy of Nature*, on the other hand, Hegel studies life no longer as a logical determination of the sense of being but as a natural determination of the idea in its exteriorization. Here, nature is an external contradiction and it shows itself as "the idea in the form of otherness" (Hegel, 1970, p.13). In fact, when he says that nature is characterized by exteriority, Hegel refers to a world in which all things are external to one another. Thus, nature is the domain of exteriority; it is a world in which things are out of each other. However, this does not mean that it is outside of us, on the contrary, our bodies are a part of nature. Since nature is the idea in the form of otherness, its fundamental determination is exteriority and it is the negation of the idea. However, since it is at the same time refers to the idea, it is an unresolved contradiction (Hegel, 1970, p.17). Hence, "the final goal of nature and the genuine actuality of the idea" is surpassing such a contradiction, overcoming determinateness and becoming spirit (Hegel, 1970, p.24). In this way, nature evolves dialectically according to the logic of life. The Hegelian *Philosophy of Nature* can be seen as a dialectical process from the

indeterminacy of space towards life and spirit. Thus, it is clear that the concept of life, just as the Hegelian dialectics, is the logic of self-reference which is the characteristic of the good infinity.

According to Hegel, as we have seen in the previous sections, the mechanism is characterized by the exteriority of relations. The mechanical object is an undifferentiated object and although it contains differences, these are indifferent to each other and their relationship is only external (Hegel, 1975, §194). Hegel explains the external relations in nature with the movement of celestial bodies: this movement is characterized by a spatiotemporal unit that establishes the relationship between mechanical objects (Hegel, 1991, p.342). Such a relationship is external and abstract since the mechanical objects are self-subsistent and indifferent to this relationship. In other words, in the mechanism, due to its independent and complete objects which are indifferent to each other and which are only externally related, there is no principle of self-determination. Thus, mechanism or mechanical thinking is not sufficient to apprehend life in its circular form. For objects such as life, there is a circular organization expressed in the self-production process of the living being. Here, determinism is no longer valid.

In chemism, on the contrary, the object shows a significant tendency towards differentiation so that "objects are what they are only by their relation to each other" (Hegel, 1975, §194). After exploring the category of mechanism, in his *Philosophy of Nature*, Hegel emphasizes that "the chemical process contains in its Notion the transition into the organic sphere" (Hegel, 1970, p.160). In fact, he obviously states that the chemical process is, in general, life itself:

> The chemical process is, in fact, in general terms, Life; for the individual body in its immediacy is not only produced by the process but also destroyed by it, so that the Notion no longer remains at the stage of inner necessity but is made manifest. (Hegel, 1970, p.269)

For Hegel, vitality reveals itself in the principles of chemism and it emerges from the chemical process. What only distinguishes it from vital process is its finitude. In a chemical process, the beginning and the end of the process are different. The "fire" and "activation" (*Begeistung*) that trigger and maintain the chemical process are extinguished in the neutrality of the result (Hegel, 1970, p.269). In other words, the products of the chemical process are indifferent to each other just as the objects of the mechanics; thus, they do not react with each other for a further continued process. The chemical process is completed in some time and once it is completed, it ends up. Hegel (1970, p.269) underlines that "if the products of the chemical process spontaneously renewed their activity, they would be life".

On the other hand, the organism is "the infinite process which spontaneously kindles and sustains itself" (Hegel, 1970, p.270). Life is not completed or extinguished in its products, but rather it reproduces itself continuously. The living individual produces itself as a living being and it is at the same time both the producer and what is produced. Thus, in this self-production process, the beginning and the end are no longer indifferent to each other, that is, the products cannot be separated from the process as an inert result. In this way, we can see the circular form of life that, by returning to itself, overcome the finitude of the chemical process. It is clear that vitality is a continues chemical process in which, in its circular form, the beginning and the end is identical: "if we are to describe what a body is, the whole cycle of its alterations must be stated; for the true individuality of body does not exist in a single state but is exhausted and displayed only in this cycle of states" (Hegel, 1970, p.270). In consequence, the transition into the organic sphere is immanent in the chemical process and the living being is a chemical process that returns to itself:

> The organism is already in itself what it is actually; it is the movement of its becoming. But that which is result is also that from which it has resulted—beginning and end are the same; this, which was hitherto only our knowing, has now entered into existence. (Hegel, 1970, p.275)

Teleology is the third moment of objectivity in its transition to the idea. Hegel affirms that "teleology is especially contrasted with mechanism, in which the determinateness posited in the object, being external, is essentially one in which no self-determination is manifested" (Hegel, 1991, p.734). While in mechanism and chemism the concept exists only in itself, the transition to teleology is occurs when it frees itself from the object: "where purposiveness is discerned, an intelligence [Verstand] is assumed as its author, and for the end we therefore demand the Notion's own free Existence" (Hegel, 1991, p.734). Now, the object itself becomes the concept that is realized in it as an end:

> Mechanism purports to be a non-relation between Objects. Dialectical Reason points out that non-relation is a form of relation. Therefore, the objects cannot keep themselves apart. This is Chemism. Finally, the repulsion and attraction of objects is brought together; this is the posited End or Teleology of Notion. In Teleology, subjective Notion recognizes the object as its own self. Purposiveness, at first external, becomes internal. This is Idea. The very purpose of subject and object is to sacrifice themselves in favor of Idea. (Carlson, 2007, p.525)

While the categories of the mechanism and chemism are lack of self-determination, teleology is related to the concept which is self-determining and therefore free. In other words, the Hegelian teleology does not consist of external causal relationships; on the contrary, it is related to the purposiveness within the activity of the concept which has its negation in itself. It is important at this point to highlight again the holistic character of the Hegelian thought of nature. Both mechanism and chemism do not account for the whole. In the realm of nature, in the organism, only the teleology of life comprehends this whole (Hegel, 2010, p.665). This does not mean, however, that the mechanism and chemism are completely ignorable; on the contrary, from the Hegelian perspective, they are necessary moments of the absolute whole of reality.

Teleology which is the third moment of objectivity in *Logic* corresponds in the *Philosophy of Nature* to the part devoted to the life of the living organism. In nature,

according to Hegel, there is no external agent which impose a purpose on natural organisms. Life is the operation of infinite teleology and the living being has an internal end: "life is means, but not for an other but for this Notion; it perpetually brings forth its infinite form" (Hegel, 1970, p.275). The interiority of the concept that superseded the mechanism and the chemical process concerns only with what it is in itself and for itself. Hence, it is not characteristic of natural exteriority and it acts in accordance with an end. In this sense, the movement of returning to the idea is based on a principle which is outside of nature but which is determined by it in the context of life. The purposiveness which is recognized in itself and for itself in the Spirit as a principle and which is determined in nature is acting in accordance with an end. What is effective in the context of organic life, in the living being, is this act.

In consequence, we see that Hegel understands the vital process, in all domains, as immanent. Nothing intervenes in life from outside. Hegel does not admit the presence of any external vital force that would guide nature. As I have already mentioned, the transition into the organic sphere is immanent in the chemical process rather than being given by an additional transcendent substance or vital principle. What the vital process maintains and what it requires to maintain itself is its self-organization. Development is, at all levels, whether in logic or in nature, a purely immanent development. The way in which the idea returns to itself always consists of self-movement. Thus, such an immanence and the presence of self-movement is a fundamental refusal of essentialism and vitalism[3]. In other words, we can see in the Hegelian system that the distinction between life and non-life is related to an immanent organization or idea rather than a substance or essence.

From the Hegelian point of view, therefore, life cannot be reduced to non-life. The distinction between living and non-living things is not due to being consist of different

[3] "Vitalists hold that living organisms are fundamentally different from non-living entities because they contain some non-physical element or are governed by different principles than are inanimate things" (Bechtel & Richardson, 1998).

essences or material contents but due to difference in their organization. That is, this distinction is only ideal and objective (Hegel, 1970, pp.274-275). Hegel refuses both a mechanistic and vitalistic position. Vitality is not identified by a given immutable essence, but rather it is a pure self-constitutive act. As a result, it can be said that Hegel interprets the category of objectivity from the point of view of objective idealism, and hence as one of the moments of the world spirit: the object of the Absolute is the world, that is, its other.

As we have already seen, the idea is neither pure subjectivity nor pure objectivity but the unity of the subject and object. The immediate determination of the idea as such is life. Life is the end and means of itself and it is thus an indissoluble unity.

> Life, considered now more closely in its idea, is in and for itself absolute universality; the objectivity which it possesses is throughout permeated by the concept, and this concept alone it has as substance. Whatever is distinguished as part, or by some otherwise external reflection, has the whole concept within it; the concept is the soul omnipresent in it, a soul which is simple self-reference and remains one in the manifoldness that accrues to the objective being (Hegel, 2010, p.678).

As an infinite circular process which returns to itself, life constitutes the "elevation to the first ideality of nature" (Hegel, 1970, p.273). Through mediation, Hegel here structures the idea of nature per the determinations of the concept, starting from the most abstract and immediate sphere towards the concrete sphere of life. An organism cannot be understood gradually from its parts but only from its conception as a whole. In other words, life can only be understood in terms of teleology: each organ is an end and a means in relation to the others. The Hegelian conception of life is far from being a mechanical system and we should understand here the infinite living unity of all things. After this brief introduction to the Hegelian concept of life in this chapter, I will try to elaborate in Chapter 4 on the idea of life and try to clarify the self-referential organization of it.

CHAPTER 3

THE PROCESS METAPHYSICS OF A. N. WHITEHEAD

An alternative to Hegel's dialectical view of progress and philosophy of the *Absolute Spirit* is presented in the *Philosophy of Organism* by Alfred North Whitehead (1861–1947). The work of Alfred North Whitehead is one of the most innovative contributions to the philosophy of the 20th century. It successfully combines a metaphysical prehension with a firm scientific foundation. From the abstract to the concrete, Whitehead is definitely a system philosopher. He is a mathematician and also one of the main logicians of history (the famous co-author, with Bertrand Russell, of *Principia Mathematica*). He proposes a new way of understanding reality very different from traditional conceptions. In this chapter, I will try to present as clearly and succinctly as possible the fundamental lines of Whitehead's process metaphysics. Then, I will explain how these ideas have an impact on his concept of life and how they relate to the philosophy of Hegel.

3.1 From Moore to Whitehead: A Short Historical Background

Since the beginning of the 20th century, the hegemony of Hegelianism in British academic philosophy came to an end and the views that defend the existence of the objective world as independent of the knowing mind began to gain strength. G.E. Moore (1873-1958), in the article "The Refutation of Idealism" (1903), attacked the *esse est percipi* ("to be is to be perceived") doctrine. This basic doctrine means that outside the mind, it is pointless to talk about *being*; reality without thinking and consciousness is incomplete and self-contradictory. In fact, this well-known form of modern idealism was born thanks to George Berkeley (1685-1753). In his criticism of Locke, Berkeley denied the existence of bodies as substances and said that they are

only “ideas”. For him, the all substances are made up of ideas, the reality of which consists in being perceived. In other words, he holds that ordinary objects are only collections of ideas which are mind-dependent. Berkeley understands ideas as objects of sense-experience: his theory of ideas is a theory that refers only to the sensible world (Berkeley, 2000). If we return to Moore, he demonstrated that there is no identity between the act of sensation and the object of the act itself.

Meanwhile, debates on the side of idealism were still alive and popular. B. Bosanquet (1911) defended that what we need for an objective look at the premise of knowledge is not recognition of the psychic nature of things but recognition of the logical nature of reality revealed through the medium of the subject. F. H. Bradley (2016) stated the same thing at the end of his famous treatise: “Outside of spirit there is not, and there cannot be, any reality, and the more that anything is spiritual, so the more is it veritably real” (p.489).

Somewhat later, Samuel Alexander (1859-1938), author of *Space, Time, and Deity* (1920), moved with a great attention to the results of scientific research. He argues that ideas are not intermediaries between the human spirit and empirical reality. They are things but it is understood that things are not exhausted in their materiality. In fact, matter has only a spatial dimension while things are particular determinations of a unitary and original reality which is posited as “space-time” by Einstein’s physics (Alexander, 1966, p.247). However, Alexander gives a metaphysical interpretation of this space-time unity. According to him, space and time are a unity like the fact that human beings is a unity of spirit and body. This implies not only that there is no separation between spirit and body in human beings but also that there is no spiritual world on one side and no material world on the other and there is no world of essences separated from the world of existences. Hence, the mentally perceived connections between things are not subjective but objective; they are “ideal” connections intrinsic to reality and proper to it (Alexander, 1966, p.353). Alexander defends that matter has evolved over time and time is the internal principle (not external) and condition of the

evolution of matter. By virtue of this evolution, matter has reached an "organic" order from which human beings has emerged. This means that the spirit-body unity of human beings has its roots in the space-time of cosmic reality. Thus, the spirit is not reducible to the body but it does not exist outside of matter: it is, on the evolutionary level, "extension" of the body (Alexander, 1966, p.347). S. Alexander, in *The Basis of Realism* (1914), also built a philosophical system that intends to start from the observation of reality itself, of the universe, in order to be able to know its structure and its categories. Starting from the sense-experience, he concludes that the spatiotemporal continuum is the foundation of everything that exists, namely, the ontological foundation of everything (Alexander, 1969). A. N. Whitehead and S. Alexander were two of the British philosophers who produced comprehensive metaphysical systems at the beginning of the 20th century.

On the other hand, in *Our Knowledge of the External World* (1914), B. Russell (Whitehead's student) argued against the identification between sensations and perceived objects. He stated that the "thing" built by the subject out of sense data is nothing but a hypothesis, that is, a logical construction whose existence cannot be proved (Russell, 1926, p.147). In fact, Russell simply agreed with Einstein's position: if space and time are inseparable, if matter is energy and if everything is relative to the observer, then both matter and mind are unimportant oversimplifications of reality. Hence, he treated reality as neither pure mental nor pure physical and called his position "neutral monism". In other words, for him, matter is less material than Newton thought and spirit is less spiritual than Berkley thought. These are different ways of organizing space-time and what actually exist are "events" (Russell, 1926, p.227). Thus, we can say that we are a group of space-time events that stick together for a little moment. The same position is also valid for perception, that is, the sensation is both mental and physical. While an object is defined by all the appearances that emanate from the place where the mind is directed, the mind is defined by all the appearances that start from objects and reach the mind. If we represent the universe as

a network of interactions between many objects and many minds, an object is the collection of all its information outputs and a mind is the collection of all its information inputs. However, it is important to note that the object is not the generator of such outputs and the mind is not the receiver of such inputs. There is no substantial difference between matter and mind, that is, they both have the same origin which is neither purely physical nor purely mental—which is neutral.

Later, Russell argued that Bradley's position has its origin in an unacceptable conception of the relationships between the different constituent beings of the universe. This erroneous concept in Russell's eyes is called by him "theory of internal relations". According to this theory, each being is what it is by virtue of its rightful place in the totality. Russell replaced this theory by the "theory of external relations" according to which the relations are independent of the properties of the related elements. For example, for him, being of an entity (A) greater than another (B) is not a property intrinsic to A or B. Hence, Russell concludes that relations are external and do not constitute the being of related things or a property of them. As a result, the abandonment of the theory of internal relations allowed Russell to abandon idealism and monism. In fact, once the theory of internal relations is rejected, we reject that the real is constituted by its essential relationship with thought and we admit that the objects of the universe have an essence independent of our knowledge of them. This conception of things is a realistic position. The theory of internal relations implies that the different individuals and facts of the universe constitute a unitary system (monism). Once this has been rejected, we can affirm that there is a plurality of facts whose truth does not depend on either the supposed totality or the truth of other facts. This starting point opens the way to analytical methods in philosophy: since the universe consists of multiple elements, the most appropriate way to understand it will be to decompose complex facts down to the simplest. Russell called this position "logical atomism" (Russell, 1918).

For the Hegelian idealism, as we have seen in Chapter 2, the relations of the subject and the object are *organic* (that is, preserves itself by its own action) in nature so that they mutually come up with one another. This means that there is no subject without an object just as there is no object without a subject and true reality is *Absolute* as the unity of both. The Hegelian idealism, thus, turns out to be the opposite of Russell's atomism.

Later, under the light of these debates of his time, Whitehead structured his own categorical scheme and declared his position about these debates by introducing his *Reformed Subjectivist Principle*. The Reformed Subjectivist Principle concerns the relationship between knowledge and reality. It is usual to consider that the priority affirmation of subjectivity is a distinctive mark of modern philosophy since Descartes. Such a subjectivist turn characterizes Cartesian thought and also the philosophies of Berkeley, Hume, Leibniz and Kant, among others. Whitehead focuses on Hume's doctrine of "impressions of sensation" which he characterizes by the simultaneous acceptance of two principles: *The Sensationalist Principle* and *the Subjectivist Principle* (Whitehead, 1969, pp.157-160). The Sensationalist Principle asserts that the primary activity in the act of experience is a subjective consideration of the data. The data is thus a mere sensation. The Subjectivist Principle adds to the Sensationalist Principle that the act of experience can be adequately analyzed in terms of pure universals. Whitehead's philosophy of organism denies both as they appear in modern philosophy. According to Whitehead, the world is comprised mainly of subjects present by apprehending not only objects but also other subjects. Furthermore, nothing happens in the universe that does not refer to a subject's experience and, in fact, the universe is experience. Whitehead mentions that "apart from the experiences of subjects there is nothing, nothing, nothing, bare nothingness" (Whitehead, 1969, p.167). As we will see in the following sections, the concept of objectification is essential in his philosophy of organism: it defines something "other" (an alterity) that makes itself present to the subject as an object in the experience (Whitehead, 1969,

p.166). Whitehead underlines that all our knowledge must be based on experience and, in experience, other realities different from the subject itself are objectified to it. Thus, he proposes a reformed subjectivist principle that begins with an analysis of the act of experience as Descartes did but recognizes an objective datum in that experience. This principle, in other words, maintains the objective reality of the datum which is offered externally to the experience of the subject while it is immanent to the subject at the same time. The Reformed Subjectivist Principle combines a realistic attitude with the priority of subject which is the characteristic of modern subjectivism, in other words, it represents a compromise between modern subjectivism and ancient or medieval realism.

At the end of this section, it is worth noting that the three volumes of *Principia Mathematica* which were the joint work of Russell and A. N. Whitehead was published in 1910-1913. The authors attempted here to show that pure mathematics follows from purely logical premises and it uses only concepts that can be defined in logical terms. In consequence, they tried to emphasize that pure mathematics is reducible to logic. Of course, in practice, we cannot just take a complicated mathematical formula at random and express it in pure logical terms; however, in principle, all pure mathematics is ultimately derivable from logical premises. Saying that mathematics is reducible to logic means that pure mathematics can in principle be derived from certain fundamental logical concepts or initial propositions and that mathematical propositions can be translated into logical propositions in principle with equivalent truth values.

3.2 Whitehead's Concept of Nature

In *The Concept of Nature* (1920), Whitehead remains within the framework of philosophy of science. Here, he limits his task within explaining the connection between an empirical basis and the conceptual constructions of natural sciences. However, this connection is actually very different from the direct correspondence that

classical empiricism tries to establish. Philosophy of science does not explain the fact of cognition as a whole and does not seek to find a metaphysical criterion of truth, that is, a criterion that implies a correlation of scientific knowledge to beyond the physical reality. Its task is only finding out the content of the concept of nature in the most general sense. Thus, *The Concept of Nature* starts with two main questions: what is nature in general and what is nature as the object of natural sciences as a whole?

Whitehead answers these main questions in accordance with the spirit of realism: nature is what is given in perception through the senses, no more and no less (Whitehead, 2015, p.3). In other words, for him, nature is what is observable and, therefore, object of perception is something external to thought. The sense-perception of nature is the only true perception but the conceptual one distorts the truth of nature. Copresence of sense-perception and conceptual perception makes it impossible to distinguish between imaginary fictions and the direct sensory data. Thus, Whitehead underlines that nature is self-contained against thought, that is, "nature is closed to mind" (Whitehead, 2015, p.3).

So as to understand Whitehead's this position better, we should correlate it with the philosophical debates of the last century. In the context of these debates, Whitehead confronts the followers of the Hegelian idealism that treats nature as a moment in the self-realization of the absolute reason, namely, the manifestation of spirit as we have seen in Chapter 2. Whitehead's position is directed against the Hegelians who seek to find much more meaning in nature than the data given in sense-perception. He obviously states that "...we may drop the term 'apparent'; for there is but one nature, namely the nature which is before us in perceptual knowledge" (Whitehead, 2015, p.27). Thus, Whitehead's position here is in fact determined by the confrontation of realism and the Hegelian idealism. For him, as we will see in the following sections, the nature discovered through sense-perception is a set of entities whose mutual relations can be expressed by thought without reference to the absolute spirit (*Geist*) or to sensible consciousness.

According to Whitehead, the first task of philosophy is therefore to give a general classification of natural entities discovered in perception. We should not look for any hidden inner truth that is fundamentally different from what is directly given to the sensory organs; in other words, nature is one-dimensional in this sense. (Whitehead, 2015, p.3). Its appearance is its reality and it has no veil of deception beyond which we should go so as to separate sensory appearances from absolute reality. Whitehead expresses his position better by distinguishing two ways of thinking nature: while he defines thinking about nature "without thinking about thought" as thinking homogeneously, he characterizes thinking heterogeneously as thinking about it "in conjunction with thinking either about thought or about sense-awareness or about both" (Whitehead, 2015, p.3). Hence, he mentions that natural sciences should study nature only through thinking homogeneously. Otherwise, as I have stated before, copresence of sense-perception and conceptual perception makes it impossible to distinguish between imaginary fictions and the direct sensory data. It is this confusion what the source of many errors or problems is.

Now, it is clear to us that Whitehead does not accept the bifurcation of nature. He adheres to the principle of "there is only one nature" and underlines that it is not possible to make a distinction between its subjectivity and objectivity or primary and secondary qualities (Whitehead, 2015, p.27). In other words, for him, the subjective perception of qualities of objects is a pseudoscientific postulate. Thus, he starts a discussion on the doctrine of mechanistic materialism about the primary and secondary qualities (Whitehead, 2015, p.31). According to this doctrine, it seems to us that the sensually perceived qualities belong to the things in themselves. This supposition is explained by Hobbes as "the main deception of sense" (Hobbes, 2019). However, in fact, they only arise in a subject under the influence of material bodies that have continuity in space and time and, so, that have motion. This train of thought, in fact, historically goes back to Democritus and has a place in the installation of natural

science materialism. Hobbes explains this classic thesis of mechanistic materialism as the following:

> The clapper has no sound in it, but motion, and makes motion in the internal parts of the bell; so the bell has motion, and not sound, that imparts motion to the air; and the air has motion, but not sound; the air imparts motion by the ear and nerve unto the brain; and the brain has motion but not sound; from the brain, it rebounds back into the nerves outward, and thence it becomes an apparition without, which we call sound. (Hobbes, 2019, p.5)

Primary qualities are the qualities which exist within the body of an object independently of our perception—for example, the movement of the material body. According to the fundamental thesis of mechanistic materialism, as it is clarified by Hobbes, primary qualities affect the human consciousness and lead to the arising of secondary qualities. These are directly perceived qualities such as color, taste, smell, etc. Whitehead defines "bifurcation theory" as the following: while elements such as "the greenness of the trees", "the warmth of the sun" or "the hardness of the chairs" are learned by sense-awareness, "the conjectured system of molecules and electrons" (causal nature) affecting the mind produces this awareness of apparent nature (Whitehead, 2015, p.21). According to Whitehead, such a distinction can only be made "in accordance with the state of physical science at the close of the seventeenth century" (Whitehead, 2011, p.54). This is what he calls the bifurcation of nature:

> The bifurcation theory is an attempt to exhibit natural science as an investigation of the cause of the fact of knowledge. Namely, it is an attempt to exhibit apparent nature as an effluent from the mind because of causal nature. (Whitehead, 2015, p.22)

In fact, the bifurcation theory seeks the cause of some knowledge rather than ultimate knowledge. However, Whitehead states that there should be a necessary unity between the causal (or conceptual) and the apparent (sensible) nature. He points out that not only secondary qualities but also the primary qualities are recognized by a subject, that is, by consciousness (Whitehead, 2015, p.22). In other words, both thinking about the

directly perceived qualities and about their sources such as motion—and also constructing such a relation between one another—are the productions of the same consciousness. Here, the only difference is that secondary qualities are directly perceived qualities, that is, related to sensory perception. Since primary qualities are not immediately given through sensual perception, it is not possible to recognize or define them without abstract thinking. Hence, since secondary qualities arise from primary ones, there is no fundamental difference in the ontological status of these qualities. If we define one as subjective, then the other should be subjective too. Whitehead formulates this internal contradiction of the bifurcation of nature as the following:

> The whole notion is partly based on the implicit assumption that the mind can only know that which it has itself produced and retains in some sense within itself, though it requires an exterior reason both as originating and as determining the character of its activity. But in considering knowledge we should wipe out all these spatial metaphors, such as 'within the mind' and 'without the mind'. Knowledge is ultimate. (Whitehead, 2015, p.22)

Whitehead attempts to develop a single concept of nature as the object of physics so as to overcome such a bifurcation of nature. He underlines that, in any case, mechanical materialism is theoretically inconsistent and insufficient in approaching the problem of consciousness (Whitehead, 2011, p.79). Consciousness is ignored and pushed in this perspective beyond nature as a "ghost in the machine" (Ryle, 1949) which cannot be investigated. In this way, all psychological aspects are eliminated and reduced to the physiological ones. On the other hand, for Whitehead, nature has no gaps in it that separate the subjective from objective. As we have seen so far and as we will see in detail in the following sections, Whitehead treats philosophy as the criticism of abstractions (Whitehead, 1968, p.67). In the view of Whitehead, everything is what it is and all simplifications are only the result of representations in mind. So, separating some phenomena of reality from the whole by defining them as subjective is the result of an illusion, that is, of a philosophical error rather than the conclusion of science.

According to the main thesis of Whitehead's philosophy of science, all nature is one (Whitehead, 2015, p.27). The task of his philosophy of science is only finding out the content of the concept of nature in this sense. In other words, it attempts first not to split nature into sections which are studied separately by each individual science and, secondly, it tries to establish a logical connection between the concept of nature and all the other concepts that science operates with. Hence, the fundamental notion here is different from the original terminology of classical empiricism which seeks to show how knowledge arises from experience: the notion of emergence (Whitehead, 1969, p.20).

The core doctrine of emergentism supposes that everything that exists is made of the same final entities and from these entities new systems endowed with new properties[4] arise (Emmech, Køppe, & Stjernfelt, 1997). It can be said that, however, this view does not explain satisfactorily how the animated arises from the inanimate or how consciousness is born from the central nervous system. Also, it remains to be clarified how interconnected or mutual relations between nature and social aspects should be treated and how these relations affect cognition. Hence, emergence means here for us not just the generation process of knowledge by experience, but rather it refers to the logical reconstruction of semantic relations between scientific concepts and direct experience. We will see in the following sections the central role of the perpetual emergence of new entities in Whitehead's cosmology. At this point it is important to note that Whitehead's early philosophy of science is closely interrelated with his late metaphysics. In consequence, the notion of emergence leads us to the question of what all things are made of.

Before answering this question, it is important to remind that Whitehead points out and rejects the errors of the theoretical systems developed in the natural sciences of the 17th century. In the 20th century, revolution in physics has entailed the replacement

[4] An emergent property is a property which a collection or complex system has, but which the individual members do not have.

of the old categories of mechanical realism and concepts such as process, internal interrelationships, force fields, radiant energy, etc. appear. For Whitehead, criticism of the old categories is a significant step towards the development of new concepts of physics and his philosophy of science is the prerequisite of his speculative philosophy.

Under the light of the revolution in twentieth-century physics, Whitehead adopts a Heraclitean position about nature: nature reveals itself to us as a becoming. Any limited process of nature that preserves the concreteness inherent in all nature also represents becoming and is called *event*[5] (Whitehead, 2015, p.15). Whitehead employs this notion to describe a spatiotemporal incident (occasion). From this perspective, the world is composed of events or occasions of experience rather than enduring things. Hence, perception presents us the facts of nature as occurrences (events) by manifesting the structures of their mutual relations. Nature appears to us as a complex network of events that take place in space and time, that is, nature is a process consisting of processes (Whitehead, 2015, p.36).

As I have already emphasized, Whitehead rejects the bifurcation of nature into causal and apparent components, that is, into mind and matter. In this regard, the most significant attempt in his philosophical system is treating nature as process. Thus, the fundamental characteristic of an event is its "passage", that is, its being a process. At this point, understanding the notion of extension has a central importance for understanding Whitehead's system. According to Whitehead, space and time are abstract concepts derived from the "extensive relation" between events which implies the passage of events and the extension of them over each other (Whitehead, 2015, p.23). He underlines that the continuity of nature arises from extension, that is, "every event extends over other events and every event is extended over by other events" (Whitehead, 2015, p.39). Here, Whitehead also clarifies the relationship of whole and parts in accordance with his system: "the 'part' is an event which is extended over by

[5] Whitehead calls these events later "actual entities" or "actual occasions" which are "the final real things of which the world is made up" (Whitehead, 1969, p.18).

the other event which is the 'whole" (Whitehead, 2015, p.39). It is clear therefore that although the continuous flow present in perception is subdivided into discrete events, they always maintain a connection with the whole. This means that there are no independent events. According to Whitehead, "events are the relata of the fundamental homogeneous relation of 'extension'. Every event extends over other events which are parts of itself, and every event is extended over by other events of which it is part" (Whitehead, 2007, p.61). In consequence, the whole development of nature is governed by the relation of extension.

As I have mentioned before, the categorical schema developed by Whitehead later creates the prerequisites for the establishment of his speculative philosophy. In this regard, he attempts to express and explain eternity in his philosophical cosmology and, therefore, introduces a special constitutive element into the picture of nature: objects. Objects are the eternal elements in nature. They exist independently of our senses and they cannot be explained by mind; rather, the senses and the mind require these objects. It is important to note that objects cannot manifest themselves outside of events. According to Whitehead, "we are comparing objects in events whenever we can say, 'There it is again'. Objects are the elements in nature which can be again" (Whitehead, 2015, p.92). In nature, there are various objects many of which we cannot even notice. They pass from one event to another without changing, although the context and the event itself can change:

> Namely the event is what it is, because the object is what it is; and when I am thinking of this modification of the event by the object, I call the relation between the two 'the ingression of the object into the event'. It is equally true to say that objects are what they are because events are what they are. Nature is such that there can be no events and no objects without the ingression of objects into events. (Whitehead, 2015, p.93)

We see here the core idea of Whitehead's philosophical system: the world is constituted by an extensive set of events which change continuously and which are connected to each other. In other words, the world is a relational whole which is in a

perpetual evolution. The continuity of nature arises from extension, that is, from the fact that each event extends over another event and is included in other events. Thus, it is clear that the boundaries of an event are not definite and it is not possible to separate the events totally from each other. As we will see in the following sections, the concept of process implies that everything changes, that is, everything is in a state of becoming. Despite such a dynamic character of nature, as I have already mentioned, objects are the eternal elements that pass from one event to another without changing.

Objects convey some recognizable permanence within the events. The faculty which allows us to grasp such permanence is called by Whitehead recognition: "recognition takes place within the present without any intervention of pure memory" (Whitehead, 2015, p.80). According to his definition, "it is impossible to recognize an event because an event is essentially distinct from every other event. Recognition is an awareness of sameness" (Whitehead, 2015, p.92). Objects, just as events, are given in perceptual knowledge and, thus, the relationship of experience between these two elements does not cause a bifurcation. However, objects are what remain unchanged within the perceptive flow.

In nature, there are indefinite number of objects with varying degrees of complexity. Whitehead refers especially to three types of them: sense-objects, perceptual objects and scientific objects (Whitehead, 2015, p.95). The simplest objects are sense-objects, that is, the sensory qualities such as color. Simply, we can consider these qualities as being non-spatiotemporal. For example, the color of the ocean or of the sky is blue. Also, the color of someone's eyes or the color of my coat can be blue. Maybe, the paint on the wall or the color of the cover of a book is blue. All listed here involve the same sense-object: blue color. Hence, it is clear that the same sense-object can appear in an infinite variety of situations (Whitehead, 2015, p.96). It is important to note that Whitehead here mentions an important distinction which G. E. Moore has already introduced in "The Refutation of Idealism". Moore (1903) has suggested distinguishing between the act of sense perception and its content. In this way, the

concept of sense data has been emphasized as being the central concept of realism. Here, it is clear to us that Whitehead obviously distinguishes sense-object from events. On the other hand, as I have already mentioned, objects cannot manifest themselves outside of events. This means that, in Whitehead's way of thinking, they enter the events and pass from one event to another without changing while the situations of their ingressions change.

In fact, there are four classes of events involved in the perception of sense-objects: (i) the percipient events (the state of the observer or of the subject of perception), (ii) the situations (as we have already seen), (iii) the active conditioning events, (iv) the passive conditioning events (Whitehead, 2015, pp.97-98). The relationship between a sense-object and nature is completed by these four events. Active conditioning events can be conceived as "a cause of the occurrence of a sense-object in its situation" (Whitehead, 2007, p.86). According to Whitehead's example, if we consider an astronomer who observes the redness of a star through a telescope, the active conditioning event of the sense-object is the situation whose character is expressed by the telescope (Whitehead, 2007, p.94). To give another example, if we look at the color of a coat in our room, the light of this room is an active conditioning event since it is an active condition for this observation. In this case, while our bodily state during the observation is the percipient event, the situation is where we see the color (the coat in our room). Passive conditioning events, on the other hand, are the events which cannot be classified as the other three events—they are events of the rest of nature (Whitehead, 2015, p.98).

In the latest example, the coat which is perceived is the perceptual object. Perceptual objects as the second type of objects are "the ordinary objects of common experience", that is, "the 'things' which we see, touch, taste and hear" (Whitehead, 2007, p.88). A perceptual object is therefore the product of the various sense-objects that share the

same situation. It is important to note that the ingression[6] of objects in events occurs in separate ways for different types of objects. Each type of object corresponds to different types of ingression (Whitehead, 2015, p.95). Thus, the role of situations for sense-objects and perceptual objects is different from each other. Perceptual objects can be "delusive" or "physical" (Whitehead, 2015, p.99). If we see the reflection of the coat on the mirror, that is, if the situation of the event is a passive conditioning event, the perceptual object is delusive. On the contrary, if the situation is an active conditioning event and if it is the situation of the object observed, the perceptual object here is physical.

The third type of objects are scientific objects which are not directly perceived and which "express the causal characters of events" (Whitehead, 2007, p.95). These are represented by electrons, atoms, and molecules. Thus, Whitehead dissociates himself from phenomenalism in a very definite way. According to his way of thinking, the scientific explanation depends not only on sense-objects but also on its own objects which are not directly perceived:

> Finally, the characters of the observed physical objects and sense-objects can be expressed in terms of these scientific objects. In fact, the whole point of the search for scientific objects is the endeavour to obtain this simple expression of the characters of events. These scientific objects are not themselves merely formulae for calculation; because formulae must refer to things in nature, and the scientific objects are the things in nature to which the formulae refer. (Whitehead, 2015, p.101)

Now, it is clear to us that the percipient event (the subject or the observer) cannot function itself without other three classes of events involved in the perception of sense-objects. Here, Whitehead's way of thinking is more complicated than the relationship between subject and object posited by traditional views. As I have already mentioned,

[6] The term 'ingression' is used by Whitehead "to denote the general relation of objects to events" (Whitehead, 2015, p.93).

for Whitehead, the spatiotemporal relationships between events are governed by the fundamental homogeneous relation of extension. He also takes into account physiological mechanisms in relation to the direct physical impact of the environment. In consequence, for Whitehead, cognitive process is a complex whole in which a single factor cannot be ignored or eliminated.

As we will see in the following sections in detail, Whitehead calls his system of thought *Philosophy of Organism* which also implies his criticism of mechanistic materialism. We have already argued in the context of Hegel's system that thinking of an organism forces us to take into account the relations constituting an indivisible whole. Whitehead, in this regard, points out that nature appears to us as a complex network of events taking place in spatiotemporal dimensions and that we cannot ignore the fundamental role of mutual relations in this scheme. Whitehead treats cognition not as a subjective image but as an actual event just as all the processes preceding it and distinguishes his way of thinking from mechanistic materialism. In other words, he does not separate or isolate subjectivity from physical reality. Also, Whitehead's definition of objects distinguishes his understanding of physical reality from traditional views. He defines objects as remaining unchanged like Platonic ideas and therefore his position can be considered as close to Platonism more than naturalism.

In fact, as I have already underlined, Whitehead's later metaphysics has deep roots in his early philosophy of science and his philosophical system includes strong Platonic motives. In the following sections, I will try to clarify his speculative philosophy which, according to Whitehead, "is the endeavour to frame a coherent, logical, necessary system of general ideas in terms of which every element of our experience can be interpreted" (Whitehead, 1969, p.3).

3.3 The Dynamism of Reality and Unity of Diversity

In order to understand Whitehead's metaphysics better, we should take into account the great changes in the Western conception of reality between the end of the 19th and the beginning of the 20th century. The late 19th century was a time when everyday life became faster and even more interconnected through new means of transportation and advancements in mass communications. In other words, it was the beginning of the era of interconnectedness and the first globalization. As I have already mentioned, in the 20th century, revolution in physics entailed the replacement of the old categories of mechanical realism and concepts such as process, internal interrelationships, force fields, radiant energy, etc. appeared. In this regard, the famous equations of James Clerk Maxwell (1831–1879) drew the attention of Whitehead. In the mid-19th century, scientists knew that electrical and magnetic phenomena were related but it was unclear how or why they were related. Maxwell introduced then the idea of energy fields and, according to him, the cause of all magnetism was the movement of electric charge. Maxwell's this unification was a revolution in Physics. Now, almost all the tools that we use in our daily lives are based on electromagnetism.

According to Whitehead, Newton was wrong to think that the universe is made up of isolated points of matter which have precise space-time locations and Maxwell's "Dynamical Theory of the Electromagnetic Field" (1865) could allow overcoming this fallacy (Whitehead, 2012, p.27). As we have already seen, Whitehead points out that nature appears to us as a complex network of events taking place in spatiotemporal dimensions and that we cannot ignore the fundamental role of mutual relations in this scheme. In other words, once placed in a field, no point in space and time is independent of the influences of any other point in the field and this is one of the core principles of Whitehead's philosophical system. Likewise, it is worth to note that the propositional logic of Gottlob Frege (1848-1925) is another element that has contributed to Whitehead's metaphysics. While the Aristotelian logic is based on the rigidly distinction of subject and predicate, Frege's logic is a groundwork for the development of the logic of relations (Angelelli, 1967). In this regard, as we have seen

in the previous section, Whitehead treats cognition not as a subjective image but as an actual event just as all the processes preceding it.

At this point, it is useful for us to return to the notion of emergence which now refers to the logical reconstruction of semantic relations between scientific concepts and direct experience. The notion of emergence, as I have mentioned before, leads us to the question of what all things are made of. Starting from the theoretical advances in 20th Century Physics, Whitehead develops an exclusive metaphysics based on the notion of actual entity (or actual occasion). "Event" is the term used by him in *The Concept of Nature* (1920) and in *Science and the Modern World* (1925) as we have already seen but its equivalent in *Process and Reality* (1929) is "actual entity". Here, Whitehead defines actual entities as "the final real things of which the world is made up" and he formulates in his ontological principle that "there is no going behind actual entities to find anything more real" (Whitehead, 1969, p.18). These are not substances but relationships. In other words, an actual entity is nothing more than a set of elementary processes internally linked together. As a simple analogy to understand what Whitehead refers, a process consisting of processes can be considered as an organism. Thus, in fact, the entire metaphysics of Whitehead is also called the philosophy of organism. We can say that actual entities are relationships which are transformed into actual world (Whitehead, 1985, p.26).

It is important to note that Whitehead introduces an extremely innovative feature by his notion of actual entities: they characterize both the inanimate material (including space and time which emerge from the processes of actual entities) and the sphere of life. In other words, for Whitehead, the root of all existence is in actual entities (Whitehead, 1969, p.18). As we will see later in detail, each actual entity is related to all other actual entities thanks to the prehensions. This means that actual entities are always connected and interdependent with each other just as the points of an electromagnetic field. The term prehension, in Whitehead's terminology, describes both the subjective aspect of perception and the fact that perception participates in the

constitution of the object (Whitehead, 1969, p.23). Also, according to the ontological principle, actual entities differ among themselves:

> God is an actual entity, and so is the most trivial puff of existence in far-off empty space. But, though there are gradations of importance, and diversities of function, yet in the principles which actuality exemplifies all are on the same level. (Whitehead, 1969, p.18)

It is now clear to us that, according to Whitehead, reality is composed of essential relationships and that everything real is of the same type. In other words, everything real is an act in spite of the presence of different states for actualities. Also, since relationships occur through prehensions, we can say that reality is constituted through prehensions (Whitehead, 1969, p.44). Saying that reality consists of actual existences may seem like a tautology at first glance. However, by introducing the ontological principle, Whitehead rejects the identity between thought and being. This means that existence is split into two categories—into the actual on the one hand which is primary for something to be real and, on the other hand, the potential existing in thought, idea, consciousness, etc.

These two categories of existence are events or actual entities on the one hand and, on the other hand, "eternal objects" which is called by Whitehead "objects" in *The Concept of Nature* (Whitehead, 1969, p.30). In the context of his philosophy of science, as I have already mentioned in the previous section, Whitehead distinguishes between events and objects. Objects refers to the repeating identical aspects of a wide variety of situations (Whitehead, 2015, p.81). Now, eternal objects are the forms that specify the character of actual entities. Actual entities temporarily acquire various characters defining them and these characters potentially determine the actual entities in question. Eternal objects are these potentials which remain unchanged. Whitehead defines eternal objects as mathematical entities (Whitehead, 1969, p.62). They are thus immutable and define the variations of actual entities. According to Whitehead, they are the "pure potentials for the specific determination of fact or forms of definiteness" (Whitehead, 1969, p.22). Hence, at first glance, it can be said that eternal objects are like Plato's ideas, that is, Platonic-Aristotelian forms. However, we must be careful

about the difference between their ontological status. Both eternal objects and Platonic ideas define or determine things but they have an important difference: Platonic ideas, according to the customary construal, exist by themselves in an independent world which is separated from the sensible world. For Greek philosophers, forms were the true reality, namely, the most actual reality. Eternal objects, on the other hand, are mere potentials which only exist when they are incorporated or enter in actual entities (Whitehead, 1969, p.24). In consequence, every actual entity, in its inner becoming, tends to realize as a process the potentialities determined by eternal objects. As I have already mentioned, eternal objects need to enter in actual entities in order to exist but it is important to note that they do not need a specific actual entity.

We have seen that one of the categories of existence is actual entities and the other one is eternal objects. On the other hand, as I have already mentioned, Whitehead underlines that everything real is of the same type, that is, everything real is an act. As we know, according to monism, the ultimate material of all that exists is of a single type. This means that all of reality is of one kind. In this sense, Whitehead's philosophy of organism can be seen as a kind of monism. Whitehead states his position by the following principle: "the presumption that there is only one genus of actual entities constitutes an ideal of cosmological theory to which the philosophy of organism endeavours to conform" (Whitehead, 1969, p.110). However, the presence of two categories of existence may also imply that reality is multiple and it consists of separate existences. If we treat these categories as being externally related and therefore as a multiplicity, then this leads us to an atomistic position. In this regard, Whitehead introduces the notion of "universal of universals" and does not allow us for interpreting reality as such a multiplicity (Whitehead, 1969, p.21). This notion is what Whitehead calls primordial category and creativity which is necessary for existence. Creativity is in short "the principle of novelty" (Whitehead, 1969, p.21) and it is a timeless element which contributes to the organization of the universe. In other words, it is the renewal process of actual entities and it is what makes the dynamism of the world intelligible. Here, Whitehead emphasizes that the "many" implies the "one" and the "one" implies the "many". The "many" means a divided diversity and this diversity

is an essential requirement of being. Thus, for Whitehead, the "many" arises thanks to creativity and it implies the unity of diversity. At this point, it is clear to us that Whitehead is not a determinist. He mentions that a process has an internal creativity contributing to its self-determination, namely, its self-realization (Whitehead, 1969, p.222).

On the other hand, due to the multiplicity of entities or the multiplicity of experiences, Whitehead's philosophy is sometimes considered as a pluralism. As I have already mentioned, however, Whitehead obviously underlines his monistic position by emphasizing that there are last components of nature and they are all on the same level (Whitehead, 1969, p.18). In this regard, on account of the multiplicity of actual entities, we can think that this is not an absolute monism just as the monism of Parmenides' *Being*. In fact, according to Whitehead, the universe is composed of multiple actualities which are not independent but related and connected to each other organically. Thus, we can think of an organism as an analogy so as to understand Whitehead's system. As we will see later in detail, Whitehead states in his *Principle of Relativity* that each element of the universe participates in one way or another in the constitution of every other entities (Whitehead, 1969, p.65); hence, the universe can be considered as a whole organism. In other words, every entity in one way or another is significant for the rest of the universe and "all actual entities are in the solidarity of one world" (Whitehead, 1969, p.67). There is consequently a kind of universal sympathy as there is in the Stoic way of thinking according to which, in one way or another, everything is present in everything and everything is sensitive to everything. Whitehead formulates this universal sympathy by his principle of relevance or of "intensive relevance" (Whitehead, 1969, p.148). To state in a nutshell, the universe is constituted by actual entities through a becoming process which characterizes their way of being and the unity of all that exists is the unity of a network of relationships.

In consequence, by basing on the relationships of the elementary components of reality, Whitehead develops a theory of becoming. Just as the points of an electromagnetic field, actual entities are always connected and interdependent with

each other in the solidarity of one world. In this way, if everything that exists must participate in one way or another in the constitution of other entities, how the notion of novelty in such an evolving universe can be considered? We have already seen that Whitehead refers to the permanence in the universe by introducing eternal objects. These objects receive the predicate of eternity and, therefore, they do not belong to the actual world which is an arena of death and regeneration. They are mere immutable potentials and it is clear to us that in a world where there is no death, there can be no renewal or novelty. However, as I have already mentioned, Whitehead is not a determinist. He refers to the novelty in the universe by introducing creativity which is one of the ultimate categories in his philosophical system. It is the explanatory reason of universal becoming. Thus, according to Whitehead, there are both permanence and change in the universe and it is not possible to explain everything that exists by only depending on causality. At this point, in Whitehead's system, we can see that the universe consists of the opposites: actuality and potentiality or novelty and permanence. The role of opposites in Whitehead's philosophy may lead us to think of dialectical tradition in the history of thought. In fact, as we will see in the following section, we can say that Whitehead's philosophy is dialectical from beginning to end.

3.4 Dialectics in Whitehead

As we have seen in Chapter 2, reality is dialectical for Hegel and the Hegelian dialectics interprets the principle of contradiction as the reconciliation of being and nothingness in becoming. There are many supporters of dialectics also in the 20th century among the followers of the diverse philosophical movements. For example, according to the German neo-Hegelian philosopher Richard Kroner (1884-1974), dialectics takes place only in the spirit, in thought. Giovanni Gentile (1875-1944), an Italian neo-Hegelian idealist philosopher, affirms that dialectics is the process of thought and he develops a subjective idealist theory based only on the presence of an actively operating subject. As another example, according to Jean-Paul Sartre (1905-1980), dialectical reason is the reason of history and it is discovered in the dialectical

development of social praxis. Sartrean dialectics takes place between persons in a material reality that conditions them and, therefore, we can consider it as a dialectics of interpersonal relationships. Also, Gaston Bachelard (1884-1962) posits that empiricism and rationalism complement each other and, in this way, he introduces a dialectic model of the cumulative growth of scientific knowledge. As we can see obviously, dialectics is in general associated in one way or another with the activities of a subject and it is this subject that reveals the dialectical structures in the process of its functioning.

I have already mentioned that Whitehead's system consists of the opposites such as actuality and potentiality or novelty and permanence. Regarding dialectics, Whitehead's case is very special. In the Whiteheadian philosophy, first of all, nature is governed by the ontological principle which asserts that everything resides as an act or as a potential (Whitehead, 1969, p.40). Also, as I have already stated, the primordial category shows us that the world is the unity of diversity. At this point, Whitehead emphasizes another important principle: *the principle of relativity*. This should not be confused with Einstein's theory of relativity. Whitehead's principle of relativity, like all his other principles, has a metaphysical meaning and mentions that becoming is the result of the potentialities which belong to the nature of being (Whitehead, 1969, p.22). In other words, while being is the broadest sphere of potentialities, actuality is the realm of the realized potentialities. Hence, we can see here a clear distinction between being and actuality. It is also important to note that, as I have already mentioned, Whitehead does not separate or isolate subjectivity from physical reality. The reformed subjectivist principle maintains the objective reality of the datum which is offered externally to the experience of the subject while it is immanent to the subject at the same time. In consequence, in Whitehead's system, it is not a subject that reveals the dialectical structures in the process of its functioning but it is the universe itself from which any subject cannot be isolated. It is possible to say that while the unity of opposites is the most significant characteristic of self-moving reality, dialectics is the

structure of this movement. Whitehead describes the circle of such a dialectical opposition between actuality and potentiality as the following:

> In such a philosophy the actualities constituting the process of the world are conceived as exemplifying the ingression (or 'participation') of other things which constitute the potentialities of definiteness for any actual existence. The things which are temporal arise by their participation in the things which are eternal. (Whitehead, 1969, p.18)

Gregory Vlastos (1907-1992) calls the dialectics of Whitehead "heterogeneous" while he calls that of Hegel "homogeneous"[7] (Vlastos, 1937). In other words, while "for Hegel all categories of the existence are categories of *Geist*, Whitehead's categories of existence are diverse and irreducible" (Lucas, 1986, p.141). In Whitehead's system, his process metaphysics cannot be explained only by the categories of actuality and it also necessarily refers to the possibility since actuality requires potentiality to be actual. The analysis of reality therefore inevitably leads us to the consideration of the realm of potentiality. I have already mentioned that creativity is the principle of novelty; however, a novelty cannot be explained without referring to a previous potentiality. As it is already known since Aristotle's time, if we agree that "nothing comes out of nothing", novelty requires a potentiality from which a novel actuality emerges. Thus, so as to understand the dialectical movement well, the important question for us in the following section is how a potentiality is actualized.

3.5 The Emergence of Novelty

We have seen so far that, in Whitehead's system, everything consists of events or actual entities. Everything is in process and every actual entity is related and sensible to the rest of the universe. This shows us that, in a whole system, all relations are internal and constitutive (Whitehead, 2011, p.123). Here, we can think of a system in

[7] According to Lucas (1986), due to the contrast between objectivity and subjectivity, internality and externality, the Hegel's dialectics can also be seen as heterogeneous (p.142).

which every actual entity emerges as a result of the previous entities, that is, previous state of the universe. However, as I have already mentioned, Whitehead is not a determinist. He introduces the notion of creativity so as to explain the novelty and the evolution, namely, self-determination of the universe. In this way, every actual entity tends to realize the potentialities which are called eternal objects. In consequence, the multiplicity of actual entities that constitute the solidarity of the universe and their dialectical relationships with eternal potentialities lead us to think of an evolving universe which consists of both novelty and permanence and which does not remain identical to itself forever. In this section, a brief discussion about these relations will make us better understand Whitehead's cosmology and how potentialities are actualized.

At this point, our main question is how pure potentialities (namely, eternal objects) enter into actual entities. In his studies on the philosophy of science, Whitehead simply introduces the concept of object and this concept is the basis of his later metaphysical ontology. As we have already seen, he emphasizes that everything that exists is linked to one another just as the points of an electromagnetic field. Whitehead does not separate living beings from non-living things within such a network which we can consider as a whole organism and, according to him, everything that exists performs a process just like a subject's grasping the objects. In other words, with an anthropomorphic point of view, he treats all of the relationships between all entities—even the relationships between inert objects—as "perceptions" (Whitehead, 1969, p.58). This is an essential point so as to understand Whitehead's cosmology. While he points out the connection or continuity between the living and inert things, he tries to explain the lower strata of existence from the superior stratum in a hierarchical order and an anti-reductionist way. Thus, we can say that he starts from humans as the most complex beings or the superior stratum in order to explore human characteristics in the lower systems (Whitehead, 1969, p.119). Since the upper strata arise from the lower one in such a system, it is clear to us that the features of the upper systems must

potentially exist in the lower systems. In this way, with an anthropomorphic point of view, Whitehead describes the transformation of potentiality into reality or the formation of an actual occasion as the same process of a subject's grasping an object, that is, as the process of perception.

At this point, such a description may remind us the Cartesian subjectivity. According to Descartes, as it is well known, subjective reality is better known than the objective one. In this sense, to say "this stone is grey" does not express a known fact and once we return to the subjective experience, our primary starting point should be to say "my perception of this stone is as grey" (Whitehead, 1969, p.159). In other words, "I experience this stone as grey" and the keyword here for us is "experience". It is important to mention again that, in Whitehead's system, everything is experience[8]. In consequence, such a perception is the pattern of an actual occasion's becoming (Whitehead, 1969, p.161). However, we should not think here that Whitehead tries to define the entire world on the basis of the perception of a subject ("my perception") from a solipsist or phenomenological point of view. The actual entity is an organizing entity and, like the Leibnizian monad, it is a unity in multiplicity. As I will clarify in the following lines, in Whitehead's cosmology, there is no specific subject or object which is not contributed to the network of relationships, namely, to the perception set of other entities.

If we return to the example of "my perception of this stone is as gray", this statement may imply a specific form that an occasion receives in a person in accordance with the subjectivist principle. In order to eliminate such a specific form and to get the objective identity of an actual occasion, consciousness can be subtracted from this pattern (Whitehead, 1969, p.162). Thus, we obtain a pure act of acceptance, namely, the pattern of an object's inclusion in a specific subjective unity. Whitehead introduces here the concept of prehension which allow us to exclude consciousness from

[8] Whitehead defines actual entities as "drops of experience" (Whitehead, 1969, p.18).

perception. It is important therefore to note that not all prehensions are conscious or cognitive (Whitehead, 1969, p.184). It is also important to underline that actual entities, unlike the Leibnizian monads, are not closed in themselves but are connected with each other and with the rest of the universe through prehensions. In fact, an actual entity is a set of prehensions. In other words, it is a set of relations with all other actual entities that make up the evolving universe and with eternal objects by the same way. To state in a nutshell, prehensions are the relational links that actual entities have with each other and with eternal objects, namely, they are the acts of appropriation. What Leibniz calls in his monadology "perception" is what Whitehead calls "prehension".

Depending on their types of relations, Whitehead classifies prehensions in two groups: physical and conceptual (Whitehead, 1969, p.33). Physical prehensions are the relations within the actual world, namely, between actual occasions. Conceptual prehensions are on the other hand the relations of eternal objects and these objects enter into events through conceptual prehensions. If we look at the latest example, the perception of a stone can be considered as the pattern for physical prehension while the perception of "grey" can be seen as the pattern for the conceptual one (Farmer, 1997, p.230). If our presentational immediacy (that is, our direct perception) is deceived by the subject-predicate structure of our language, we conceive "grey" as a property of the stone; however, this will be an interpretation rather than a perception (Whitehead, 1969, pp. 171-173). Then, Whitehead distinguishes pure prehensions from the impure ones. It is important to note that the eternal object of "grey" can be contributed not only to a pure conceptual prehension but also to the physical realization of "grey" in an actual entity. While the data of pure conceptual prehensions are eternal objects, impure conceptual prehensions are the ingressions of these objects into actual entities (Whitehead, 1969, p.33). Now, we can see in the process of prehension how Whitehead describes the transformation of potentiality into actuality.

As I have mentioned so far, actual entities are connected with each other through prehensions. This means that in Whitehead's cosmology, there is no specific subject

or object which is not contributed to the network of relationships, namely, to the perception set of other entities. In the context of perception, according to Whitehead, Hume and Kant ignore or do not take into account the participation of causal efficacy by focusing on presentational immediacy (Whitehead, 1969, p.173). For example, I clearly do perceive solid objects here and now. The presentational immediacy consists in only the apprehension of the present given in space and time and does not carry any information from the past or about the future. However, both the perceived objects and my body (or my sensory system) through which I perceive objects here and now has a history. Thus, if we take into account the participation of causal efficiency, it is clear to us that the perceived objects and my perceiving body are the result of their past and they are under the ongoing influence of history although I do perceive them here and now. I have already mentioned that, according to Whitehead, if we conceive "grey" as a property of the stone, this will be an interpretation rather than a perception:

> In this perceptive mode the sensa are 'given' for the percipient, but this donation is not to be ascribed to the spatial object which is thereby presented, the stone, for example. Now it is a primary doctrine that what is 'given' is given by reason of objectifications of actual entities from the settled past. (Whitehead, 1969, p.171)

According to Whitehead, first of all, potentiality "is the correlative of givenness" (Whitehead, 1969, p.44). Givenness becomes actuality when all other potentialities are rejected except the one which is being realized and this one is therefore what is given. If we have an actuality, this means that the potentiality of its non-existence was eliminated, that is, non-givenness became impossible for it (Whitehead, 1969, p.45). At this point, if actual entities are the result of a past and givenness, can we say that they are not free? Whitehead mentions that "the individuality of an actual entity involves an exclusive limitation. This element of 'exclusive limitation' is the definiteness essential for the synthetic unity of an actual entity" (Whitehead, 1969, p.44). This means that actual entities are internally determined by the conditioning imposed by the properties of numerous entities with which they integrate. Then,

Whitehead clarifies that although actual entities are internally determined, they are externally free (Whitehead, 1969, p.46). During its formation, an actual entity chooses or decides between several possible integrations.

In *Process and Reality*, Whitehead explains his concept of freedom in detail. As I have already mentioned, in the Whiteheadian cosmology, creativity is the principle of novelty (Whitehead, 1969, p.21). An actual occasion is a new existence which is different in many ways from any element or component which it unites. Creativity is inherent in actual entities or events as a common attribute. Thus, the foundation of existence is also identified by the power of creation. Whitehead's main metaphysical principle or dialectics is a progressive movement from diversity to unity by creating new existences different from the diverse elements which are being integrated or connected with each other. In this way, "many" becomes "one" and enriches that unity. Hence, it is important to underline that the unity of diversity here is also the diversity of unities which incessantly update the universe. At this point, the teleological operation of prehensions becomes clear to us. Whitehead emphasizes that a prehension "involves emotion, and purpose, and valuation, and causation" (Whitehead, 1969, p.19). An actual entity "functions in respect to its own determination" and this means that the life of each entity is a self-chosen process (Whitehead, 1969, p.25). The unity of diversity is therefore not a static characteristic of the universe. Just as an organism, it is a living unity which is constantly renewed by emergence of new actual occasions. In consequence, each actual entity has its self-determination on the one hand and all freedom is limited on the other hand by givenness and potentiality:

> But there is no such fact as absolute freedom; every actual entity possesses only such freedom as is inherent in the primary phase 'given' by its standpoint of relativity to its actual universe. Freedom, givenness, potentiality, are notions which presuppose each other and limit each other. (Whitehead, 1969, p.133)

It is clear to us that Whitehead preserves Spinoza's *causa sui* but puts process in place of substance[9]. As it is formulated in the ontological principle and principle of relativity, each actual existence can only be described as an organic process. Whitehead also mentions in his reformed subjectivist principle that a process is "the becoming of experience" (Whitehead, 1969, p.166). In the Whiteheadian cosmology, the processes in microcosm imitate what the universe represents in macrocosm; so, we can conceive the universe as a whole organism and all reality as a process of self-realization. In this way, Whitehead places process as the ultimate reality of existence and formulates a dialectics between permanence and novelty.

3.6 The Concreteness of Experience

As we have seen in the previous sections, in the processes constituting the universe, there is a development and evolution through unification and assimilation of multiple elements. These components are integrated in a complex and complete unity which we can consider as a whole network of relations and which is different from its past. In this network, each actual entity prehends all the entities in its environment directly or indirectly. According to Whitehead, prehension is "the activity whereby an actual entity effects its own concretion of other things" (Whitehead, 1969, p.52). In other words, the prehension process is the process of capturing various elements for the constitution of an actual entity and it connects the other entities to the experience of the concrescent entity by uniting all of them in a complex series of relationships. Here, it becomes important for us to understand the concept of concrescence process which involves the prehension process. In the final analysis, the concreteness process is the formation of actual existence and this is the fusion of "many" into "one". Whitehead denotes this formation process with the term "concrescence" which we can consider

[9] According to Whitehead, every individual actual entity "satisfies Spinoza's notion of substance: it is causa sui [cause to itself]" (Whitehead, 1969, p.222).

as an act of fusion (Whitehead, 1969, p.211). Actual entities have two forms of fluidity which Whitehead respectively calls “concrescence” and “transition”:

> One kind is the fluency inherent in the constitution of the particular existent. This kind I have called ‘concrescence’. The other kind is the fluency whereby the perishing of the process, on the completion of the particular existent, constitutes that existent as an original element in the constitutions of other particular existents elicited by repetitions of process. This kind I have called ‘transition/ concrescence’ moves towards its final cause, which is its subjective aim; transition is the vehicle of the efficient cause, which is the immortal past. (Whitehead, 1969, p.210)

To state in a nutshell, the formation of a new actual entity occurs through the concrescence of prehensions. We have seen so far that an actual entity is constituted by prehending other entities of its actual world and unifying them in this creative process. The diverse things become an individual unity through the concrescence process, namely, concrescence is the passage from diversity to unity (Whitehead, 1969, p.23). Hence, it can be said that every actual entity is both a subject and an object in this process. In other words, in the process of concrescence, each actual entity is a subject which creates itself from the given data, that is, from the prehended entities which can therefore be called its objects (Leclerc, 1958, p.156). However, actual entities do not remain or live forever. When its process ends, an actual entity ceases to be a subject and becomes an object for the entities succeeding it. In other words, the perishment of an actual entity occurs when it reaches full realization or “satisfaction” (Whitehead, 1969, p.26). At this point, it is objectively captured by other new entities. Such processes proceed from phase to phase and each previous phase prepares the next phase. Hence, an actual entity should be treated as a process of becoming and perishment. Here, the ongoing process of perishing is what Whitehead calls “transition”.

Concrescence and transition are two ways of the evolution of an actual entity. An actual entity’s process of concrescence involves the other actual entities which it

prehends and this results in the solidarity of the universe as Whitehead emphasizes in his principle of relativity. The transition process, on the other hand, consists of the relation of an actual entity with the entities succeeding it. In consequence, the nature of actual entities is both subjective and objective and all the processes occur thanks to this bipolar character. Thus, in relation to his classification of prehensions, Whitehead underlines that actual entities have physical and conceptual poles.

> In each actuality, there are two concrescent poles of realization—'enjoyment' and 'appetition,' that is, the 'physical' and the 'conceptual' […] A physical pole is in its own nature exclusive, bounded by contradiction: a conceptual pole is in its own nature all—embracing, unbounded by contradiction. The former derives its share of infinity from the infinity of appetition; the latter derives its share of limitation from the exclusiveness of enjoyment. (Whitehead, 1969, p.348)

Whitehead defines the physical pole as the initial phase of an actual entity's becoming process which corresponds to the objectivity of experience (Whitehead, 1969, p.248). In this phase, an actual entity just receives data from the past, that is, it prehends the physical reality of other entities. The conceptual pole, on the other hand, is the subsequent phases in which the received data is creatively used and which corresponds to the subjectivity of experience (Whitehead, 1969, p.248). In these phases, the conceptual pole prehends eternal objects. It is important to remind here that we cannot separate these poles from each other and Whitehead aims to unify subjectivity and objectivity in such a process. Also, although actual occurrences are discrete just as atoms, this discreteness allows the continuity of the whole cosmic process. As we have already seen, immediately after the forming process of an actual entity is completed, it becomes a given for the other prehensions which constitute the subsequent actual occurrence. In other words, after an actual entity loses its subjective immediacy and therefore its actuality, it becomes a "real" potentiality for the emergence of a new actuality and it retains its objective content in this process (Whitehead, 1969, p.65). At this point, so as to understand the Whiteheadian cosmology better, I will try to clarify the concept of real potentiality.

As we have already seen, Whitehead mentions that nature appears to us as a complex network of events taking place in spatiotemporal dimensions. No point in space and time is independent of the influences of any other point. In other words, space and time are abstract concepts derived from the "extensive relation" between events (Whitehead, 2015, p.23). This means that the space-time continuum is not an independent existence as a passive capacity or pure potentiality but a real potentiality which implies creative activity and the givenness of actual entities (Whitehead, 1969, p.65). The continuity and homogeneity of space and time is an illusion which arises when the givenness of actual entities is abstracted from this potentiality. Whitehead emphasizes that the real potentiality is "conditioned by the data provided by the actual world" (Whitehead, 1969, p.65). Actual entities atomize the extensive continuum and allows potentiality to become actuality. Thus, such an atomization process is required for space and time to be actual: "the atomization of the extensive continuum is also its temporalization; that is to say, it is the process of the becoming of actuality into what in itself is merely potential" (Whitehead, 1969, p.72). By basing on the non-classical physics of the 20th century, Whitehead here defines the becoming process of actuality as atomization.

At the end of its becoming process, as I have already mentioned, an actual entity reaches its ultimate satisfaction and immediately perishes to become an element in the constitution of other actual entities. This is a creative process and an actual entity becomes the object of other actual entities after ceasing to be a subject. At this point, we can consider satisfaction as the unity of an actual entity's physical and conceptual operations. In the concrescence process of an actual entity, all prehensions are united into satisfaction which Whitehead defines as "one complex, fully determinate feeling" (Whitehead, 1969, p.26). In other words, in the formation of an entity, numerous data are unified in a complex feeling which implies that the actual entity is completed and ready to perish so as to contribute to the next phase as an object. It is important to note here that an experience is a unified and concrete whole from which the consciousness

or any interpretation of it is excluded; thus, we can consider a concrescence as the direct experience of the present (Whitehead, 1969, p.168).

Regarding experience, Kant has constructed his well-known categorical scheme in order to build a solid framework of objective reality by basing on sense data and the subject of consciousness. However, according to Whitehead, "the philosophy of organism inverts this analysis, and explains the process as proceeding from objectivity to subjectivity, namely, from the objectivity, whereby the external world is a datum, to the subjectivity, whereby there is one individual experience" (Whitehead, 1969, p.72). In the Whiteheadian process philosophy, prehensions are bipolar and the objectification or formation of actual existence includes the arising of subjectivity. Thus, while Kant goes from subject to object, Whitehead returns to the "pre-Kantian modes of thought" and goes from object to subject (Whitehead, 1969, p.xi). This means that while subjectivity is the result of a process, it is at the same time the premise of this process. Objectivity must be a given and being a given implies that something is given for a subject. As we have already seen, Whitehead here puts his reformed subjectivist principle in place of the Cartesian subjectivist principle and unites subjectivity and objectivity thanks to his concept of process.

3.7 Feelings and Causality

Now, it is clear to us that the formation of each actual entity, that is, of each atom of reality can be explained only thanks to an organic interaction and the fusion of the opposites. Diverse and separate prehensions are superimposed on each other and unified in a variety of combinations. This means that such a formation process is creative and it is not possible to identify or analyze the initial components from the final product. As we know, just as the Leibnizian monads, every actual entity has prehensions which we can consider as perceptions. Leibniz distinguishes the unconscious perception from the conscious perception, namely, apperception and treats perception as a representation (Leibniz, 1989). Whitehead admits that

prehensions can be unconscious or conscious but, different from Leibniz's monadic perception, he does not consider them as representations (Whitehead, 1969, p.53). It is worth to note here that, for Whitehead, most prehensions are not conscious. This picture becomes more complicated by Whitehead's distinguishing "negative" prehension from the "positive" ones. In short, while a positive prehension includes a given in the formation process, a negative one excludes it (Whitehead, 1969, p.41). In other words, a prehension is defined as positive if an actual entity (namely, a datum) is contributed to it but as negative otherwise. Whitehead calls positive prehensions, both physical and conceptual ones, "feelings" while he also defines the conceptual pole as "mental" pole. Thus, a positive prehension is a feeling which consists of the passage of an objective datum to its subjective assimilation. On the other hand, although negative prehensions do not contribute to the content of the process by their data, they contribute by their subjective forms (Whitehead, 1969, p.26). At this point, Whitehead treats the subjective form of a conceptual feeling as a valuation and underlines that the conceptual registration introduces creative purpose:

> The mental pole introduces the subject as a determinant of its own concrescence. The mental pole is the subject determining its own ideal of itself by reference to eternal principles of valuation autonomously modified in their application to its own physical objective datum. Every actual entity is 'in time' so far as its physical pole is concerned, and is 'out of time' so far as its mental pole is concerned. It is the union of two worlds, namely, the temporal world, and the world of autonomous valuation. (Whitehead, 1969, p.248)

Actual entities are therefore not meaningless corpuscles; contrarily, Whitehead defines their relationships as efficient and final causes and formulates in the notion of prehension. Every actual existence, in fact, arises as a result of the joint action of final and efficient (material) causation. While efficient causation is the objectification of givenness in physical prehension, final causation is the subjective aim which characterizes the method and value of this objectification in the final synthesis of subjectivity (Whitehead, 1969, pp.244-245). For example, most plants make their own

food by performing photosynthesis and need using sunlight in order to do this. Thus, these plants adjust their position unconsciously so as to use light stimuli optimally—this is called phototropism. On the other hand, the human skin uses sunlight to synthesize vitamin D from cholesterol. Human beings are aware of sunlight and of the fact that they perceive it. Also, they can choose consciously to be exposed to sunlight so as to make their body produce vitamin D. In both cases, the relationships between the organisms and sunlight are causal and subjective. It is clear to us that plants and human beings here do not perceive light in the same way. Whitehead emphasizes that each actual entity subjectivizes or internalizes the given data in accordance with its own constitution and then updates its constitution in accordance with this subjectivized data (Whitehead, 1969, p.236). In other words, in the Whiteheadian philosophy of organism, the subject is not a substance which is separated from the objective world and which relates to it externally, but rather it is an entity which is formed thanks to the synthesis of data in the feelings and which becomes also an object in the formation of other entities. Whitehead explains these causal feelings as the following:

> A simple physical feeling is an act of causation. The actual entity which is the initial datum is the cause/ the simple physical feeling is the effect/and the subject entertaining the simple physical feeling is the actual entity 'conditioned' by the effect. This 'conditioned' actual entity will also be called the 'effect'. All complex causal action can be reduced to a complex of such primary components. Therefore, simple physical feelings will also be called 'causal' feelings. (Whitehead, 1969, pp.235-236)

It is now clear to us that, from the most complex to the simplest, every actual entity experiences a causal feeling. As we have seen in the latest example, in accordance with the entities' degree of complexity or their hierarchical stratum, this experience can refer to a consciousness level ranging from total unconsciousness to full consciousness (Whitehead, 1969, p.176). Prehensions explain therefore not only the formation of each actual occurrence but also establishment a universal connection which maintains the stability and order of the universe. Thus, the role of efficient and final causes in

the constitution of actual entities also expresses the relationship between whole and parts. From the initial feelings to the subject's reaching the state of being an object for a new concrescence process, namely, to its completeness or satisfaction, the purposiveness is present in all stages of concrescence (Whitehead, 1969, p.87). Achievement to satisfaction is the purpose or meaning of the formation process, namely, it is the final cause. So as to characterize the final synthesis of subjectivity, Whitehead refers to the specificity of aesthetic experience in which contrast becomes a way to achieve harmony (Whitehead, 1969, p.280). Achieving harmony is a criterion of completeness and this is satisfaction. On the other hand, the efficient cause constitutes the initial phase of the concrescence. In this phase, the actual entity conforms to the properties and conditions given by the other actual entities which serve as data in the formation process. In consequence, while the efficient cause is associated with the initial phase in the formation of an entity, the final cause corresponds to the supplementary phases of concrescence characterized by creativity or novelty, that is, by adaptation guided by the creative purpose (Whitehead, 1969, p.222). Here, it is important to underline that the purpose is transitive since an actual entity becomes a mean for the constitution of a new actual entity just after reaching its purpose, that is, its satisfaction.

Now, it can be said that while the concrescence represents the subjective aim which directs the formation process, the transition is a mean for the efficient causality which implies an immortal past. As we have already seen, the completeness of an actual entity implies that it has reached its limits and accomplished its objective. Then, it ceases to be a subject and becomes an object for the constitution process of a new entity—Whitehead defines this entity as dead datum (Whitehead, 1969, p.164). A dead actual entity or dead datum in this way becomes part of a new entity in a new formation process and it becomes immortal, that is, such a transition allows it to retains its objective content. As I have already mentioned, this immortality of the objective content of an actual entity implies a "real" potentiality for the emergence of a new

actuality. The datum of the past is called by Whitehead “superject”. In other words, while a subject functions within the limits of the immediacy of its own becoming, a superject exerts its function of objective immortality (Whitehead, 1969, p.245). Thus, there is a harmony or conformation in the formation of every actual entity and the present of the universe conforms to its past: “the creature perishes and is immortal. The actual entities beyond it can say, ‘It is mine’. But the possession imposes conformation” (Whitehead, 1969, p.82). In consequence, while the efficient cause guarantees the continuity of the past to the present and future, the final cause corresponds to the phases of novelty and adaptation guided by a creative purpose. At this point, it is worth noting that this relation between the subject and superject is studied in quantum physics as wave-particle duality (Finkelstein & Kallfelz, 1997).

The notion of objective immortality plays an important role in Whitehead’s process philosophy. I have already mentioned that a dead entity which has reached its own limits and objectives enters the composition of an entity in formation and continues to live in it. There is a mutual adaptation in this process: while the recipient actual entity conforms to the properties of datum which it has received on the one hand, the actual entity which acts as a datum is subject on the other hand to the orders of the recipient entity into which it is integrated. Immortality implies the preservation of the content of the past thanks to its objectification in actuality. This objectification is not only a spreading in time but also the act which creates space and time and which I have already explained as the atomization of the extensive continuum (Whitehead, 1969, p.72). In accordance with the causal relationship, every actual entity which acts as a datum or cause and enter the constitution of the recipient actual entity implies a duration. In other words, it turns spreading in time into a duration or extensiveness which is qualitatively identical with itself and thereby gives the process the character of a course in space and time (Whitehead, 2015, p.39). It is clear to us that such a process is a series of objectifications, namely, the transition and repetition of states which are reproduced each time in the context of new formations. In other words, as

we have already seen, space and time are abstract concepts derived from the "extensive relation" between events. Thus, if we treat the space-time continuum as an independent existence which the things inhabit as sense perception or presentational immediacy does, we cannot reach the full picture of truth (Whitehead, 1969, p.234).

In consequence, Whitehead introduces the notion of objective immortality so as to explain the spatiotemporal continuum which we assume as the basis of our everyday experience which Hume calls "practical belief". As I have already mentioned, Whitehead thinks that Hume ignores the participation of causal efficacy by focusing on presentational immediacy and he accuses Hume of anti-rationalism. In *Process and Reality*, rationalism is defined as "the belief that clarity can only be reached by pushing explanation to its utmost limits" (Whitehead, 1969, p.153). Locke, according to Whitehead, tries to achieve ultimate clarity in the analysis of human understanding without any reference to metaphysics and therefore he takes an anti-rationalist position too. However, the Whiteheadian process philosophy "attains its chief importance by fusing the two, namely, religion and science, into one rational scheme of thought" (Whitehead, 1969, p.15).

3.8 The Whiteheadian Scheme of Thought

Whitehead, regarding of his rational schema of though, mentions that we have to rethink our categories or the basic concepts of knowledge. His philosophical schema is not simple: there are three categories of the ultimate, eight categories of existence, twenty-seven categories of explanation and nine categoreal obligations. Within his philosophical system, he extends his analysis of experience to the whole reality and this is his the most revolutionary attempt. In other words, in the Whiteheadian system, the actual entities that make up every entity in the universe including inanimate objects (such as rocks or stones) have an experiential nature, namely, they are experiences. Such a position is usually referred to as "pan-experientialism" and we should not confuse this position with the idea of panpsychism (Kim, 1999). While panpsychism

claims that reality as a whole is conscious, Whitehead underlines that consciousness presupposes experience but not vice versa (Whitehead, 1969, p.53).

As I have already mentioned, according to Whitehead, sense perception or presentational immediacy does not give us the full picture of truth. On the other hand, as he frequently mentions, rationalism can be a potential threat to the scientific understanding of the universe. As it well known, it may imply to the identicalness of thinking and being, namely, to the philosophy of identity which is obviously criticized in Whitehead's process metaphysics. As we have seen in Chapter 2, Hegel defines the notion as a "concrete concept" but Whitehead underlines that what Hegel calls a "concrete concept" is only an abstraction rather than reality. The presumption of the identicalness of thinking and being is seen frequently in the history of philosophy from Descartes to Hegel; however, Whitehead insists that actuality is the only concreteness and an idea always remains abstract. Thus, for him, queries of though cannot be extended to out of the degree of abstractness.

Now, we know that actuality is possible only when there is a process. Everything motionless is an illusion, that is, an abstraction from the process (Whitehead, 1969, p.50). Here, it becomes clear to us that abstraction cannot be actuality. In other words, since an abstraction is devoid of self-movement, it is not possible to treat it as a concreteness or actuality. For example, we can see only the body of a subject but not the subjectivity itself. According to Whitehead, the arguments of Descartes and Hobbes are examples of the false substitution of concreteness since they substitute actuality for potentiality. In this regard, if we confuse an abstraction with the concrete or the part with the whole, this fallacy leads us to a dualistic way of thinking and we try to make a clear distinction between the mental and the physical (Whitehead, 2011, p.52). This fallacy, on the other hand, may lead us to think of reality as being exclusively physical or exclusively mental. Thus, Whitehead mentions that the cosmologies we know so far are incapable of comprising the richness of the experience

and far from explaining the full picture of reality since they substitute the concrete for the abstract:

> The explanatory purpose of philosophy is often misunderstood. Its business is to explain the emergence of the more abstract things from the more concrete things. It is a complete mistake to ask how concrete particular fact can be built up out of universals. The answer is, 'in no way'. The true philosophic question is, how can concrete fact exhibit entities abstract from itself and yet participated in by its own nature. In other words, philosophy is explanatory of abstraction, and not of concreteness. (Whitehead, 1969, p.20)

To state in a nutshell, all concepts are necessarily abstractions and when we confused the abstract with the concrete, we suppose that there is something really concrete although we form just an abstraction. Whitehead suggests calling this kind of fallacy as "the fallacy of misplaced concreteness" (Whitehead, 2011, p.51). At this point, Whitehead can be seen as a radical anti-dualist thinker in many aspects. While he violently criticizes the separation between subjective experience and the objective world, he also declines to presume that the truth of the natural world can only be reached through quantitative mathematical abstractions. As we know, therefore, he introduces the notion of actual entity so as to overcome such a dualism. Actual entities continually perish on the one hand and, on the other hand, they have objective immortality. Each of these aspects is the counterpart of the other. Experiences are established according to Whitehead by sequences of strictly interrelated elementary processes which unify multiple feelings into one. In such a process, the fundamental element is not what the feelings are in their origin but the way in which they are experienced, namely, the subject's self-awareness of the experience (Whitehead, 1969, p.245). The concrescence or becoming of an actual entity involves deciding for the acceptance or rejection of the eternal objects and the acquisition of the forms defined by these decisions. It is important to point out at this point that the eternal objects are all given at once and no new eternal objects arise later since they are persistent elements—where there is no death, there can be no regeneration. However, as I have

already mentioned, Whitehead is not a determinist and refers to the novelty in the universe by introducing creativity as one of the ultimate categories in his philosophical system:

> It is by reason of their instinctive grasp of this ultimate truth that, in spite of much association with arbitrary fancifulness and atavistic mysticism, types of Platonic philosophy retain their abiding appeal; they seek the forms in the facts. Each fact is more than its forms, and each form 'participates' throughout the world of facts. The definiteness of fact is due to its forms; but the individual fact is a creature, and creativity is the ultimate behind all forms, inexplicable by forms, and conditioned by its creatures. (Whitehead, 1969, p.20)

It seems that Whitehead succeeds in developing a metaphysics based on dynamism rather than substances. However, In the Whiteheadian process metaphysics, the concept of eternity or eternal objects becomes again necessary so as to explain the dynamism even if these objects are in the form of mere potentialities. In this regard, the status of eternal objects is one of the most debatable aspects of the Whitehead's system. It is reasonable to think that if creativity were not directed to a specific purpose or to a final cause of becoming, an ordered and coherent world would not exist. Thus, it is not surprising that at the end of his metaphysical journey, Whitehead reintroduces the notion of God as a guarantor of the creativity of actual entities. Now, we can think that the creativity of actual entities cannot actually produce anything new or the philosophy of organism remains insufficient for eliminating the requirement for any divine entity. In this context, as I have already explained, Whitehead emphasizes that a process has an internal creativity contributing to its self-determination, namely, its self-realization (Whitehead, 1969, p.222). During its formation, an actual entity chooses or decides between several possible integrations. This means that an actual occasion is a new existence which is different in many ways from any element or component which it unites. On the other hand, Whitehead relates his Platonic approach in his cosmological system to the worldview of Galileo to a greater extent than the

teachings of Plato. It is important to remind at this point that the Whiteheadian cosmology presupposes concrete reality as the only fundamental reality.

In this chapter, we have seen the dynamic structure of reality in the context of Whitehead's process philosophy. In Chapter 4, I will try to clarify his concepts of life and vitality which are treated by Whitehead as being related to his concept of society. Whitehead introduces the concept of society so as to explain the presence of one or more defining characteristics inherent in all elements of a given environment. As I have already mentioned, he formulates in his system the connection or continuity between the living and inert things and he tries to explain the lower strata of existence from the superior stratum in an anti-reductionist way. Thus, he starts from humans as the most complex beings or the superior stratum in order to explore human characteristics in the lower systems (Whitehead, 1969, p.119). Also, as we know, some minerals nourish the plants which nourish some animals and all of these nourish the human beings. This is an example for the fact that the inorganic contributes to the structure of living and thinking being and there is a mutual adaptation or conformity between these entities as Whitehead emphasizes (Whitehead, 1969, p.107). In this way, the Whiteheadian philosophy of organism explains how the inorganic becomes organic and living or "thinking being".

CHAPTER 4

THE CONCEPT OF LIFE IN HEGEL AND WHITEHEAD

Hegel's *Philosophy of Nature* treats the "evolution" of nature as a unitary process from the indeterminacy of space to life and spirit. This development is dialectical and, thus, characterizes true infinity. As we have seen in Chapter 2, the image of the good infinity is nothing other than a self-enclosed circularity without beginning or end. For Hegel, the spirit is not something externally given to nature but it reveals itself through the developmental process of nature from its simplest forms to more and more complex structures and comes to know itself. Thus, the spirit that has reached its self-consciousness considers nature no longer as a powerful and dangerous enemy or just as a consumption material.

On the other hand, for Whitehead, nature is what we are aware of in perception. The aim of his system is to escape a bifurcated way of thinking about nature, that is, to give coherence to the concept of nature by rejecting the dilemma between an objective nature on the one hand and a subjective perception of nature on the other hand. Whitehead gives the philosophy of nature the task of treating the idea of nature as a whole not affected by our perception of it. The notion of perception in his system (as not our perception of nature but as the perception in nature) has a constitutive role for nature itself.

In this chapter, I will try to clarify how Hegel and Whitehead treat life and vitality. We will see that life, for Hegel, appears as a logical category and, as an idea, it acquires a regulatory status. The simple life of nature is the fundamental principle of the circular movement but it is not the end of either Logic or nature since it has to be negated by the spirit as a moment of difference. In this regard, negation is a necessary moment for

maintaining the movement. It is important to note that, for Hegel, the movement of life is not only the model of the movement of the spirit but it is in fact included in the movement of the spirit. It is life itself that reveals the structure of the absolute as an internal end, that is, as the end of circularity. Thus, we can also see the movement of life as an analogy for Hegel's system. As we will see in this chapter, life is a process of self-production by the means of the other and, in this sense, it is "becoming". As a consequence of circularity, we reach the concept of autonomy which implies self-determining and self-referential organization of life. In this way, for Hegel, the idea of life also serves as the basis and end of individual human existence. On the other hand, as we have seen in Chapter 3, Whitehead's goal in his systematic metaphysical cosmology is to analyze the concept of life, to merge it with that of nature and to interpret nature as a living creative process. Life in nature is "the central meeting point of all the efforts of systematic, humanistic, naturalistic and philosophical thought" and thus, for Whitehead, the position of life in nature is the "capital problem of philosophy and science" (Whitehead, 2012, p.57).

4.1 The Self-Referential Organization of Life in Hegel's System

Before beginning this section, it is important to remind that there is a distinction between natural life described in Hegel's *Philosophy of Nature* and the logical idea of life. However, as we will see in this section, *Logic* has a regulatory function in the *Philosophy of Nature*. First of all, life is universal or indeterminate but, as a concept, it carries within itself the moment of particularity (Hegel, 1991, p.603): one has a body and a determined sphere of action. Finally, these two moments find their unity in the individuality, that is, in the living being. Hegel conceptualizes the individual living being as concrete conjugation of universality and particularity; thus, life is determined as a living being and is only realized in individual subjects. As an independent individual, the living being separates itself from its environment and this independency is the negation of life since being isolated from outside prevents life from being what

it is as an idea, that is, from being the truth of the objective world. In other words, the living individual cannot be completely indifferent to the external world since it is at the same time the condition of the life process. Thus, the living being reproduces in its internal development the three moments of the subjective concept: life diffuses at first throughout the body (universal) and then differentiates the total mass into different members (particular) so as to assert itself as a concrete reality (individual) through the relationship between these members. Thus, in a living organism, the universality of the relationship in itself is united with the particularity of the relationship to the other.

4.1.1 Organics and The Syllogism of Life

In his *Philosophy of Nature*, Hegel divides the process of an organism in three moments in accordance with the idea of life developed in his *Science of Logic*: formation, assimilation, reproduction. Through mediation, Hegel here structures the idea of nature per the determinations of the concept, starting from the most abstract and immediate sphere, towards the concrete sphere of life. As we have seen in Chapter 2, an organism cannot be understood gradually from its parts but only from its conception as a whole. In other words, each organ is an end and a means in relation to the others and life can only be understood in terms of teleology (Hegel, 1970, p.275). The Hegelian conception of life is far from being a mechanical system and we should understand here the infinite living unity of all things.

The logical idea does not immediately transform into life: it passes from the exteriorization of space to the interiority and ideality of organism as not a linear development but as dialectical. Life as an immediate idea is external to itself and is non-life since it is mechanical and physical (Hegel, 1970, p.273). While in the vegetable kingdom subjective vitality is external to itself, it is only in the animal organism that life is subject: a living organic system. Life as a subject is a process or an activity in relation to itself and objectivity. Organic individuality exists as an animal and, therefore, has self-movement and self-organization (Hegel, 1970, p.277).

Namely, the animal organism is a living universality which follows the logic of the concept in its three syllogistic determinations as I have mentioned above: the processes of formation (the structural process), assimilation, reproduction (the process of the genus).

The logic of structure (shape) exposes the process by which the identical living being differs in itself and concretely identifies this inner otherness as life. Hegel describes the concept, in the animal subject, in its determinations in the form of a syllogism: (i) the universality which is the subject's identity with itself is the moment of sensibility, (ii) the particularity which is the subject reacting to the outside is the moment of irritability, and (iii) and the individuality which is the unity of the previous moments is the moment of reproduction of an individual (Hegel, 1991, p.769). The structure is what separates the living from the external environment. In other words, it configures an internal environment which is capable of receiving information; thus, it is the moment of sensibility. The organs and systems form a whole that is more than the simple sum of the parts, as I have discussed in Chapter 2.

The moment of universality is related to *sensibility* since it is the pure feeling of self, that is, the moment of self-reference (Hegel, 2010, p.678). Sensibility allows the individual to accept all the universality of the external world which is imprinted in the interior of the feeling of self. It is a centripetal movement in which the living being allows, through sensibility, the external universality to be received within itself. Then, the moment of particularity is *irritability*, that is, the relationship to the other. Irritability is the externalization which is particularized in different species and genera, that is, of a specific existence. According to the third determination which completes the syllogism, the living being is individuality and this is the moment of *reproduction* which we can also call self-production. Reproduction, in short, is the moment of the living being's individuality which stands as an effective individuality: a being-for-itself that relates to the outside as a subjective totality (Hegel, 2010, p.683). The concrete moment of life is reproduction in which the identity between subject and

object takes place. The identity of the living being is thus achieved by reproduction. In other words, the concrete organic identity is gained by the living being through its self-production process rather than being given from outside. In fact, reproduction characterizes the individual's ability to bring together moments of sensibility and irritability in self-preservation that reproduces and maintains itself and also engenders other individuals.

> With reproduction as a moment of singularity, the living being posits itself as actual individuality, a self-referring being-for-itself; but it is at the same time a real outward reference, the reflection of particularity or irritability as against an other, as against the objective world. (Hegel, 2010, p.83)

In the union of sensibility and irritability, life is determined as an individuality. While irritability and sensibility are abstract determinations, the fundamental unity between these two moments is established in reproduction: in reproduction, life is concrete and vitality. The individuality of the living being returns to itself (to universality) from its other (from particularity). The living individual is an internal and external unit, that is, it is the process of life. This process implies that the individual is related to the external world as a particularity through *need* (tendency) and *pain* (feeling), *violence* and *appropriation* (Hegel, 2010, p.684). *Need* is the state in which the living individual manifests its dependence on the environment. Hence, on the one hand, the individual is autonomous and, on the other, it is dependent. It is a contradiction that is expressed in the pain itself. It is in this pain of need that the autonomy of particularity in relation to complementarity with the external is revealed. So, the external relationship carries with it irritability and violence which makes the individual return to the interior. Thus, in this movement of painful need and impatient violence, the individual appropriates something to keep itself alive, that is, to reproduce. The objectivity of the world becomes an object for the individual, who, through the mechanical process is able to assimilate the object in its interiority. This is the vital process in which the individual reproduces and preserves itself, becomes a universality: *the genus* (Hegel, 2010, p.688).

The originative judgment of life (*das ursprüngliche Urteil des Lebens*) separates itself from objectivity as an individual subject and "since it constitutes itself as the negative unity of the concept, makes the presupposition of an immediate objectivity" (Hegel, 2010, p.678). The syllogism starts with the individuality: "this subject is the Idea in the form of individuality, as simple but negative self-identity—the living individual" (Hegel, 2010, p.680). The individual is life as a soul, that is, a principle that moves by itself. For this, the soul needs a body that links it with the exterior objectivity. So, the soul has this corporeality by nature. The corporeity of the living being is an organism that has members and its articulation is a syllogism: "soul-body-external objectivity". In other words, the first moment is the soul which is pure simple relation to itself, that is, subjective being for itself. The second moment is the body which is materially open and externally conditioned. Then, the third moment is the identity of soul and body. There is no body without soul and no soul without body. We can perceive the vital process only through the tension between these two aspects abstracted from a concrete unity (Hegel, 1970, p.232). While body implies the physical separation from the environment, soul is the subjective unity in itself and thus their unification in the concrete organic identity, or in vitality, implies a continues contradiction. The individual is thus a universal Notion because it is organized as a totality in which the Notion is immanent and develops in its own purposiveness (Hegel, 2010, p.680). Thus, the living individual produces itself as a living being and, in this self-production process, it is at the same time both the producer and what is produced. Therefore, it is an autonomous living being and this autonomy, says Hegel, is the "Notion of the living subject and its process", which develops through sensibility, irritability and reproduction (Hegel, 1991, pp.767-768).

As I have already mentioned, in his *Philosophy of Nature*, Hegel divides the process of an organism in three moments: formation, assimilation, reproduction. As the second moment, assimilation is the process in which the relationship of the living being with the other is established. This process incorporates and transforms the products of the

external environment or, in other words, it adapts the living being to that environment: “the organism must therefore posit what is external as subjective, appropriate it, and identify it with itself; and this is assimilation.” (Hegel, 1970, p.381). The organic individual remains equal to itself by assimilating its other and this is the condition of its continued vitality process. Thus, for Hegel, the whole organism is an open system so as to be able to maintain its organization and, so, existence. The living being, in addition to having its structure and separating itself from its environment, has at the same time a relationship to this environment. As we know, a living being needs feeding and, therefore, it constantly exchanges substances with its external medium by assimilating inorganic nature. It is produced from this material it receives from outside. It converts the external matter into itself, that is, it makes itself from its other. Consequently, the material composition of the living being is always changing. This means that an organism can completely renew all its parts and still remain as the same organism:

> The process in which the organism expends itself and inwardly collects itself goes on without ceasing. It is said that after five, ten, or twenty years the organism no longer contains its former substance, everything material has been consumed, and only the substantial form persists. (Hegel, 1970, p.378)

The continuity of the vital process of an organism depends on being open to outside in terms of energy and matter flux. An organism needs to consume some material that it takes from external objectivity. In other words, it constantly internalizes the otherness and produces itself constantly through such an incessant flow of external material. In consequence, it constantly renews its material content but, as Hegel mentions, its substantial form remains the same in such relation to outside. Thus, for an organism, living is a continuous effort for maintaining the organization itself. The organic process is the constant production of oneself from its other and an organism is what produces itself (Hegel, 1970, p.355). This means that vitality is the process of producing itself within a circular form of organization.

At this point, it is important to underline that since the living being is an open system in permanent flux and since it makes exchanges with its environment, it needs to have information about its state and its environment. For an organism, such information starts from the distinction between its interior and exterior, from its relationship with its limits. The living being is not indifferent to its limits and it feels them as a distinction between itself and its other. In other words, while it is closed in itself as a subjective unity (in its limits) on the one hand, it is open to the external environment in a dependency relationship on the other hand. The limits and difference in relation to the outer environment is called lack and assimilation is what exceeds these limits.

It is clear that feeling a lack implies a contradiction in itself. Contradiction between the closed ideal process and the open material process results in feeling a lack. Hegel mentions that "only what is living feels a lack; for in Nature it alone is the Notion, the unity of itself and its specific opposite" (Hegel, 1970, p.385). In other words, while the living being separates itself from its other, it at the same time depends on this other. This contradiction or tension between being closed in itself and being open to outside is a necessity for the maintenance of continued vitality. While the living being on the one hand has a freedom of self-determination, it depends on its environment on the other hand. Its autonomous existence or the maintenance of its autonomy requires the presence of the other. Hence, it can produce itself only in the relation to the other. Its freedom of self-realization implicates at the same time a dependence and necessity and, thus, it always feels a lack. In consequence, vitality is impossible without contradiction and living implies feeling a lack.

As we have seen so far, the logic of assimilation exposes the process by which the living being in itself differs from its other, that is, from the inorganic nature. It becomes a totality by assimilating this external alterity (Hegel, 1970, §357). The animal organism is a singular individual in its relationship with its external nature. It is produced and reproduced, that is, it conserves itself. Then, subjectivity becomes a concrete universal: the genus (Hegel, 1970, §366). The genus is the moment when the

individual fully returns to itself, due to the ability to produce and reproduce. The process of the genus is the relationship of the living being to the species. In other words, the genus is the moment when production is transformed into reproduction.

The generating individuality carries all objectivity within itself as a whole, so it is able to recognize the other individual. In the living individual, reproduction means self-maintenance, growth and regeneration of damaged parts. However, in the process of the genus, reproduction means the production of another individual which is identical to the producer. In other words, the generating individuality is expressed in the form of duplication of the individual. Genus is a universal identity that is organized on two levels: (i) The microcosmic genus or the infinitely small principle of the germ where the origin of all growth is found: "The germ is thus the entire living being in the inner form of the Notion" (Hegel, 2010, p.688). (ii) The macrocosmic genus are the generations that are engendered, that is, "propagation of the living species". The unity of the genus is then a universality of individuality and subsistent generations. The individuality emerges from this generating universality only to disappear again. It is, says Hegel, a repetition of infinite progress in which the idea "does not emerge from the finitude of its immediacy" (Hegel, 2010, p.688). The realization of the genus is, then, the spiritual realization of this universality in which living individuality has perished and become a universality fully determined by the idea: "the death of this life is the procession of spirit" (Hegel, 2010, p.688). Hence, the logic of the genus exposes how the living totality differs from itself in its other and overcomes this difference as completing itself as a natural life and moving on to life in the spirit.

As we already know, for Hegel, the circular movement of life involves the moment of its negativity. Life, as we have seen, is a concrete concept consisting of opposite determinations, that is, of contradiction. Life and death complement each other as dialectical moments of the whole, not only of a living organism in its immediate vicinity but of life in general in its infinite continuity in the world. Dialectics is the beginning of vitality and it becomes clear that "contradiction is the root of all

movement and life" (Hegel, 2010, p.381). "Something is alive, therefore, only to the extent that it contains contradiction within itself: indeed, force is this, to hold and endure contradiction within" (Hegel, 2010, p.382). We cannot separate the concept of life from organic process as a transcendence, a non-contradictory essence. In consequence, the Hegelian conception of life shows us that there can be no life without process. In other words, life is impossible outside of the process.

4.1.2 The Idea of Life

We have seen in Chapter 2 that Hegel regards life not as an ordinary category but as an idea and that in his *Philosophy of Nature* he studies life no longer as a logical determination of the sense of being but as a natural determination of the idea in its exteriorization. It is important to note again that it is not the empirical existence of nature that is at issue in the construction of Hegel's system but its rational structure, namely, its logic. In this section, we will see that the transition from the logical idea to nature is related to the triad of syllogisms in which the entire system of philosophical knowledge finds its condensed expression.

So as to understand the idea of life, we need to start by answering the question of what is the meaning of "idea" in Hegel's system. The idea in the Hegelian interpretation is the unity of concept and reality or of subjective concept and objectivity (Hegel, 2010, p.673). It also acts as a basis, as an end, and therefore as a regulatory principle. It is not transcendental as it is in the Kantian view but immanent to both nature and human beings (Hegel, 1970, §215). In Hegel's interpretation of the idea, dynamics is in the first place. In other words, he understands the idea first of all in the form of a process: "an idea is essentially a process, because its identity is the only absolute and free identity of the Concept, because this identity is the absolute negativity and thus dialectical" (Hegel, 1975, p.278).

When we regard life as an idea and therefore as a process, it is clear that we should also account for its circular organization which is the form of good infinity. In nature, what reveals itself is this process: nature has a circular organization as a whole and Hegel admits it as a universal life (Hegel, 1970, p.302). Nature is internally one and, in the process of development, this inner unity reveals itself in living organisms in which form takes possession of matter. Life becomes an actual internal integrity in the organism. This means that the living organism manifests the actuality of the idea of life in its existence or, as Hegel states, "objectivity of the living being is the organism" (Hegel, 2010, p.681).

At the same time, however, Hegel emphasizes that the main definition of life is subjectivity. The living organism as an idea is a closed process in itself. In other words, it is a circular totality in itself which has a subjective, infinite form implying self-determination or self-reference (Hegel, 1970, p.275). The living organism in its subjective process distinguishes its being from its environment as affirming itself as an autonomous circular organization. Life "as subject and process" which is "the first moment of particularization" is essentially a pure self-mediating activity in which it "makes itself into its own presupposition" (Hegel, 1970, p.277). Having a self-referential organization is the elemental principle of being a subject and, from the Hegelian point of view, it is important to underline that we should understand subjective life not as a vital substance but as a pure movement, namely, self-mediation. The subjectivity of a living organism is in fact an internal realization of its being-for-itself. Life represents the necessarily formation of nature and internal basis of all living beings. A living being is capable of realizing this universal basis. In the context of human beings, Hegel examines this reflection in the *Philosophy of Spirit* in which self-reflection is also interpreted as a certain universal basis and self-identity of the human spirit (Berenson, 1982). If we return to the main issue, we can see in the subjectivity of a living organism that life as an idea is self-sufficient, it is true in-itself and for-

itself (Hegel, 2010, p.677). Also, from an external point of view, the subjectivity of a living organism is seen as its efficiency and freedom.

Hegel then mentions that, since life appears as an idea, its universal moment in the living being consists in the sense of its own vitality and this is at the basis of all other determinations of the living organism (Hegel, 2010, p.678). The living thing which has the capability of producing itself is at the same time dependent on physical nature from which it assimilates those what it needs for self-production. While it affirms itself as a subject and self-distinguishes itself from external world, it remains necessarily linked to non-living nature and it takes from the external environment "the condition of its existence" and the "material of its process" (Hegel, 1970, p.299). Thus, while the living being is closed in itself on the one hand, it is open to external world on the other hand. Life is on the one hand a subjective unity which is closed in itself and which has an infinite self-referential organization. On the other hand, it is an objectivity as being open to the physical world on which it depends. As a unity of these two opposing determinations, the living being is subjective in objectivity as Hegel affirms in the *Philosophy of Nature*:

> The true determination of life is that the reality in the unity of Notion and reality, no longer exists in an immediate manner, no longer exists independently as a plurality of properties existing outside one another, but that the Notion is absolute ideality of their indifferent subsistence. [...] The subjective, infinite form is now also in its objectivity [...]. (Hegel, 1970, pp. 274-275)

As we already know, the development of logical life occurs in three processes: the living individual, the life process and the genus. Life is bifurcated into many living individuals and thus the life process arises as the second moment. Hegel actually uses the word "nature" to speak of the logical living individual and the unity to which it corresponds. Hegel's objective is to explain the concept through life. In other words, life is a metaphor for the concept since it is the unity of opposites. At this point, it is important to note that the unity of opposites implies in Hegel's system the overcoming

of contradiction. Hegel frequently underlines that contradiction is the principle of process and thus of life process. If there is nothing that carries contradiction internally, vitality cannot exist: "yet whoever claims that nothing exists which carries in itself a contradiction in the form of an identity of opposites is at the same time requiring that nothing living shall exist" (Hegel, 1998, p.120).

> For the power of life, and still more the might of the spirit, consists precisely in positing contradiction in itself, enduring it, and overcoming it. This positing and resolving of the contradiction between the ideal unity and the real separatedness of the members constitutes the constant process of life, and life is only by being a *process*. (Hegel, 1998, p.120)

From the Hegelian point of view, the idea of life is valid not only in nature but also in spirit and in logic. So, it can be said that while a mutual transition of these spheres takes place in life, the reality of this transition takes place in a person. Thus, when we talk about contradiction as a principle of life, we should also understand the relationship between soul and body. The soul which the basis of the subjectivity of the individual is a form of a living body and a self-driving principle. At this point, Hegel agrees with Aristotle: along with the soul, the body is also needed. By the means of the body, the soul can relate to the external: "[...] corporeity of the soul is what whereby the soul links itself to external objectivity" (Hegel, 2010, p.680). The unity of soul and body allows us to think of an organism as an indivisible whole. Here, we again see that while an organism is on the one hand closed in itself as an ideal process, it is on the other hand open to its environment as a physical body, that is, a material process. An organism gains its identity by the continuous process of self-production which has an infinite form. However, this infinite form is at the same time in an obligatory relationship with the physical world which is continuously renewed through material flow. Corporeity as the basis of the individuality of a living thing makes it a negative unity and according to Hegel (2010, p.681):

> this individuality is therefore the impulse to posit as a concretely real difference the otherwise abstract moment of the determinateness of the concept; and since

> this concretely real difference exists as immediate, it is the impulse of each singular, specific moment to produce itself and equally to raise its particularity to universality, to sublate the other moments external to it and promote itself at their cost, but no less to sublate itself and make itself a means for the other.

In this way, the living individual is included in the process of life. While it is end in itself as a subject, it also needs to remove the opposing objectivity. In this interaction with its negation, it gains its actuality and its "end in itself" becomes its being-in-itself and for-itself. Now, it is clear that an organism is what has an internal ability, an impulse, to preserve its self-identity. The identity of a living organism is the invariance of its organization, a constant struggle to maintain its integrity rather than a material or substance. Hence, as I intend to clarify throughout this study, vitality is not an essence but an action in process. From the Hegelian point of view, only in the life process does the individual gains actuality:

> Through its process with the simultaneously presupposed world, it has posited itself for itself as the negative unity of its otherness, as the foundation of itself; thus it is the actuality of the idea, so that the individual now brings itself forth out of actuality, whereas before it proceeded only from the concept, and its coming to be, which was a presupposing, now becomes its production. (Hegel, 2010, p. 686)

In the *Philosophy of Nature*, Hegel (1970, p.355) again states that the process of individuality is a "closed circle" and that a living being exists as an end that produces itself. The circular character of the vital organization removes the distinction between the producer and product. What we have in the idea is the immanency of the concept in the object and it reveals itself in logical life. The logical living being (*das Lebendige*) corresponds to the natural organism and both of them have a corporeality. However, the corporeality of the first is the immediate reality which is identical to the concept, while that of the second is the immediate reality of the body coming from nature and is identical with the soul: "the living being has this corporeity at first as a reality immediately identical with the concept; to this extent, the corporeity has this reality in general by nature" (Hegel, 2010, p.680).

As we have seen so far, Hegel's thought of life process starts from the *Science of Logic,* therefore, it is on living individuals including human beings. Since the idea of life is present in everyone as an impulse, the actuality of any living individual is related to the realization of this vital, natural impulse. The being of an individual is its self-determination as an opposition to the other and this is its independence, namely, freedom. In this case, the opposition to the other can be thought of as a constructive opposition. It is important to note again that instead of being determined by the other (or by external factors), what we have here is a circular determination where there is no longer an absolute separation between the determinant and the determined. The constructive nature of opposition means that opposites are determined by the nature of the object and are internally lawful. Therefore, the relationship between the opposites has a direction and an internal end: both of them are not destroyed but canceled to become a more perfect moment. According to Hegel, "contradiction is the root of all movement and vitality", namely, all activity is dialectical (Hegel, 2010, p.382).

Hegel also mentions that life process in human being is included in the spiritual process through the category of individuality. He notes that "man is an animal, but even in his animal functions, he is not confined to the implicit, as the animal is […] because he knows that he is an animal, he ceases to be an animal and attains knowledge of itself as spirit" (Hegel, 1998, p.80). Thus, although the natural is the negation of the ideal, yet in human beings, it is positively included in a single process of activity. This means that the idea of life must be understood in unity with other foundations of human existence. Hence, we can see that Hegel gives a holistic understanding of the idea of life as the foundation of the existence of an individual.

It is worth to remind at this point that, from the Hegelian holistic point of view, soul and body are simple moments abstracted from their concrete unity (Hegel, 2010, p.672). The understanding, however, tries to prevent contradiction which is the root of vitality and, therefore, treats these abstract moments separately although they can only exist in their concrete unity. In other words, it tries to reduce the living organism to

just a material body, namely, a non-living corpse. Since, as we have already seen, the distinction between living and non-living things arises just from the difference in their organization and this distinction is only ideal, such a reductionist approach is not capable of giving us the truth of vitality and life. In other words, since the faculty of the understanding is just mechanical (i.e., finite) thinking, it treats life as a dead nature; thus, life and vitality are not possible within the context of reductionism (or mechanistic materialism): "this dead nature, then, if it is separated into its concept and its reality, is nothing but the subjective abstraction of a thought form and a formless matter" (Hegel, 2010, p.672).

In this section, so far, I have tried to clarify the living individual and life process which are the first two moments of the idea of life. In the development of logical life, as we know, Hegel argues on the process of the genus as the third moment. While in the life process an individual posits itself as an opposite to objectivity which is indifferent to it, in the process of the genus it is correlated with the objectivity which is identical to it. Only through this process the natural universality of the individual can be established (Hegel, 2010, p.687). The process of the genus is the formation of new generations but this formation also implies the extinction of the living things. Death is a specific expression of the internal contradiction of the living things. As we know, there is nothing which does not carry contradiction within itself between the universal and particular, between the concept and reality. The universal becomes real through the mediation of particular. Thus, for Hegel, the "extinction [of immediate singularity] is the death of the individual" (Hegel, 1970, p.411).

In consequence, the idea of life cannot be thought of without taking into account the concept of death. The process of the genus which realizes the inner dialectic of life and death in individuals leads to the emergence of spirit as a self-conscious moment. In the debate on the idea of cognition, Hegel stresses very clearly the link between the theme of life and that of knowledge (Hegel, 1991, p.775). The idea as a totality appears

in its immediate form as life which corresponds to an abstract universal in this first moment. For Hegel, the idea in its first moment constitutes itself as logical life common to all living beings. Then, it gains the universality of the genus and constitutes theoretical and practical knowledge which are the spheres of the spirit as a capacity of cognition. In other words, here the mediated idea is knowledge and it corresponds to the form of particularization. The result of mediation is the absolute idea which, as a concrete universal or the moment of the singular, is the unity of organic life and self-consciousness. The absolute idea is "the sole subject matter and content of philosophy" (Hegel, 1991, p.824).

We have seen in Chapter 2 that in the categories of objectivity Hegel moves forward from mechanism and chemism to external teleology. In this movement, the end is not immanent to objects and we can explain it only through the existence of an external factor. The mechanical and chemical causes act in the living being as an external process. However, the living is characterized by the presence of the concept that unifies it and acts as an internal impulse to maintain itself. Thus, a gap opens up between the subjective concept (or end) and the object (what is produced). So as to overcome this gap, the next step occurs through the unification between subject and object. Such unification is the transition from the external purposiveness to the internal one, the realization of the subjective end that leads to the idea: "the idea, namely, in positing itself as the absolute unity of the pure concept and its reality and thus collecting itself in the immediacy of being, is in this form as totality–nature" (Hegel, 2010, p.752). Hence, what characterizes the living being is the presence of the concept as an immanent end. Logical life, as well as living organisms, are explained through the movement towards an internal end. This movement explains the development of the concept that reaches its immediate unity and its freedom with the logical idea of life. According to Hegel, "it is the idea that in its determination remains with itself" (Hegel, 2010, p.752).

In this way, we see that the logical idea follows an immanent process of development in accordance with the principle of internal teleology: life, the idea of cognition and the absolute idea. The absolute idea as the unity of immediate life and consciousness is nothing more than life in its totality. In other words, "the absolute idea alone is being, imperishable life, self-knowing truth, and is all truth" (Hegel, 2010, p.735). The transition from absolute idea to nature is just an externalization in time of what it already is. When defining the absolute idea at the end of Logic, Hegel mentions that it is "a turning back to life" as a new immediacy (Hegel, 2010, p.735).

4.2 Whitehead's Living Societies

As we have seen so far, the philosophy of organism rejects the duality between nature and spirit or mind. Whitehead treats this duality as a "fallacy of misplaced concreteness" and he defends that neither the notion of physical nature nor the notion of life "can be understood unless we fuse them together as essential factors in the composition of 'really real' things whose interconnections and individual characters constitute the universe" (Whitehead, 2012, p.57). He emphasizes that from the intramolecular components to human beings, physical and mental aspects mutually influence and need one another. In this regard, one of the main postulations of the Whiteheadian cosmology is that nothing exists by itself, namely, there are no independent beings abandoned to their own fates in the universe. Since everything that exists is in relation to the rest of the universe, when we isolate an object from its relations, we cannot reach anything other than a series of approximations and idealizations. Therefore, Whitehead does not make a sharp distinction between living and non-living entities and formulates a continuity among all strata of beings in his concept of society. In this section, so as to understand the Whiteheadian concept of life better, I will try to clarify how he defines beings as the multiplicities of societies.

4.2.1 The Concept of Society

We have seen in Chapter 3 that Whitehead formulates his cosmology as an organism or a social organization. Therefore, in order to understand the Whiteheadian concept of life, it is essential to understand the notion of society as well. Whitehead introduces the concept of society so as to explain the presence of one or more defining characteristics inherent in all elements of a given environment. As we already know, since an actual entity can capture or prehend the other entities, actual entities can form actual units. Whitehead defines these units which are constituted as a result of the mutual objectifications or reciprocal prehensions among actual entities as "particular fact of togetherness among actual entities" which he calls "nexus" (Whitehead, 1969, p.20). In other words, the actual entities come together and form actual units or nexus thanks to the prehensions linking them. However, the concept of society is more than a set of actual entities: each member of a society has a genetic relation to other members. Each component of a society shares a special form or a "personal order" and it participates in this form through the prehensions of other members. Whitehead briefly states that a society is "a nexus with social order" (Whitehead, 1969, p.34). This means that all the members of a society share some common defining characteristics thanks to the genetic relationship between them.

In the Whiteheadian cosmology, while the ultimate components are atomistic entities, macroscopic entities such as stones, plants or animals are spatiotemporally extended entities, namely, societies. As we have already seen, each one of the actual entities participating in a society or nexus has characteristics inherited or derived from the prehensions of the previous generations (Whitehead, 1969, p.34). Thus, everything that exists is a network of relationships which depends on a substrate that gives conditions for this network. In consequence, every actual entity or society exists in an environment with which they reciprocally configure each other. For example, while an individual consists of atoms, it constitutes a society in relation to other individuals. Also, while the world consists of societies, it is itself part of the solar system. In this

way, we can think of the universe as an electromagnetic field in which every point relates to each other and as a hierarchical order in which every stratum gives rise to the upper one:

> An extensive continuum is a complex of entities united by the various allied relationships of whole to part, and of overlapping so as to possess common parts, and of contact, and of other relationships derived from these primary relationships. The notion of a 'continuum' involves both the property of indefinite divisibility and the property of unbounded extension. (Whitehead, 1969, p.66)

Whitehead underlines that each society can contain several societies simultaneously and geometries of different dimensions emerge from the pure extension (Whitehead, 1969, p.97). Therefore, in the Whiteheadian cosmology, nature's background should be topological or geometric. As we have seen in the previous chapter, Whitehead treats space and time as abstract concepts derived from the "extensive relation" between events. Thus, the extensive society gives rise to the geometric society and the continuity of actual entities depends on the continuity of the geometric society arising from the extensive continuum. This means that, other than the extensive continuum or extensive society, the characteristics of any society cannot be abstracted or independent from the characteristics of the geometric society from which it has arisen. As it is well-known, geometry is accepted since Descartes as the mathematical background of physics and mechanics. Hence, Whitehead's definition of the extensive continuum is one of the most significant aspects of his description of the universal hierarchical order. On the other hand, according to Whitehead, "our present cosmic epoch is formed by an 'electromagnetic' society which is a more special society contained within the geometric society" (Whitehead, 1969, p.98). In fact, in accordance with the scientific revolutions of the 20th century, the physical background of the universe can be defined on the basis of electromagnetism. This is the stratum where the entities such as electrons, protons, waves, etc. emerge. In the constitution of

the upper strata, these entities give arise new relationships and new actual entities are constituted as a result of the relationships within the lower strata.

As we know, Whitehead consciously aims to synthetically connect or unite the approaches which are treated as being opposites of each other in the history of philosophical thought. In this regard, he formulates a type of atomism which does not relate anymore to the mechanistic interpretations of reality. In the Whiteheadian cosmology, the universe can be conceived as a whole organism and all reality as a process of self-realization. In other words, we can consider an actual occasion as the formation of an organism and the cosmic process as a creative evolution. Such an interpretation of nature as a living organism may recall us the hylozoism of the pre-Socratics which does not separate matter from life. In fact, Whitehead formulates his system as a "cell-theory of actuality" in which atoms are accepted as living organisms and he therefore calls this doctrine "the philosophy of organism" (Whitehead, 1969, p.219). At this point, such a way of thinking may also remind us of Bergsonism. Whitehead himself mentions the presence of a certain similarity between his doctrine and that of Bergson; however, it would be a profound mistake for us not to regard these two ways of thinking as different from one another. For example, Whitehead's concept of feeling seems corresponding to Bergson's "intuition" which is about the physical grasp of an object. However, while Bergson does not give place to teleological elements in his concept of intuition, they are fundamental characteristics of physical prehensions for Whitehead (Auxier, 1999). On the other hand, Whitehead's concept of society gives his process philosophy a special character in comparison with Bergson's metaphysics. In this context, the Whiteheadian cosmology combines the evolutionary approach with the structural and morphological one. From a morphological point of view, for instance, the universe can be conceived as a hierarchical order, that is, the hierarchy of strata as I have already mentioned. Whitehead obviously clarify this morphology in his concept of structured society: "the notion of a society which includes subordinate societies and nexus with a definite

pattern of structural inter-relations must be introduced. Such societies will be termed 'structured" (Whitehead, 1969, p.99). To state in a nutshell, the beings and objects are societies of societies. A society is defined as structured if it consists of subordinate societies, that is, if its network is constituted from hierarchically ordered societies. A structured society such as a crystal or a stone can be more or less complex with respect to the multiplicity of its sub-societies or sub-nexus:

> Molecules are structured societies, and so in all probability are separate electrons and protons. Crystals are structured societies. But gases are not structured societies [...] although their individual molecules are structured societies [...] A 'structured society' may be more or less 'complex' in respect to the multiplicity of its associated sub-societies and sub-nexus and to the intricacy of their structural pattern. (Whitehead, 1969, pp.99-100)

Whitehead describes a structured society as being stable or unstable by evaluating it with respect to changes within the larger society which can be considered as its environment. The stability of such a society may be dependent or independent on the definite characteristics of the society in which it shelters. While a society which is structured with this kind of dependency is defined as "specialized", the independent one is called "unspecialized" (Whitehead, 1969, p100). At this point, Whitehead notes complexity and non-specialization as desired properties: "the problem for Nature is the production of societies which are 'structured' with a high 'complexity' and which are at the same time unspecialized" (Whitehead, 1969, p.101). This aim of nature relates to the fact that non-specialization allows societies to gain new functions for the sake of adapting to a new environment, namely, for the sake of increasing their survival rate. At this point, it becomes clear to us that there is an objective correlation between the scientific laws and the structural connections existing between the members of societies. In other words, scientific laws define inherent characteristics of all actual occurrences which make up such a given society. As I have already mentioned in Chapter 3, efficient causality implies such an immortal past and the determination of the future by the past while final causality is the subjective aim. It is appropriate to say

therefore that scientific laws are the laws of actuality insofar as only the efficient causation is taken into account and the final causation is ignored.

It is important to note at this point that although it is possible in an inorganic nature to ignore the final causality which allows novelty to arise, a living organism is a special case in this sense. Whitehead, like Hegel, rejects from the beginning a vitalistic[10] point of view with respect to the irreducibility of the organic to inorganic. According to the 19th century vitalism, while the behavior of living beings would not make sense without the presence of a *sui generis* (vital) force and without a purposiveness, there is no explanatory value of the final causality in inert objects. In other words, while the vitalists relate inert objects to the atomistic and physicalistic mechanism, they explain the living things by the action of the vital forces. Whitehead considers such a view as a product of the Cartesian dualism. For him, vitalism "is an unsatisfactory compromise. The gap between living and dead matter is too vague and problematical to bear the weight of such an arbitrary assumption which involves an essential dualism somewhere" (Whitehead, 1969, p.79). We cannot define vitalism as being reductionist but it nevertheless makes a distinction in nature between the inert and living and thus maintains the bifurcation between the physical and mental. On the contrary, Whitehead defends a gradualism between the classes of beings rather than a sharp distinction. As we have already seen, he defines all reality as an organism. All beings are constituted of experiences and there is a collaboration between the efficient and final causes. At this point, Whitehead mentions also that he is not satisfied with the division of scientific work:

> We do not know of any living society devoid of its subservient apparatus of inorganic societies. 'Physical Physiology deals with the subservient inorganic apparatus; and 'Psychological Physiology' seeks to deal with entirely living nexus, partly in abstraction from the inorganic apparatus, and partly in respect

[10] According to vitalism, an organic molecule cannot be produced from inorganic molecules (Bechtel & Richardson, 1998).

> to their response to the inorganic apparatus, and partly in regard to their response to each other. (Whitehead, 1969, p.103)

While Whitehead tries to explain the phenomena of life without falling into mechanical reductionism, he does not ignore both the final causality and empirically investigated features of the functioning of organisms. For him, isolation of life as a special "substance" prevents science from explaining the functioning of organisms in a complex environment in which every entity experiences the phenomena of life. In consequence, as we have already seen, Whitehead proposes to create a special science which aims to study the complex interaction of the organic and inorganic. His system expresses a continuity among all strata of beings so as to conceive a unique universe presided over by a single cosmology[11]. In this regard, in order to explain a continuity among all strata of beings and the complex interaction of the organic and inorganic, Whitehead introduces the concept of mental pole as we have seen in the previous chapter. We know that every actual entity has both a physical and a mental pole. Whitehead here does not separate the physical from mental but rather he describes the entities as the unity of both aspects. Thus, he obviously rejects Cartesian dualism which does not allow to reach a unitary understanding of the universe. In other words, the philosophy of organism is formulated as in opposition to the duality of the physical and mental. At this point, it is important to remind that although all actual entities have a mental pole, this does not mean that all of them is conscious. Consciousness appears only in structured societies due to their exceptional integration and complexity:

> In the actual world we discern four grades of actual occasions, grades which are not to be sharply distinguished from each other. First, and lowest, there are the actual occasions in so-called 'empty space'; secondly, there are the actual occasions which are moments in the life-histories of enduring non-living objects, such as electrons or other primitive organisms; thirdly, there are the actual occasions which are moments in the life-histories of enduring living objects;

[11] "Cosmology sets out to be made from all subordinate details. Thus, there should be one cosmology presiding over many sciences" (Whitehead, 1958, p.87).

> fourthly, there are the actual occasions which are moments in the life-histories of enduring objects with conscious knowledge. (Whitehead, 1969, p.177)

It is clear to us that the human kind belongs to the last (the fourth) class of actual occasions. Therefore, all actual occasions or the lower strata can be explained by starting from humans in an anthropomorphic way. Arising of a particular complexity depends on the fact that self-awareness or the philosophical reflection emerges only in the final result of the process but not in the initial stages of it. In this regard, Whitehead emphasizes that human subjectivity belongs to the "derivative 'impure' phases of the concrescence" (Whitehead, 1969, p.36). In a sufficiently complex organism, the transition from the initial relationships (from prehensions or feelings) to consciousness involves acts of selection among the data which are required for maintaining the formation processes of the actual entities. Thus, while some data are selected and received due to their relevance for the purposes of the entities, the irrelevant ones are left out. This means that consciousness is a subjective form which is constituted by the contrast between affirmation and negation (Whitehead, 1969, p.261). In other words, consciousness requires the contrast between what is and what is not or between what is possible and not possible. I have already mentioned in the previous chapter that although negative prehensions do not contribute to the content of the process by their data but by their subjective forms. In this context, according to Whitehead, "the negative perception is the triumph of consciousness. It finally rises to the peak of free imagination, in which the conceptual novelties search through a universe in which they are not datively exemplified" (Whitehead, 1969, p.161). Now, after this brief explanation to the fourth class of actual occasions which is associated with the arising of consciousness as a late phase of complex integrations, I will return to the concept of living organism in the next part and I will try to clarify how Whitehead express the relationship between living and non-living societies.

4.2.2 The Living Societies

We have seen that the objective of nature is the production of unspecialized structured societies with a high complexity since such kind of societies are able to gain new functions for the sake of adapting to a new environment and increasing their survival rate. According to Whitehead, the realization of this objective is possible firstly by "eliciting a massive average objectification of a nexus, while eliminating the detailed diversities of the various members of the nexus in question" (Whitehead, 1969, p.101). This means that there is a preference for uniformity in these societies and such a preference is one of the characteristics of inert entities which are classified as a lower degree of structured society and which we can call non-living societies. On the other hand, another way is by "an initiative in conceptual prehensions, i.e., in appetition" (Whitehead, 1969, p.102). This is briefly the desire for self-preservation or survival and this desire is the main characteristic of living entities which have a high degree of complexity. Such societies are living societies and appetition can be considered as the prerequisite of adaptation which implies novelty. At this point, as we have already seen, novelty relates to the concept of conceptual pole which uses the received data creatively and which corresponds to the subjectivity of experience (Whitehead, 1969, p.248). In this context, Whitehead associates the specificity of life with originality of conceptual feeling (which he calls now "appetition"), namely, with the modification of the past into the creative productivity of the present:

> The molecules within an animal body exhibit certain peculiarities of behaviour not to be detected outside an animal body [...] Thus, life acts as though it were a catalytic agent [...] Thus, though life in its essence is the gain of intensity through freedom, yet it can also submit to canalization and so gain the massiveness of order. (Whitehead, 1969, pp.106-107)

This last circumstance allows life to be accessible to scientific study. So as to clarify the specificity of life, Whitehead here points out the rising of the energy level of molecular reactions, the contribution of inorganic societies to organisms (as Hegel also

points out) and reciprocal modifications in their structures. As we have already seen, there is no known living society which is capable of existing without inorganic societies (Whitehead, 1969, p.103). Inorganic societies such as atoms or molecules do not need living societies in order to exist but a living society such as a cell needs inorganic societies in order to survive in a changing environment. We can see here that an inorganic entity is less complex but more independent than a living one. On the other hand, since every entity tries to intensify its experience, all of its behaviors should not be completely determined by its past, namely, by the efficient cause. In this regard, since life gains intensity through freedom, it requires an empty space which is not completely occupied by any corpuscular society and a nonignorable participation of the final cause (Whitehead, 1969, p.105). Life is therefore a special property of a set of entities which Whitehead calls living societies. It is a passage from a physical order to a certain originality as a reaction to the characteristics of the environment. In this way, Whitehead introduces his methodology by depending on the principle of the unity of nature as he defends in the London period of his studies. Thanks to his concept of society, he formulates a gradualism between the classes of beings by refusing a sharp distinction between living and non-living entities:

> It is obvious that a structured society may have more or less life, and that there is no absolute gap between living and non-living societies. For certain purposes, whatever 'life' there is in a society may be important; and for other purposes, unimportant. (Whitehead, 1969, p.102)

As we have seen so far, according to Whitehead's philosophy of organism, every society or every organism is constituted by actual entities. This means that every existence is the unification processes of actual entities, that is, of experiences in one or another way—through prehensions. Whitehead emphasizes that creativity is "the process of eliciting into actual being factors in the universe which antecedently to that process exist only in the mode of unrealized potentialities" (Whitehead, 2012, p.60). In this regard, life is the creative activities of actual occasions or experience, that is, a process of self-creation which means the transformation of the potential into actual. In

other words, living is associated with novelty, namely, with the efforts of living entities to adapt to an evolving environment. Such an effort mainly relates to the subjective aim or final causality rather than the past or efficient causality. Thus, it is important to note here that the drive of the creative process is an immanent purposiveness. On the other hand, the non-living entities are associated with the past, that is, they tend to be repetitive and uniform. At this point, Whitehead underlines that there is no strict border between the living and non-living since the living societies have an obligatory relationship with inorganic entities. As its well-known, the existence of microscopic organisms was discovered in the 17th century[12]. Whitehead argues that if we expand our scale of exploration enough, we can describe all entities as organisms. For example, inert beings such as stones, rocks or a crystal are organisms which are comprised of smaller organisms (Whitehead, 1969, p.99). In other words, for him, an organism is not just a living entity which we recognize in a determined scale and, in fact, all actual entities are organisms. In this way, as he aims, he succeeds to express a continuity among all strata of beings and a unique universe presided over by a single cosmology.

Whitehead's organicism and evolutionism unfolds in line with the Pythagorean-Platonic tradition (Lucas, 1986, p.134) and it can be said that he seeks to find the embodiment of eternal and unchanging forms in a continuously evolving world. For Whitehead, according to his well-known statement, "the safest general characterization of the European philosophical tradition is that it consists of a series of footnotes to Plato" (Whitehead, 1969, p.18). In this regard, since he defends also that all reality is constituted by drops of experience, his philosophical position can be seen as an idealistic panpsychism. However, according to Whitehead, consciousness "arises only in a late and derived phase of complex integrations" as I have already mentioned (Whitehead, 1969, p.162). Several modern philosophers such as Descartes, Locke, Hume or Kant defends that experience presupposes consciousness but the truth is the

[12] By Robert Hooke and Antoni van Leeuwenhoek

exact opposite for Whitehead. Consciousness emerges in a later stage from experience, that is, from the processes of numerous life centers which can be conceived as the points of a network:

> There are thus millions upon millions of centers of life in each animal body. So, what needs to be explained is not dissociation of personality but unifying control, by reason of which we not only have unified behaviour, which can be observed by others, but also consciousness of a unified experience. (Whitehead, 1969, p.108)

This means that consciousness is a rare event, namely, "the crown of experience" which is "obtained only occasionally" but "not its necessary basis" (Whitehead, 1969, p.139). That is why it becomes clear to us that the philosophy of the organism is not panpsychist and "relegates consciousness to a subordinate metaphysical position" (Whitehead, 1969, p.139). In this sense, I have already mentioned in the previous part that consciousness is a subjective form which is constituted by the contrast between affirmation and negation. Conscious perception is the most primitive form of judgment but when we say "this coat is not blue" or "I am not you", this means that consciousness has reached maturity. Whitehead here affirms that "for Kant, the world emerges from the subject; for the philosophy of the organism, the subject emerges from the world" (Whitehead, 1969, p.88). While this last statement shows us one of the critical points where Whitehead's realistic position distinguishes from the Kantian idealism, the process of arising of consciousness makes us clear once more the role of opposites in his system:

> Thus, the universe is to be conceived as attaining the active self-expression of its own variety of opposites—of its own freedom and its own necessity, of its own multiplicity and its own unity, of its own imperfection and its own perfection. All the 'opposites' are elements in the nature of things, and are incorrigibly there. (Whitehead, 1969, p.350)

As we have seen in Chapter 3, Whitehead transforms Cartesian duality into a dialectical connection of opposites and he expresses in this way the unification of the

monadic structure of reality into “one”. It is important to remind at this point that the reformed subjectivist principle is an unignorable component of the Whiteheadian cosmology. In ancient times, the human was seen as being an ordinary part of the general architecture of the cosmos. Descartes, on the other hand, takes human self-consciousness (“I think”) beyond the limits of the universe and makes it the guarantor of truth before proving the existence of a God. Whitehead, by again reconciling the opposites, generalizes the Cartesian principle to the entire universe: the cosmic process now appears as an infinite number of throbs or pulses of subjectivity (Whitehead, 1969, p.116). In other words, the fusion of diversity into a single unity is a structural characteristic of the emergence of subjectivity. Thus, subjectivity here is a universal ontological characteristic and we should not confuse it with human subjectivity which is only a particular form of it. Meanwhile, the Whiteheadian ontological principle posits that reality consists of individual entities. Here, we can say that the ultimate metaphysical truth is atomistic and the continuum continuously refers to potentiality (Whitehead, 1969, p.72). This is a kind of theory of monads and while Leibniz’s monads change, the monads of the philosophy of organism “become” as the final products of the creative processes. Therefore, Whitehead’s position is sometimes characterized as “organic atomism”.

To state in a nutshell, in the Whiteheadian metaphysics, life is understood as a continual process which is both physical and mental and in which actual entities are constantly becoming. Each new stratum arises thanks to the synthesis of preexisting elements in new ways, that is, the emergence of novelty is a passage from multiplicity to unity. As we know, everything that exists has both a physical and a mental pole and the capacity of complex organisms or humans for thought and reason implies a high degree action of the mental pole. Humans are a part of the general order of nature; however, we cannot reduce the human factor to the structural relationships of physical nature as natural-science materialism does. Whitehead proposes that the unity of the human and nature should be understood in another way:

> [...] in physical science, a living body is to be interpreted according to what is known of other sections of the physical universe. This is a sound axiom; but it is double-edged. For it carries with it the converse deduction that other sections of the universe are to be interpreted in accordance with what we know of the human body. (Whitehead, 1969, p.119)

Whitehead emphasizes therefore that an anti-reductionist path of explanation is appropriate—from the highest stratum to the lowest one. For him, including the highest mental functions, everything that exists in humans or that can be perceived in humans exists also in nature as a potential or in an implicit form. Departing from the human, since it is at the top of the evolutionary ladder, we can explore the characteristics of other strata in nature. In this way, Whitehead formulates his cosmology as an organism or a social organization and he succeeds to explain the phenomena of life without ignoring both the final causality and empirically investigated features of nature.

4.3 From Hegel to Whitehead: The Purposiveness of Life

We have seen in Chapter 2 that, according to Hegel, the main characteristic of life is a process of self-determination which culminates in a comprehensive teleological system where all moments are interconnected. Hegel treats contradiction as the root of all movement and life. Every living being tries to realize its idea in its internal purpose by overcoming the antagonism between its being and its environment. Logical life, as well as living organisms, are explained through the movement towards an internal end. Thus, it is life itself that reveals the structure of the absolute as an internal end and we can see the movement of life as an analogy for Hegel's system.

Whitehead, on the other hand, strongly rejects the position of absolute idealism. He emphasizes that since a natural science is a system of ideas which undergoes conceptual restructuring from time to time, metaphysics differs in that it tries to develop a system of the most general ideas. However, metaphysics does not at all have the privilege of expressing truth if it is not viewed on a common basis with science.

Therefore, for Whitehead, the existence of reality cannot be explained as an idea alienating itself into nature as Hegel tries to do. From the dialectics of a developing idea, one can get only the idea of nature but not nature itself (Whitehead, 2011, p.157). Yet, without falling into the fallacy of misplaced concreteness, Whitehead's approach maintains a dialectical systematization so as to explain the unification of the opposites and he formulates a dialectical relationship between actuality and potentiality or novelty and permanence.

Whitehead conceives an organism as the model of all universe and the life process as a whole can therefore be conceived in the Whiteheadian cosmology as the vital process of an organism. This means that, as I have already explained, all inert beings are also organisms which are comprised of smaller organisms and all inorganic entities carry life within themselves in an implicit way (Whitehead, 1969, pp.102). So as to reach such a network among all beings, Whitehead defends that reality is not made up of neither pure matter nor pure spirit, but rather it is composed of events or drops of experience which possess both physical and mental aspects. As we know, Whitehead calls these events "actual entities" or "actual occasions" which have both physical and mental poles and he defines the objects of the factual cosmos which appear in the space-time continuum as the products of the successive transitions of these interrelated events.

Whitehead, as a process philosopher like Hegel, does not ignore the role of history and treats the actual entities as the elements of the historical process: through their physical poles, all actual occasions are determined on the one hand by the past, namely, their predecessors which give the conditions specific for their formation (Whitehead, 1969, p.248). In this way, thanks to such a conformation phase, the present of the universe conforms to its past. However, Whitehead is not a determinist as we have already seen and he formulates the emergence of novelty through the mental poles which creatively use the received data and corresponds to the subjectivity of experience. Thus, while the datum of the past is called by Whitehead "superject", each actual entity is on the

other hand the "subject of their own immediacy" (Whitehead, 1969, p.25) and has a capability of self-determination. In consequence, every actual existence arises as a result of the joint action of final and efficient (material) causation. While the efficient cause guarantees the continuity of the past to the future, the final cause corresponds to the phases of novelty and adaptation. At this point, it is significant to remind that the drive of the creative process is an immanent purposiveness. Like Hegel, Whitehead defends that an organism carries an internal purposiveness. As we have seen in Chapter 3, when its process ends, an actual entity ceases to be a subject and becomes an object for the entities succeeding it. A dead actual entity in this way becomes part of a new entity in a new formation process. Thus, it is appropriate to say that Whitehead, like Hegel, treats an actual entity as both a *being-for-itself* and a *being-for-others*. While an actual entity is capable of self-determination on the one hand by adapting the data provided by the past, it is on the other hand an efficient cause for the self-realization of its successors.

Hegel emphasizes that, in the purposiveness of the vital process, the members and organs of a living body are what they are only in their unity and they are by no means indifferent to the whole. According to him, the external and mechanical relationship of whole and parts is not enough to know organic life in its truth (Hegel, 2010, p.680). Similarly, according to Whitehead, the multiplicity of actual entities constitutes the solidarity of the universe just as the functioning of an organism as a whole (Whitehead, 1969, p.56). For example, while a bird can be prey for other animals, it also has other roles in its ecosystem and in the cosmic system. Whitehead here introduces the concept of "balanced complexity" which implies the biodiversity and the relation of each being to all other beings (Whitehead, 1969, p.159). As I have explained in the previous sections, Whitehead's philosophy of organism defines the beings and objects as societies of societies. From this perspective, not only living things but also inert beings such as stones or rocks are organisms which are comprised of smaller organisms, that is, an inert being or a single-celled organism is already a society of

societies (Whitehead, 1969, p.99). From the perspective of complex societies, for example, the human body consists of many systems, bones, muscles and organs which Whitehead classifies as subordinate societies and lower strata. Such subordinate societies serve the organism on which they depend by fulfilling its different functions within its environment. Hence, while a living organism fulfills its self-realization by the means of its members, it also carries a role in the self-realizations of other organisms. As a result of this section, it becomes clear to us that Whitehead takes into account all the relations as a whole in the context of the life process as Hegel does and he relates these relations to the internal purposiveness of organisms. However, as a further step, it is important to note that all entities are defined as organisms in the Whiteheadian philosophy of organism.

CHAPTER 5

CONCLUSION

As we have seen in the previous chapters, by both Hegel and Whitehead, life is considered as a process. Thus, before completing this study, it may be beneficial to articulate a comparison of these two philosophers in terms of the relation of process and knowledge. In this regard, I will again return to the ancient era. Heraclitus of Ephesus (c. 535 – 475 B.C.) is the first philosopher who conceives of reality as a synthesis of opposites and he affirms that knowledge arises only from the unity of opposites. While Thales of Miletus (c. 624 - 546 B.C.) is considered as the first thinker who understands the whole from an intelligible unit (*hydros* or water), it was Heraclitus who defined this unit as a constant struggle of opposition which tends towards harmony. In this way, *logos* (reason) is seen as "becoming" and reality as a process (Kirk, 1954, p.94). The Heraclitean way of thinking is therefore an understanding of absolute reality as a process mediated by *logos*. Heraclitus obviously underlines that it is *logos* what permeates the cosmos and consciously manifests itself in humans. Movement is the principle (*arché*) of the unity of opposites which implies a mediation coming from a negation (Kirk, 1954, p.173). At this point, it is appropriate to say that the Heraclitean monism means admitting this negation as the driving force of knowledge and truth.

What Heraclitus mainly emphasizes is that knowledge cannot be separated from its process. However, the problem of his thought is that the essence of *logos* is lost here in the bad infinity without returning to itself. In other words, *logos* is represented by finite determinations each of which consists only of a negation of its being and never returns to itself as a negation of negation. The absolute always presents itself as

"becoming" and fails to establish itself as an "idea". As we have seen in Chapter 2, Hegel characterizes the advance to the infinite as a content generated by repetition. He defines the idea as the unity of concept and reality and since he regards life as an idea (and therefore as a process), the Hegelian philosophy of nature bases on a circular organization which is the form of good infinity (Hegel, 2010, p.673). In this regard, in the Heraclitean way of thinking, the non-being always remains as alien to the being, as something external to it and not as part of its own unfolding. The essence is therefore lost in the continuous flow and the dialectic of Heraclitus fails to determine the forms of essence or the "idea".

Hegel, like Heraclitus, understands the movement of the absolute from the mediation of the other but this movement is the absolute which unfolds in itself and for itself from the differentiation with itself. Thinking appears as a movement which occurs internally and externally, namely, it is indeed consciousness and the world itself. In consequence, like Heraclitus, Hegel defines self-awareness as "the whole". This means that the certainty of the whole is the certainty of the self at the same time and, here, knowledge cannot be separated from its process. In this regard, what Hegel explains is that one cannot think of the fundamentals of knowing outside its own knowledge. Thus, the foundation of all knowledge in the self can only be found in its own unfolding in itself and for itself and such a self-knowledge process is mediated by the other differentiated from itself.

Hegel therefore tries to explain how to think of thinking without falling into contradiction when we admit it as an object. There are various ways of thinking that ignore the opposites or treat the existence of the opposites as a contradiction which should be eliminated in one way or another. As we know, the Hegelian philosophy accepts the contradiction as a necessary moment of the Absolute and it formulates how to overcome such a contradiction by a dialectical movement so as to reconcile being and thinking (Hegel, 2010, p.92). In such a formulation, Hegel starts from the beginning, that is, from experience and he admits the starting point of philosophy as

experience. All contradictions are then resolved in the self-consciousness of the *Absolute Spirit* which is predetermined from the previous phases of its development. From the Hegelian point of view, hence, philosophy is what gives an account of its own journey from the beginning to the end so as to understand the unfolding of the idea in all its forms and expose it from itself within the mediations of all these forms. In this movement, there is indeed no separation between being and thinking, subject and object, particular and universal. As a result, the Absolute appears in all its forms from its own mediations with itself since it is in itself and for itself.

On the other hand, Whitehead defines philosophy as "the attempt to make manifest the fundamental evidence as to the nature of things" (Whitehead, 1969, p.48). In other words, he characterizes the main objective of the Whiteheadian process philosophy as being able to understand the nature of reality itself. Starting from the London period of his studies, he formulates his methodology by depending on the principle of the unity of nature and he treats philosophy as an effort for establishing a logical connection between the concept of nature and all the other concepts that science operates, that is, for framing a coherent system in which "every element of our experience can be interpreted" (Whitehead, 1969, p.3). It becomes clear in this way that, according to Whitehead's philosophical approach, studying the world is in fact studying our experience of the world. This means that reality is only available to us through our experience of it. Whitehead's process metaphysics has therefore deep roots in his early philosophy of science and it "has taken human experience as an example upon which to found the generalized description required for metaphysics" (Whitehead, 1969, p.112).

In the context of the Whiteheadian process philosophy, after we abandon the concept of substance, the main question will be how to explain the individuality and identity of actual entities. If the process were continuous as it is in the Heraclitean way of thinking, this question would become an insurmountable problem. However, Whitehead has a different view at this point: "there is a becoming of continuity, but no

continuity of becoming [...] In other words, extensiveness becomes, but 'becoming' is not itself extensive" (Whitehead, 1969, p.35). As we know, Whitehead's system treats process certainly as the fundamental metaphysical character of nature and Whitehead obviously underlines that the emergence of actuality can only be explained as a process. Here, it is important to note that such a process occurs in the individual atomic units. Each actual entity is closed in itself in the sense of being an individual and Whitehead mentions that these atomic units make therefore the process discontinuous. In other words, each actual entity is different and each has its own internal process. Thus, what such a system implies is the discontinuity of the process rather than the continuity. However, defining actual entities as atomic units does not mean that the boundaries of an actual event are definite; on the contrary, it is not possible to separate the events totally from each other. The continuity of nature arises from extension, that is, from the fact that each event extends over another event and is included in other events. According to Leclerc (1958), "the theory Whitehead advances, therefore, conceives the actual entities as 'epochal' units of becoming, in each of which the process of becoming is completed; and each epochal unit of becoming as succeeding and being succeeded by other epochal units" (p.74). In consequence, as I have explained in Chapter 3, actual occurrences are discrete units but not completely closed in themselves and this discreteness allows the continuity of the whole cosmic process.

Now, it is clear to us that the Whiteheadian concept of reality is a continuous succession of different entities. An actual entity can be conceived as an atomic unit of the process and it is surpassed by other atomic units. As we know, Whitehead defines a prehension as positive if an actual entity (namely, a datum) is contributed to it and he calls positive prehensions "feelings". In the process of becoming, each actual entity firstly feels the objectified universe passively and then it actively unites those feelings in harmony. We can conceive this unification as the moment of pure subjective self-creativity. Once this harmonization is reached or once it is satisfied, the moment of subjective experience ends and the actual entity remains as part of the objective context

for the formation of the subsequent occasion of experience (Whitehead, 1969, p.245). In other words, when its formation process ends, an actual entity becomes an object for the entities succeeding it. In this way, Whitehead defines the universe itself as a process in which "many" become "one".

I have explained in Chapter 3 that the internal unity of an actual entity is constituted by the successive phases of its formation process (Whitehead, 1969, p.26). Whitehead defines the physical pole as the initial phase which corresponds to the objectivity of experience and the conceptual pole as the subsequent phases in which the received data is creatively used and which corresponds to the subjectivity of experience. However, these internal successive phases should not be understood as a continuous succession which implies a temporal distinction between its preceding and subsequent parts. According to Whitehead, actual entities atomize the extensive continuum and such an atomization process is required for space and time to be actual (Whitehead, 1969, p.72). Thus, actual entities are extensive and this extensiveness means that they are not divisible: he extensive act of becoming cannot be divided since it takes place as a whole (Whitehead, 1969, p.324). At this point, it is also important to note that Whitehead's distinction between the physical and mental poles does not mean two separate substances but two different aspects of the process. From this perspective, it becomes clear to us that a physical body is imbued to the smallest detail with a mental character. Thus, it is not possible in the Whiteheadian way of thinking to treat the biological body as an isolated physicality as natural-science materialism does.

As we know, Whitehead describes actual entities as "drops of experience" which are complex and interdependent and as "the final real things of which the world is made up" (Whitehead, 1969, p.18). However, admitting that the world is made of drops of experience does not mean defending that everything in the universe is consciousness. Whitehead obviously emphasizes that consciousness depends on experience but arises in a late phase of complex integrations (Whitehead, 1969, p.162). This means that while a kind of pre-consciousness appears as a raw and primitive feeling in all entities,

consciousness arises only in the complex societies of actual entities. In other words, consciousness is a special form of experience: while experience is universal at the microcosmic level, consciousness arises only at a high level, namely, it is the "the crown of experience" (Whitehead, 1969, p.139). Thus, from the Whiteheadian point of view, it is appropriate to say that the fundamental units of perception in a physical body are the actual entities themselves rather than the sensory organs which Whitehead defines as the societies of actual entities.

We know that, according to the Whiteheadian cosmology, the perceptions or experiences of actual entities are what make up the entire universe. Each actual entity becomes what it is by perceiving its interconnectedness with the rest of the universe. Whitehead affirms that "every actual entity is in its nature essentially social" (Whitehead, 1969, p.22). Through their mental poles, actual entities temporarily acquire various characters which are determined by eternal objects. These objects are pure potentials or the forms that specify the character of actual entities and they can be conceived as mathematical entities (Whitehead, 1969, p.62). Thus, thanks to the eternal objects, the conceptual becomes directly and inherently an inseparable part of the physical. As I have mentioned before, it is not possible in the Whiteheadian way of thinking to treat the biological body as an isolated physicality. Just as the coexistence of a physical body with the mind, the objective physical pole fundamentally coexists with the subjective mental pole. In other words, cultural or social aspects of an entity are deeply interconnected with its physical body. What is important here and what carries Whitehead's philosophy one step further than many philosophical systems is that it clarifies the connection between the physical body and the social aspects and, hence, it does not limit the cultural and social relations with just the human realm of meaning. What Whitehead emphasizes is that we are interconnected with not only a cultural and social human network but also, at the microscopic level, with our past and with the history of our physical environment.

As we have seen in the previous chapter, all the objects of our experience (stones, plants, people, etc.) are societies of actual entities. Whitehead defines many types of society with different levels of complexity and he classifies human beings as a complex society under the title of structured societies (Whitehead, 1969, p.99). As I have mentioned before, the network of a structured society is constituted from hierarchically ordered societies. From the perspective of complex societies, the human body consists of many systems, bones, muscles and organs which Whitehead classifies as subordinate societies and lower strata. Also, the particular complexity of humankind implies having self-awareness and the capability of philosophical reflection (Whitehead, 1969, p.36). The members of a human body, as a whole, create a society and allow particular complex experiences to occur. As Whitehead obviously emphasizes, "mankind is the animal at the head of the Primates, and cannot escape habits of mind which cling closely to habits of body" (Whitehead, 1967, p.46). It is appropriate to say therefore that while there is a type of unity between the physical body and the subjective mental experience, there is also a unity between nature and the individual bodies as a whole. Since the human experience cannot take place out of the physical body, we cannot ignore the role of physical bodies in our tries to understand nature. In this regard, Whitehead (1968) describes the body as the "portion of nature with which every moment of human experience intimately cooperates" and points out that "there is an inflow and outflow of factors between the bodily actuality and the human experience, so that each shares in the existence of the other" (p.115). To state in a nutshell, every actual entity or society exists in an environment with which they reciprocally configure each other and, as we know, Whitehead does not isolate living beings from inert things within such a network which we can consider as a whole organism.

In this way, Whitehead overcomes in his system the Cartesian dualism and bifurcation of nature. He formulates a reconciliation between the physical and conceptual and denies the dualistic position without falling into a traditional monistic position. The

Whiteheadian process philosophy differs from traditional monism since the "one" universe formulated here is never static and defined as a continuous process of creation. Therefore, it is possible to say that it regards reality as being "one" and "many" at the same time. In fact, one can claim that the bipolarity of actual entities and the difference between eternal objects and actual occasions can be associated with a dualistic position. At this point, if we consider any actual object (for example, a stone), it is "many" in the sense of being a society of societies. However, it is on the other hand "one" as a whole and closely linked to everything that exist as being also a part of a whole, namely, of the universe. In addition, bipolar character of actual entities does not mean that the physical and mental is separable, but rather they are two inseparable aspects of existence. As I have mentioned in Chapter 3, Whitehead obviously tries to formulate a unique universe presided over by a single cosmology. However, different from Hegel, the Whiteheadian universe cannot be considered as being absolute, unchanging or static behind its changing appearance. Whitehead considers admitting such an absolute reality as an error and, as we know, defines such an as the fallacy of misplaced concretion (Whitehead, 2011, p.51). This is to confuse an abstraction with an ultimate concrete fact and, according to Whitehead, this fallacy is the cause of most of the errors seen in the history of philosophy.

On the other hand, Hegel's philosophy is an attempt to consider the entire universe as a systematic whole in which differentiation is essential. According to the Hegelian way of thinking, the identity of thought and its object can only be achieved through experience: thinking achieves a progressive intelligibility in this identity and the achievement of intelligibility is already its purpose. The truth is therefore reached only when the errors are experienced and the truth triumphs. What makes the universe intelligible is to consider it as an eternal circular process by which the Absolute Spirit comes to know itself as Spirit, namely, as *One* with the Absolute Spirit itself. This process occurs (i) through its own thought, (ii) through nature, (iii) through finite spirits, their self-expression in history and their self-discovery in art, religion, and

philosophy. In consequence, since it considers all reality as Absolute Spirit, Hegel's system is obviously monistic.

I have tried to show in this study that, for both philosophers, life is more than what is claimed by mechanistic views that ignore the dynamics and relations. As we have seen in the previous chapters, according to Hegel, the purposiveness found in the vital process of organisms is that every living being tries to overcome the antagonism between its being and its environment, namely, the separation between the subject and the world and this is the realization of its idea. From the Hegelian point of view, since being an organism means renewing and producing itself, there is no vitality without a self-production process and self-referentiality. In this regard, Zizek affirms that "in the modern sciences, this closed circle of the self-referential 'positing [of] the presuppositions', which Hegel already perceived as the fundamental characteristic of a living entity, is designated as 'autopoiesis': in a kind of retroactive loop, the result (the living entity) generates the very material conditions that engender and sustain it" (Zizek, 2012, p.107). On the other hand, according to Whitehead, all organisms fulfill their functions in a cosmic process for the purpose of realizing themselves and contributing to the self-realizations of other organisms. If I make an evaluation in the context of the positive sciences, it is appropriate to say that the notion of purposiveness is not treated kindly by many scientists since it is associated with the idea of a creator God. However, when teleology is understood as a factor which is present in the nature of organisms and which gives the explanations of their formation processes, it does not refer to the presence of any divine external agent. It is worth noting that teleology is an important part of scientific thought from ancient Greece to the present day and it is still a point of debate especially in the context of the philosophy of biology. In regards to these debates, Francisco J. Ayala, an eminent Spanish-American evolutionary biologist, defends that there is a purpose (an end) in homeostatic systems. According to him, e.g., the regulation of the body temperature of mammals is directed

to the purpose of maintaining the body temperature and, in this sense, they can be conceived as teleological systems. (Ayala, 1970).

More emphatically, Dobzhansky et al. agree that the characteristics of individuals are teleological. For example, while the wings of a bird serve to fly and the eyes to see, the kidneys function in the regulation of the blood composition. The characteristics of organisms which can be called teleological are those that can be identified as adaptations: structures such as a wing or a hand, organs such as the kidneys, or behaviors such as the mating dance of a bird of paradise. Adaptations are the characteristics of organisms which have been produced by natural selection since they fulfill certain functions and increase in this way the reproductive success of their carriers (Dobzhansky et al., 1980, p.495). Similarly, for Ayala, it is teleological explanations that allow us to study the development of the organs such as the eyes since they reveal precisely how the organ in question contributes to the system of an organism. In this way, teleological explanations are perfectly compatible with causal explanations (Ayala, 1999). At this point, Ruse (1999) agrees with Ayala that there is something distinctive in evolutionary biology and this distinction has precisely a teleological nature.

In this regard, as we know, both Hegel and Whitehead have already discussed that all organs or members of a body exercise their own functions in the process of the self-preservation or self-realization of the whole organism. However, in the context of the role of adaptations, it is clear to us that Whitehead obviously points out the creative processes which result in novelty in the physical world. He considers what distinguishes the higher forms of life as their capability of modifying their environments and he admits this capability as one of the main objectives of life (Whitehead, 1958, p.8). In other words, according to Whitehead, life is directed towards increasing its own self-satisfaction. At this point, it is important to note that Whitehead definitely separates his metaphysical way from that of Darwin. I think the following declaration is enough for clarifying his view in this regard: “Darwin […] is

truly great, but he is the dullest great man I can think of. He and Huxley had grasped the principle of evolution in material life, but it never occurred to them to ask how evolution in material life could result in a man like, let us say, Newton" (Whitehead & Price, 1977, p.283). By the way, it is worth remarking that Engels defined the three laws of dialectics from the reading of Hegel's *Science of Logic* and, according to him, these laws applied to nature are a good basis for Darwin's theory of evolution (Royle, 2014).

One of the main problems with the mechanistic views is that they do not take into account the importance of relationships. However, in Whitehead's way of thinking, the primary role belongs to the relationships rather than the objects (Whitehead, 1985, pp.38-39). Actual entities are not meaningless corpuscles; contrarily, Whitehead defines their relationships as efficient and final causes and formulates in the notion of prehension. It is appropriate therefore to say that he describes each entity through the sum of its relationships with other entities (Whitehead, 1985, p.26). In other words, it is relationships that form the objects themselves and they are not secondary to the objects. In this regard, as we know, actual entities are drops of experience. This means that, besides the sum of its relationships, an entity should also be defined through how it reacts to these relationships. At this point, Whitehead's notion of creativity and the role of the mental pole come to the fore. As we have already seen, novelty relates to the function of the mental pole which uses the received data creatively and which corresponds to the subjectivity of experience (Whitehead, 1969, p.248).

Whitehead emphasizes that each entity (e.g., a human being, a stone or an atom) brings a degree of novelty to its relations with other entities, namely, how they react to each other is not fully determined by efficient or material causation. although most of the entities are not conscious. Hence, while each entity tries to conform to the conditions that surround it, it is under the influence of a social structure (Whitehead, 1985, p.39). In other words, while the present of the universe conforms to its past, that is, while the efficient cause guarantees the continuity of the past to the present and future, the final

cause corresponds to a degree of novelty which is guided by a creative purpose. It is important therefore to underline that all entities have a certain degree of freedom or creativity which allows them to be self-directed in this sense. In consequence, the individuality and originality of an entity arises from its own capability of self-determination of how it reacts to the rest of the world and how it confronts its environment under certain conditions. In this context, David Ray Griffin (2001, p.97), also a process philosopher, coins the term "pan-experimentalism" (the idea that all entities experience) so as to describe Whitehead's position and to distinguish it from panpsychism (the idea that all matter has consciousness). For the Whiteheadian process philosophy, in this way, it is possible to explain the individual cognitive differences—e.g., the emergence of Newton. As a result, it is clear to us that understanding reality as the creative process of an organism and considering this organism as a set of societies constituted by drops of experience makes Whitehead's philosophy a bridge over the gap between the social and scientific theories.

On the other hand, it is clear that Hegel takes a stand against the science of his time. He accepts what is debated in the area of natural sciences but he opposes the reductionist tendency of science and, as a result, he elaborates a new concept of nature. From the Hegelian point of view, treating the relationship between whole and parts as external or mechanical and considering the parts as being separable from the whole is insufficient to account for life. Hegel underlines that the members of an organism are not simply parts since they are what they are only in the whole or in unity. In other words, contrary to mechanism, members are not indifferent to unity. This does not mean that there is nothing to be gained from the reductionist approach. Hegel remarks that a reductionist operation corresponds to the way of finite thinking which characterizes the faculty of Understanding and it produces limited knowledge. However, according to the Hegelian way of thinking, such an approach does not enough for revealing the truth of the organic world. At this point, the question is why we interest in his philosophy of nature today. Does it still have anything to say to us?

First of all, from my point of view, it is worth being taken into account since it points out the cosmic unity. In fact, the well-known form of *Big Bang Theory* reinforced by recent discoveries suggests the presence of a cosmic unity at the beginning of everything. The term Big Bang does not refer to an explosion in an existing space, but rather it designates the joint emergence of matter and "space and time" from what is known as a singularity (LePoire, 2020). In other words, the Big Bang Theory remarks that not only the matter in the universe but also the origin of space and time is a singularity at the time of the Big Bang. Of course, this study is not the place for a scientific discussion on the details of this theory and other ones; however, what I want to mention that philosophical reflection on the singularity, on the concept of the whole or on the Absolute is a fruitful activity for a better evaluation of the recent scientific theories about the cosmos. Saks, Monge and Guzun (2009) affirm in this regard that:

> For Hegel, the real knowledge was to understand not only parts but the Whole, the Absolute Idea. From our practical point of view (not to be involved in deep discussions between materialism and idealism in philosophy), Absolute Idea may be taken to represent the perfect, detailed knowledge of the integrated, whole systems. That in fact is what Systems Biology wants to find out, to know all about the life in its complexity, to comprehend the Whole, an Absolute Idea of the living systems. (para.5)

If I return to the context of evolutionary biology and genetics, it is appropriate to think that there is an evolutionary relationship among all living beings since the genetic materials of all consist of the same nucleotides (in different number or sequences) and since they all use this material in the same way (Woese, 1998). It is worth reminding here that the term "genetics" wasn't even coined until 1905—long after Darwin's death in 1882. Today, we know that all living things (all cells) have a genetic "code" which is different in all living organisms and which serves as the primary unit of heredity. This fact inherently interconnects the plant, animal and human domains and, in this way, establishes an immense phylogenetic field. Within this field, throughout history, the genetic "information" which specifically changes from one individual to

another and which transmits the proper characteristics from generation to generation gives us an extensive "information" pool (Woese, 1998). At this point, it is important to clarify what this information is. As it is known, genetic information is stored in the sequence of nucleobases along nucleic acid chains (Watson & Crick, 1993). These chemical bases are common for all living things but their numbers and sequences are different. It can be said therefore that this information is not a particular material but an organization. We can also take into consideration here the self-organization or self-assembly at the molecular scale. Similarly, as we have seen in the previous chapters, Hegel remarks that life does not arise from an extra ingredient that is infused into the inanimate matter but emerges from a special organization of chemical processes (Hegel, 2014, p.222). In this regard, it is also worth reminding that Hegel did not catch the studies of genetics but the primer principles of these studies had already been discovered in Whitehead's time. Later, by underlining again the role of organization, Whitehead mentions that actual entities are self-creating processes and all beings are constituted thanks to their different modes of formation and connection. His philosophy of organism, furthermore, obviously takes into account the contribution of the physical past to the present and future in the formation processes of actual entities, namely, the conformation of the present to the past in a physical sense.

As another field through which we can interpret the concepts of life and vitality, relational biology has developed formal models that allow an in-depth analysis of the specific properties of life (Rosen, 2005). Although the notion of self-reference pointed by Hegel is still a debatable issue, relational biology defends in its general approach that the autopoietic properties of life implies its self-referentiality. In other words, biological organizations are assumed as the networks of processes operating in a circular way (Goudsmit, 2009). One of the famous declarations of Nicolas Rashevsky, the father of mathematical biophysics and theoretical biology, in this regard is: ''throw away the matter and keep the underlying organization'' (Naranjo, 2011). Also, Hempel, Pineda and Smith (2011) obviously remark that "self-reference, the ability of

a system to refer to itself, is a necessary condition for complexity, and can indeed form the basis for a definition of complexity" (para.1). My aim here of course is not to compare the Hegelian views with today's scientific facts in detail. What I want to mention is that his logical principles and views are still worth being the subject matter of philosophical reflection which should play, I think, an integral role in scientific inquiry.

On the other hand, in order to make an interpretation on the cognition in organisms without a nervous system, it may seem useful to integrate Whitehead's approach to this discourse. In this regard, the philosophy of organism can be treated as a complementary way of thinking on behalf of organicism which can also be called systems theory. As we know, according to Whitehead, the actual entities which make up all beings in the universe including inanimate objects such as stones or rocks have an experiential nature, namely, they are experiences. From this perspective, we can think of the universe as an electromagnetic field in which every point relates to each other and as a hierarchical order in which every stratum gives rise to the upper one. Similarly, organicism defends that life is interrelationships between living things living in a complex network (Herring & Radick, 2019). It reflects an approach of biology which combines the results of experimental biology with the integrative observation of organisms in their environment and it aims to study the interactions of living beings in the systems in which they integrated.

Actually, to speak of organicism in biology is an uncomfortable theoretical position both for neo-Darwinists and experimentalists who do not enter into theoretical questions which obstruct their research development. Nevertheless, Mayr (1997) recognizes that the organicist position and mainstream organicism is widely accepted among biologists. Similarly, I have tried to underline throughout the previous chapters the Whiteheadian perspective which conceives the cosmos as a network constituted by interrelated processes of which we are an integral part. What Whitehead tries to show is that an event has to do with everything that exists, namely, with all other events and,

as his most revolutionary step, he does not exclude the inorganic realm from such a network. I think in this regard that it is appropriate to say that all our decisions and actions have consequences for the world around us. There is an intrinsic and extrinsic reality of an event: the event in its own prehension on the one hand and the event as being in the prehension of other events on the other hand. Therefore, as it is in the organic theory of nature, the universe as a whole should be considered as an indivisible unity of the wholes (or organisms) the parts of which are also in an indivisible unity. In other words, the parts are themselves as long as they remain in their natural places within the whole to which they belong. On the other hand, it is true that holistic concepts are not seen as useful experimentally. However, it is worth reminding at this point that experimental methods are continuously advancing in parallel with technological advancement. In this context, for example, cybernetics is an interdisciplinary field which studies the structure of regulatory systems and it is seen closely associated with systems theory. In the field of biology, cybernetics primarily focuses on how animals adapt to their environments and how information in the form of genes is passed from generation to generation (Kremyanskiy, 2017).

In consequence, as we have seen throughout this study, both Hegel and Whitehead deal with the difference between thought and nature by opposing mechanistic and reductionist approaches. Regarding natural sciences, they both emphasize that this difference has severe implications on how to achieve natural knowledge and how to determine its objects. From the Hegelian point of view, nature has to be seen as a process through which the idea gradually reveals itself by breaking the shell of its exteriority. There is really no progress in nature but there is an internal process since it is only the internal idea that is capable of evolving. The idea in its first moment constitutes itself as logical life common to all living beings. Hegel mentions that we cannot separate the concept of life from organic process as a transcendence, a non-contradictory essence. Hence, the Hegelian conception of life shows us that there can be no life without process. Life is a process of self-production by the means of the

other and, in this sense, it is “becoming”. As a consequence of circularity, we reach the concept of autonomy which implies self-determining and self-referential organization of life. Thus, according to Hegel, since the infinity of reason is the only true infinity and since life corresponds only to the good infinity with its circular nature, the mechanism which is devoid of the principle of self-determination does not reveal the truth of life and the organic world.

On the other hand, like Hegel, Whitehead considers the mechanism as being insufficient for explaining the relations constituting life but he remarks that Hegel’s argument is a heterogeneous way of thinking about nature, namely, a fallacy. In other words, Hegel thematizes nature by using the parameters of thought but such a methodology gives us only the thinking itself rather than pure nature. At this point, as we know, Whitehead avoids falling into the fallacy of misplaced concreteness which is also known as “reification” and he mentions that we commit this fallacy as Hegel does when we treat an abstraction (an abstract belief or hypothetical construct) as it is a concrete event or physical entity (Whitehead, 2011, p.51). In this regard, the philosophy of organism aims to unify the concept of life with that of nature and to formulate nature as a living creative process. The Whiteheadian cosmology rejects therefore defining a concrete physical object as corresponding to a simple spatiotemporal extension without reference to its relationships with other spatiotemporal extensions in the universe. In consequence, for Whitehead, life can only be considered as a living creative process, namely, as a whole organism and, from this perspective, it is appropriate to say that questioning life is some kind of reification insofar as we refer to an abstract concept from concrete organic examples. This means that when we study life “in vitro” (“within the glass”, namely, outside of a living organism) in a reductionist way, the organism in question ceases to be a living being anymore and this methodology by itself does not give us any general concept that science operates with. In other words, such a “science of living beings” which is isolated from the interactions of the living environment does not reveal the truth of the

living beings and, in this sense, it is impossible for us to understand life just through the isolated physical bodies. However, as we have seen throughout this study, Whitehead does not isolate the mental act or experience from the physical body and, therefore, we cannot ignore the role of physical bodies in our tries to understand nature. He emphasizes in this regard that "if we wish to understand the relation of our personal experience to the activities of nature, the proper procedure is to examine the dependence of our personal experiences upon our personal bodies" (Whitehead, 1969, p.76).

Now, let me offer some final evaluations. As we have seen in the previous chapters, Hegel considers that something is wrong with classical logic and reforms its basic concepts in the way it can explain circularity. It is appropriate to say that he is right in his attempt to eliminate the concept of substance and replace it with something dynamic, namely, with dialectics. Similarly, Whitehead affirms that the concept of substance depends on the subject-predicate logic which erroneously treats every entity as being isolated from the others. The philosophy of organism therefore rejects substances, mechanisms and representations by pointing to the process character of being.

According to Whitehead, as we know, beings are made up of societies of actual entities which can be defined as experience centers and which are in a constant change like a flow due to their reciprocal prehensions. An actual entity establishes relationships of various complexity by adopting perpetually the other entities as parts of its own formation and this is the cause of all beings that exist. In this sense, the Hegelian way of thinking which treats a real entity as a result of the reflection in itself and in the other can be considered as compatible with the philosophy of organism. As we know, Hegel obviously emphasizes that things are not substances and their existence results from relationships. What exists in itself and for itself carries at the same time its negation within itself and it therefore exists also for others (Hegel, 2010, p.92). In this sense, an event cannot be isolated from its other and existence constitutes an identity

of all opposites. According to the Hegelian philosophy of nature, an organism gains its identity through a continuous process of self-production which is called autopoiesis and which brings forth its infinite form. However, this infinite form is at the same time in an obligatory relationship with the physical world of which material content is perpetually renewed through such relationships. In this way, it is appropriate to say that Hegel does not ignore the novelty in the physical world. While a living organism as an idea is a closed process in itself on the one hand, it necessarily exists in a mutual relationship with material nature on the other hand so as to maintain its self-production process.

From the Whiteheadian point of view, nature can be considered as a form of memory since every entity is characterized by experience or by the relationships with its environment. As we know, the formation of a new actual entity occurs through the concrescence of prehensions. The diverse things become an individual unity through the concrescence process, namely, it is the passage from diversity to unity (Whitehead, 1969, p.23). In this process, each actual entity is a subject which creates itself from the given data, that is, from the prehended entities which can therefore be called its objects. Concrescence is therefore the co-construction of an experience and this can be conceived as a delimitation in the continuous growth of possibilities. In this way, everything that exists acts and reacts as an autopoietic activity while is determined at the same time by the autopoiesis of the other. We can see here the central role of causality which is “felt” to more or less extent by every actual entity as a constant law of existence. Everything that exists constitutes itself within the limits set by the relationships which are also associated with purposiveness and the arising of universal creativity. In the Whiteheadian sense, experience always implies sharing, “feeling” and novelty. In other words, to perceive is to participate in the universal concrescence and to know is to be involved in it. Our atomic units exist within a network with all the atomic units of the cosmos and our perception demonstrates to us the continuity between the individuals and what surrounds them.

Unlike idealism, in Whitehead's process philosophy, being a subject or object is only a point of view, namely, a reference system. When an actual entity acquires the other entities through prehensions, it takes the role of subject, otherwise it is an object. Whitehead defines existence as experience and this way of thinking can be considered as being close to Bradley's idealism in the context of his "*esse est percipi*" principle derived from Berkeley which is harshly criticized by Moore in "The Refutation of Idealism" (1903). However, as we know, the mental act or experience cannot be isolated in the Whiteheadian point of view from the physical body. Thus, although Whitehead borrows some characteristic ideas from idealistic positions, I think it is clear that he has a realistic position since he defines the object of perception (i.e., nature) as something other than thought. As we know, according to the Hegelian way of thinking, the foundation of all knowledge in the Spirit can only be found in its own unfolding in itself and for itself and such a self-knowledge process is mediated by the other differentiated from itself. On the other hand, Whitehead tries to avoid empty abstractions by unifying subjectivity and objectivity in his notion of process. While the objectivity of experience corresponds in his point of view to the initial phase of the formation process which is associated with the physical pole, the received data is creatively used by the conceptual pole and this phase corresponds to the subjectivity of experience. Thus, in the philosophy of organism, knowledge emerges as a derived phase from the initial phases of concrescence in which causality reigns. In other words, as it is in Hegel, knowledge arises from a subjective process by depending on the objective one. As a result, for both philosophers, process is the foundation of the most advanced knowledge and its objectivity. However, as I have tried to show in this study, Whitehead successfully reveals not only the evolution process of the actual world and the emergence of physical novelty but also the central role of subjective creativity without falling into either a static mechanistic or idealistic position.

REFERENCES

Alexander, S. (1966). *Space, time, and deity*. London: Macmillan.

Alexander, S. (1969). *The basis of realism*. Burbank, CA: Distributed by H.B. Diamond.

Angelelli, I. (1967). *Studies on Gottlob Frege and traditional philosophy*. Dordrecht: D. Reidel.

Auxier, R. E. (1999). Influence as confluence: Bergson and Whitehead. *Process Studies*, *28*(3/4), 301-338.

Ayala, F. J. (1970). Teleological explanations in evolutionary biology. *Philosophy of science*, *37*(1), 1-15.

Ayala, F. J. (1999). Adaptation and novelty: teleological explanations in evolutionary biology. *History and philosophy of the life sciences*, 3-33.

Bechtel, W., & Richardson, R. C. (1998). Vitalism. *Routledge encyclopedia of philosophy*, *9*, 639-643.

Berenson, F. (1982). Hegel on Others and the Self. *Philosophy*, *57*(219), 77-90.

Berkeley, G. (2000). *Treatise concerning the principles of human knowledge, A*. South Bend: Infomotions, Inc.

Blits, K. C. (1999). Aristotle: form, function, and comparative anatomy. *The Anatomical Record: An Official Publication of the American Association of Anatomists*, *257*(2), 58-63.

Bosanquet, B. (1911). *Logic: or, the morphology of knowledge* (Vol. 1). Oxford: Clarendon Press.

Bradley, F. (2016). *Appearance and reality*. Florence: Taylor and Francis.

Burbidge, J. (2007). *Hegel's systematic contingency*. Basingstoke, Hampshire: Palgrave Macmillan.

Carlson, D. G. (2007). *A commentary to Hegel's science of logic*. Basingstoke, Hampshire: Palgrave Macmillan.

Conway, D. (2000). *The rediscovery of wisdom*. Basingstoke: Macmillan.

Emmeche, C., Køppe, S., & Stjernfelt, F. (1997). Explaining emergence: towards an ontology of levels. *Journal for general philosophy of science*, *28*(1), 83-117.

Farmer, R. L. (1997). *Beyond the impasse: the promise of a process hermeneutic*. Macon, GA: Mercer University Press.

Finkelstein, D., & Kallfelz, W. M. (1997). Organism and physics. *Process Studies*, *26*(3/4), 279-292.

Goudsmit, A. L. (2009). Sense and self-referentiality in living beings. *Biosemiotics*, *2*(1), 39-46.

Griffin, D. R. (2001). *Reenchantment without supernaturalism: A process philosophy of religion*. Ithaca: Cornell University Press.

Guthrie, W. K. (1933). The Development of Aristotle's Theology—I. *The Classical Quarterly*, *27*(3-4), 162-171.

Hancock, C. L. (2012). Plotinus' Adoption of Aristotle's Doctrine of Act (Energeia). *Studia Elckie*, *14*(1), 117-135.

Hegel, G. W. F. (1970). *Hegel's Philosophy of nature. Being part two of the "Encyclopaedia of the philosophical sciences", 1830. Translated by Arnold Vincent Miller, etc.* Oxford: Clarendon Press.

Hegel, G. W. F. (1971). *Philosophy of mind. Being part three of the "Encyclopaedia of the philosophical sciences", 1830. Translated by William Wallace, etc.* Oxford: Clarendon Press.

Hegel, G. W. F. (1975). *Hegel's logic. Being part one of the "Encyclopaedia of the philosophical sciences", 1830. Translated by William Wallace, etc. (Third edition.)*. Oxford: Clarendon Press.

Hegel, G. W. F. (1991). *Georg Wilhelm Friedrich Hegel: The science of logic, 1812. Translated by Arnold Vincent Miller.* New York: Prometheus.

Hegel, G. W. F. (1998). *Aesthetics, 1835. Translated by Thomas Malcolm Knox.* Oxford: Clarendon Press.

Hegel, G. W. F. (2010). *Georg Wilhelm Friedrich Hegel: The science of logic, 1812. Translated by George Di Giovanni.* Cambridge: Cambridge University Press.

Hegel, G. W. F. (2014). *Hegel's Philosophy of Nature (Vol. 2). Edited by Michael John Petry*. London: Routledge.

Hegel, G. W. F. (2018). *Georg Wilhelm Friedrich Hegel: The phenomenology of spirit, 1807. Translated by Terry Pinkard.* Cambridge: Cambridge University Press.

Hempel, S., Pineda, R., & Smith, E. (2011). Self-reference as a principal indicator of complexity. *Procedia Computer Science*, *6*, 22-27.

Herring, E., & Radick, G. (2019). From organicism to systems biology. *The Routledge Handbook of Emergence*, 352.

Hobbes, T. (2019). *The elements of law: natural and politic*. London: Routledge.

Jonas, H. (2004). Ethics and biogenetic art. *Social Research: An International Quarterly*, *71*(3), 569-582.

Kant, I. (2007). *Critique of judgement. 1790. Translated by Nicholas Walker, etc.* New York: Oxford University Press.

Kim, J. (1999). Physicalism and Panexperientialism. *Process Studies*, *28*(1), 28-34.

Kirk, G. S. (Ed.). (1954). *Heraclitus: The cosmic fragments*. Cambridge: Cambridge University Press.

Kremyanskiy, V. I. (2017). Certain peculiarities of organisms as a “system” from the point of view of physics, cybernetics, and biology. In *Systems Research for Behavioral Science* (pp. 76-80). London: Routledge.

Krieger, G. J. (1998). Transmogrifying teleological talk?. *History and philosophy of the life sciences*, 3-34.

Leclerc, I. (1958). *Whitehead’s metaphysics: an introductory exposition.* Crows Nest, Sydney: Allen & Unwin.

Leibniz, G. W. (1989). The Monadology. *Philosophical Papers and Letters*, 643-653.

LePoire, D. J. (2020). Exploring the singularity concept within Big History. In *The 21st Century Singularity and Global Futures* (pp. 77-97). Cham: Springer.

Lowe, V. (1949). The Influence of Bergson, James and Alexander on Whitehead. *Journal of the History of Ideas*, 267-296.

Lucas, G. R. (Ed.). (1986). *Hegel and Whitehead: contemporary perspectives on systematic philosophy*. Albany: Suny Press.

Manning, G. (2015). Descartes’s metaphysical biology. *HOPOS: The Journal of the International Society for the History of Philosophy of Science*, *5*(2), 209-239.

Maxwell, J. C. (1865). VIII. A dynamical theory of the electromagnetic field. *Philosophical transactions of the Royal Society of London*, (155), 459-512.

Mayr, E. (1997). *This is biology: The science of the living world*. Cambridge, MA: Harvard University Press.

Moore, G. E. (1903). The refutation of idealism. *Mind*, *12*(48), 433-453.

Moore, A. W. (2018). *The infinite*. London: Routledge.

Nagel, T. (2012). *Mind and cosmos: Why the materialist neo-Darwinian conception of nature is almost certainly false*. Oxford: Oxford University Press.

Naranjo, J. R. (2011). Bridging the Gap: Does Closure to Efficient Causation Entail Quantum-Like Attributes?. *Axiomathes*, *21*(2), 315-330.

Needham, J. (1928). Organicism in biology. *Philosophy*, *3*(9), 29-40.

Priest, G. (1995). *Beyond the limits of thought*. Cambridge: Cambridge University Press.

Ryle, G. (1949). *The concept of mind*. London: Hutchinson.

Rosen, R. (2005). *Life itself*. New York: Columbia University Press.

Royle, C. (2014). Dialectics, nature and the dialectics of nature. *International Socialism*, *141*, 97-118.

Ruse, M. (1999). Teleology and biology: Some thoughts on Ayala's analysis of teleology. *History and philosophy of the life sciences*, *21*(2), 187-194.

Russell, B. (1918). The Philosophy of Logical Atomism. *Monist*, *28*(4), 495-527.

Russell, B. (1926). *Our knowledge of the external world as a field for scientific method in philosophy*. London: Allen & Unwin.

Saks, V., Monge, C., & Guzun, R. (2009). Philosophical basis and some historical aspects of systems biology: from Hegel to Noble-applications for bioenergetic research. *International Journal of Molecular Sciences*, *10*(3), 1161-1192.

Seibt, J. (2017, October 26). Process Philosophy. Retrieved September 10, 2020, from https://plato.stanford.edu/entries/process-philosophy/

Tarski, A., & Corcoran, J. (1983). *Logic, semantics, metamathematics: Papers from 1923 to 1938*. Indianapolis, IN: Hackett Pub.

Vlastos, G. (1937). Organic categories in Whitehead. *The Journal of Philosophy*, *34*(10), 253-262.

Watson, J. D., & Crick, F. H. (1993). Molecular structure of nucleic acids: a structure for deoxyribose nucleic acid. *Jama*, *269*(15), 1966-1967.

Whitehead, A. N. (1958). *The Function of Reason*. Boston: Beacon Press,

Whitehead, A. N. (1967). *Adventures of ideas*. New York: Simon and Schuster.

Whitehead, A. N. (1968). *Modes of thought*. New York: Simon and Schuster.

Whitehead, A. N. (1969). *Process and Reality: An Essay in Cosmology*. New York: Free Press

Whitehead, A. N. (1985). *Symbolism: Its Meaning and Effect*. New York: Fordham University Press.

Whitehead, A. N. (2007). *An Enquiry Concerning the Principles of Natural Knowledge*. New York: Cosimo.

Whitehead, A. N. (2011). *Science and the modern world*. Cambridge: Cambridge University Press.

Whitehead, A. N. (2012). *Nature and life*. Cambridge: Cambridge University Press.

Whitehead, A. N. (2015). *The concept of nature*. Cambridge: Cambridge University Press.

Whitehead, A. N. & Price, L. (1977). *Dialogues of Alfred North Whitehead: As Recorded by Lucien Price*. Westport, CT: Greenwood Press.

Woese, C. (1998). The universal ancestor. *Proceedings of the national academy of Sciences*, *95*(12), 6854-6859.

Wright, J. P. (1983). *The sceptical realism of David Hume*. Manchester: Manchester University Press.

Zizek, S. (2012). *Organs without bodies: On Deleuze and consequences*. London: Routledge.

APPENDICES

A. TURKISH SUMMARY / TÜRKÇE ÖZET

"Teleoloji" kelimesi yaşamı ve evreni nihai nedenlerle, ereklilikle açıklayan ve temellendiren bir düşünme biçimini ifade eder. Teleolojik açıdan bakıldığında canlı, kendisini önceleyen maddenin hiçbir yerinde bulunmayan bir erek veya erek ile ilişkili bir organizasyona sahip olmalıdır. Örneğin, Aristoteles nihai nedenin doğada bulunduğunu ve şeylere içkin olduğunu düşünmektedir. Daha sonra, 17. yüzyılda Kartezyen mekanizmanın ortaya çıkışı, organizmaların yapısı ve işlevlerinin makinelerin temel yapısı ve işlevleri üzerinden kurulan analojiler yoluyla açıklanmasına yol açmıştır. 18. yüzyılın sonunda ise Immanuel Kant tüm doğal süreçlerin yalnızca mekanik yasalarla açıklanması gerektiği ancak canlıların organizasyonları ve davranışlarının mekanik bir düşünme şekliyle açıklanamayacağı fikrini ön plana çıkarır. Kant'ın düşüncesine göre bir varlığı bir organizma, yani yaşayan bir varlık olarak düşünebilmemiz için bu varlığın içsel bir ereği olmalıdır. Organizmanın içsel ereği bütünün idesi veya içsel formdan başka bir şey değildir. İçsel form kavramıyla Kant, organizmanın biçimsel nedeni olarak açıkça onun kendini gerçekleştirmesini sağlayan, harekete geçiren ve tüm aşamalarında gelişiminin nihai nedeni olarak işlev gören bir içsel gücü işaret etmektedir. Ona göre bir organizmanın hiçbir parçasının gereksiz olmadığı içsel bir mükemmellik ve bütünlük hali bize bir sanat eserini düşündürür. Kant, deneysel gerçekliğin ötesine geçen bu "bütün" kavramını özgürlük kavramı ile birlikte anlama yetisinden ziyade aklın kavramları olarak ele almaktadır. Bu noktada, bir organizma ortaya koyduğu bütünlük üzerinden bir sanat eserinin analoğu olarak düşünülebilirse de Kant'ın vurgulamak istediği temel nokta şudur ki, bir varlık ancak örgütlendiği ve kendisini örgütlediği koşulda bir organizma, yani canlı bir varlık olarak tanımlanabilir. Ancak Kant organizma

anlayışında onun dış dünyasıyla ve diğer organizmalarla etkileşimini ve iletişimini dikkate almamaktadır. Çevresinden tamamen bağımsız ve izole edilmiş, kendi kendine yeten bir organizma modeli geliştirmiş olan Kant'ın bu anlayışı Kartezyen bir etkiye sahiptir.

Görüldüğü üzere erek (*telos*) ile yaşam arasındaki ilişki Batı felsefesi tarihinde önemli bir yere sahiptir. Bu çalışma içerisinde önem arz eden bir diğer husus ise antik çağdan modern çağa kadar Batı metafizik tarihinin esas olarak töz fikri üzerine kurulu olmasıdır. Töz metafiziğinin kökenine indiğimizde karşımıza çıkacak olan en önemli düşünür, varlığı ebediyen farklılaşmayan ve değişmeyen olarak algılamamız gerektiğini savunan edilen Parmenides'tir. Gerçekliğin temel bileşenlerini oluş süreçleri üzerinden tanımlama fikrinin Yunan dünyasındaki en bariz öncüsü ise her şeyin akıp gittiği iddiasıyla ünlü Herakleitos'tur. 17. yüzyılda Leibniz, monadları kendi metafiziğinin temel öğeleri olarak kabul eder ve süreç metafiziğine yeni bir boyut kazandırır. 19. yüzyıla geldiğimizde ise Alman idealistleri Fichte, Schelling ve Hegel'de öne çıkan ortak unsur yine gerçekliğin oluşumunda dinamizme yer vermiş olmalarıdır. Süreç metafiziği bağlamında Hegel'in en önemli yeniliği gerçeğin "oluşmasını" ve dinamizmini düzenleyen ilkelerin felsefi soruşturma yoluyla tam olarak bilinebileceğini düşünmesidir. Alfred North Whitehead'in spekülatif felsefesinin temelini tam olarak bu fikrin oluşturduğunu söylemek yanlış olmaz.

Bu bilgiler ışığında bu çalışma Hegel ve Whitehead'in felsefi sistemlerindeki süreç düşüncesini yaşam ve canlılık kavramlarıyla bağlantılı olarak netleştirmeyi amaçlamıştır. Her iki filozofun yaşam kavramını ele alma biçimleri bizi kaçınılmaz olarak mekanik düşüncenin eleştirisine sevk eder. *Mantık Bilimi* bağlamında Hegel, anlama ve akıl yetilerini farklı sonsuzluk kavramlarıyla ilişkilendirmektedir. Hegel anlama yetisinin sonsuzluğunu sonluluğun üstesinden gelemeyen kötü sonsuz olarak tanımlarken aklın sonsuzluğunu iyi sonsuz olarak adlandırdığı tek gerçek sonsuz olarak ele almaktadır. Bu açıdan bakıldığında sadece iyi sonsuz döngüsel yapısı ile yaşam ve canlılık kavramlarını ortaya çıkarabilme yetisine sahiptir. Mekanizma ise

döngüsel bir organizasyona ve dolayısıyla kendi kaderini tayin etme yeteneğine sahip olmadığından dolayı mekanik düşünce kaçınılmaz olarak kötü sonsuzda kaybolur. Bu ilkelerin ışığında Hegel anlama yetisinin ürünü olan sınırlı düşüncenin ötesine geçerek yaşamı döngüsel bir organizasyon ve öz-göndergeli bir süreç olarak açıklar. Hegel'e göre canlılık kimya ilkelerinde kendini gösterir ve kimyasal süreçten ortaya çıkar. Kimyasal bir süreci yaşamsal süreçten ayıran tek şey sonlu oluşudur. Kimyasal işlem bir süre sonra tamamlanarak sona ererken bir organizma kendisini sürekli olarak yeniden üretir. Diğer bir deyişle, canlı hem üretici hem üretilendir. Bu noktada Hegel'e göre kimyasal sürecin sonluluğunu aşan döngüsel yaşam biçimini ve organik alana geçişin kimyasal süreçte içkin olduğunu görürüz. Mekanizma ve kimya kategorileri kendi kaderini tayin etmekten yoksundur; ancak teleoloji kendi kaderini belirleyen ve dolayısıyla özgür olan "kavram" ile ilişkidir. Yani mekanizma ve kimya bütünlüğü hesaba katmazken doğa aleminde ve organizmada görebileceğimiz yaşamın teleolojisi bu bütünü kavramaktadır. Ancak bu, mekanizmanın ve kimyanın tamamen göz ardı edilebilir olduğu anlamına gelmez. Tersine, Hegelci perspektiften bakıldığında her ikisi de gerçekliğin mutlak bütünlüğünün gerekli anlarıdır.

Hegel'e göre doğada organizmalara bir erek dayatan hiçbir dış etken yoktur. Yaşamsal sürecin sürdürdüğü ve kendini sürdürmek için gerek duyduğu şey kendi kendini örgütleyebilmesidir. Bu bağlamda Hegel'in sisteminde yaşam ve yaşam dışı arasındaki ayrımın bir töz ya da özden ziyade içkin bir organizasyon olduğunu görebiliriz. Canlı ve cansız varlıklar arasındaki ayrım farklı özlerden veya farklı maddi içeriklerden oluşmaktan ziyade organizasyonlarındaki farklılıklardan kaynaklanmaktadır. Yani bu ayrım yalnızca ideal ve nesneldir. Yaşam kendisinin hem amacı hem aracıdır ve bu nedenle çözülmez bir birliktir. Dolayısıyla bir organizma tek tek parçaları üzerinden değil, ancak bir bütün olarak kavranması sonucunda anlaşılabilir. Başka bir deyişle, her organın diğer organlara göre hem amaç hem de araç olarak değerlendirilmesi gerektiğinden, yaşamı anlamak ancak teleoloji yoluyla mümkün olabilir. Kısaca ifade

emek gerekirse, Hegel'in yaşam anlayışı mekanik bir sistem olmaktan uzak olup canlılığı ayrıştırılamayacak bir birlik olarak ele almaktadır.

Hegel doğanın "evrimini" belirlenmemişlikten yaşama ve tine uzanan bütünsel bir süreç olarak tasarlar. Bu gelişme diyalektiktir ve dolayısıyla iyi sonsuzluğu karakterize eder. İyi sonsuzluğun imgesi başlangıcı ve sonu olmayan bir döngüdür. Hegel'e göre tin, dışarıdan doğaya verilmiş bir şey olmamakla birlikte kendini en basit biçimlerinden daha karmaşık yapılarına kadar doğanın gelişim süreci ile açığa çıkararak kendini tanır. Böylece öz-bilince ulaşmış olan tin, doğayı artık güçlü ve tehlikeli bir düşman veya sadece bir tüketim malzemesi olarak görmekten çıkar. Hegel'e göre yaşamın hareketi yalnızca tinin hareketinin bir modeli değil, aslında tinin hareketine dahil olan bir harekettir. Yaşam ötekinin aracılığıyla kendi kendini üretme süreci, yani "oluş" dur. Döngüselliğin bir sonucu olarak yaşamın öz-belirlenimli ve öz-göndergeli örgütlenmesini ifade eden özerklik kavramına ulaşırız ve bu şekilde yaşam idesini bireysel insan varoluşunun temeli ve ereği olarak düşünebiliriz. Yaşam idesi herkeste bir dürtü olarak mevcuttur. Bir bireyin varlığı aynı zamanda ötekine karşı kendi kaderini tayin etmek anlamına gelir ki bu da onun bağımsızlığı, yani özgürlüğüdür. Bir kez daha belirtmek gerekir ki, burada anlatılmak istenen şey dış faktörler tarafından gerçekleştirilen bir belirleme yerine belirleyici ile belirlenmiş arasında mutlak bir ayrımın olmadığı döngüsel bir belirlemedir.

Hegel'e göre çelişki tüm hareketin ve canlılığın temelidir; yani tüm faaliyet diyalektiktir. Tin ve beden, oluşturdukları somut birlikten soyutlanmış birer basit andır. Anlama yetisi canlılığın temelini oluşturan çelişkiyi önlemeye çalışarak yalnızca somut birlikleri içerisinde var olabilen bu soyut anları ayrı ayrı ele almaya çalışmaktadır. Başka bir deyişle, anlama yetisi canlı organizmayı sadece maddi bir bedene, yani cansız bir cesede indirgemeye çalışır. Oysa canlı ve cansız varlıklar arasındaki ayrım sadece organizasyonları arasındaki farklılıktan kaynaklanmaktadır, yani sadece idealdir. Dolayısıyla indirgemeci bir yaklaşımla canlılık ve yaşamın gerçeğine ulaşmamız mümkün değildir. Başka bir deyişle, anlama yetisi sadece

mekanik, yani sonlu düşünmeyi temsil etmesi sebebiyle yaşamı ancak ölü bir doğa olarak ele alabilmektedir.

Öte yandan, 20. yüzyılın önde gelen filozoflarından Alfred North Whitehead yaşam kavramını doğa kavramıyla birleştirmekte ve doğayı yaşayan, yaratıcı bir süreç olarak yorumlamaktadır. İngiliz filozof mekanik dünya görüşüne karşı çıkarak yaşamı bir organizma olarak ele almakta ve sistemine "organizma felsefesi" adını vermektedir. Whitehead bir olguyu çevresinden izole ederek ele alma fikrinin bütünü kuşatma yeteneğine sahip olmayan sonlu düşünce tarafından üretilen bir hata olduğu konusunda Hegel ile hemfikirdir. Böylelikle Whitehead'in canlılık anlayışının Hegel'inki gibi sonlu düşüncenin ötesine geçtiği bizim için açıktır ve Whitehead bu anlayışı "toplum" kavramı vasıtasıyla formüle eder.

Whitehead'in kozmolojisine baktığımızda evrenin deneyim damlaları olarak tanımladığı aktüel varlıklardan oluştuğunu görürüz. Her şey süreç içindedir ve her aktüel varlık evrenin geri kalanıyla ilişki içerisindedir. Diğer bir deyişle, Whitehead evreni ayrıştırılamaz bir bütün olarak tasarlarken tüm ilişkileri bu bütünde içsel ve kurucu olarak görmektedir. Whitehead felsefesi her aktüel varlığın evrenin önceki durumunun, yani önceki varlıkların bir sonucu olarak ortaya çıktığı bir sistem ortaya koymaktadır. Ancak Whitehead bir determinist değildir. Yenilik ve evrimi, yani evrenin kendi kaderini tayin edebilme yetisini açıklamak için "yaratıcılık" kavramını formüle etmiştir. Yaratıcılık kavramı üzerinden Whitehead, her aktüel varlığın "ebedi nesneler" olarak adlandırdığı potansiyelleri gerçekleştirme eğilimini açıklığa kavuşturur. Bu bağlamda "evrenin dayanışması" olarak adlandırdığı ilişkiler ağı üzerinden bize yenilik ile kalıcılığın karşılıklı ilişkilerinde sürekli evrimleşen bir evren görüşü sunar. Diğer bir deyişle, evreni oluşturan süreçlerde birden fazla unsurun birleşmesi ve özümsenmesi yoluyla bir gelişme ve evrim söz konusudur. Özetlemek gerekirse, Whitehead doğanın bize uzay-zamansal boyutlarda gerçekleşen karmaşık bir olaylar ağı olarak göründüğünden bahseder. Uzay ve zamandaki hiçbir nokta başka herhangi bir noktanın etkilerinden bağımsız değildir ve bir ilişkiler ağı olarak

değerlendirebileceğimiz bu ağda, her aktüel varlık çevresindeki tüm varlıkları doğrudan veya dolaylı olarak kavramaktadır. Burada sözü geçen kavrama (prehension) süreci, bir aktüel varlığın oluşumu için çeşitli unsurları yakalama sürecidir ve bu süreç diğer aktüel varlıkları karmaşık bir ilişki dizisi içinde birleştirerek somutlaşan varlığın deneyimine bağlar. Somutlaşma süreci "çok" un "bir" e bir füzyon eylemi olarak değerlendirebileceğimiz bir şekilde kaynaşması, yani aktüel varlığın oluşumudur. Whitehead'in düşünce sisteminde somutlaşmayı şimdinin doğrudan deneyimi olarak düşünebiliriz. Bu süreçte her aktüel varlık kendisini verili verilerden, yani nesneleri olarak adlandırabileceğimiz varlıklardan yaratan bir özne olarak görev yapar. Oluşum süreci sona erdiğinde ise her aktüel varlık özne olmaktan çıkarak onu takip eden varlıklar için bir nesne haline gelmektedir. Diğer bir deyişle, aktüel varlık kendi oluşma sürecinin sonunda nihai "doyuma" (satisfaction) ulaşır ve diğer aktüel varlıkların oluşumunda bir unsur haline gelebilmek için hemen yok olur.

Whitehead'e göre doğa, algılamada farkında olduğumuz şeydir. Çalışmalarında doğa hakkında çatallı bir düşünme biçiminden kaçınmayı, yani nesnel bir doğa ile öznel bir doğa algısı arasındaki ikilemi reddederek doğa kavramına tutarlılık kazandırmayı hedeflemektedir. Diğer bir deyişle, doğa idesini bizim onu algılamamızdan etkilenmeyen bir bütün olarak ele alma çabasındadır. Bu bağlamda, algı kavramı doğa algımızdan ziyade doğadaki algıyı ele alır ve doğanın kendisi için kurucu bir role sahiptir. Whitehead'in sisteminde kayalar ve taşlar gibi cansız nesneler dahil olmak üzere evrendeki her varlığı oluşturan aktüel varlıklar deneyimsel bir yapıya sahiptir, yani deneyimlerdir. Böyle bir pozisyona genellikle birleşik-deneyselcilik (pan-experientialism) adı verilmekle birlikte bu pozisyonu panpsişizm fikri ile karıştırmamak önemlidir. Panpsişizm gerçekliğin bir bütün olarak bilinçli oluşunu iddia ederken, Whitehead deneyimin bilinci değil, bilincin deneyimi önceden varsaydığını vurgulamaktadır.

İngiliz filozofun ortaya koymuş olduğu metafiziksel felsefenin amacı daha önce de belirttiğim gibi yaşam kavramını analiz etmek, onu doğanınkiyle birleştirmek ve

doğayı canlı bir yaratıcı süreç olarak yorumlamaktır. Organizma felsefesi bu anlamda doğa ile ruh veya akıl arasındaki ikiliği reddeder. Whitehead bu ikiliği "yanlış yerleştirilmiş somutluk yanılgısı" olarak ele almakta ve fiziksel doğa nosyonu ile yaşam mefhumunun birbirinden bağımsız olarak ele alınamayacağını savunmaktadır. Diğer bir deyişle, molekül içi bileşenlerden itibaren fiziksel ve zihinsel yönlerin karşılıklı olarak birbirlerini etkilediklerini ve birbirlerine ihtiyaç duyduklarını vurgulamaktadır. Bu bağlamda, Whitehead kozmolojisinin ana varsayımlarından biri hiçbir şeyin kendi başına var olmadığı, yani evrende kendi kaderine terk edilmiş bağımsız varlıkların bulunmadığıdır. Bu perspektiften bakıldığında, var olan her şey evrenin geri kalanıyla ilişkili olduğundan dolayı bir nesneyi ilişkilerinden izole ettiğimizde bir dizi yaklaşım ve idealleştirmeden başka bir şey elde edemeyeceğimiz bizim için açıktır. Bu bağlamda Whitehead canlı ve cansız varlıklar arasında keskin bir ayrım yapmamakta ve "toplum" kavramı yoluyla tüm varlık katmanları arasında bir süreklilik ifade etmektedir.

Bildiğimiz gibi Whitehead, kozmolojisini bir organizma ve sosyal bir organizasyon olarak formüle etmiştir. Bu nedenle yaşam kavramını anlamak için toplum kavramını anlamak önemlidir. İngiliz filozof belirli bir çevrenin tüm unsurlarında bulunan bir veya daha fazla tanımlayıcı özelliğin varlığını toplum kavramı yoluyla açıklamaktadır. Bu kavramın çıkış noktası bir aktüel varlığın diğer varlıkları yakalaması, yani algılayabilmesi yoluyla aktüel varlıkların aktüel birimler oluşturabilmeleridir. Whitehead aktüel varlıklar arasındaki karşılıklı nesneleştirmelerin veya karşılıklı kavrayışların (prehensions) bir sonucu olarak oluşan bu birimleri "bağlantı noktası" (nexus) olarak adlandırır. Ancak toplum kavramı bir dizi aktüel varlıktan daha fazlasını ifade ederek bir toplumun her üyesinin diğer üyelerle genetik bir ilişkiye sahip oluşunun altını çizer. Bir toplumun her bileşeni diğer üyelerin kavrayışları aracılığıyla katıldıkları özel bir forma, yani kişisel bir düzene sahiptir ve bu da toplumun tüm üyelerinin aralarındaki genetik ilişki sayesinde bazı ortak tanımlayıcı özellikleri paylaştığı anlamına gelir.

Whitehead'in kozmolojisinde nihai bileşenler atomistik varlıklar iken taşlar, bitkiler veya hayvanlar gibi makroskopik varlıklar uzay-zamansal olarak genişletilmiş varlıklar, yani toplumlardır. Daha önce de bahsetmiş olduğum gibi, bir topluma veya bağlantı noktasına katılan aktüel varlıkların her biri önceki nesillerin deneyimlerinden miras alınan veya türetilen özelliklere sahiptir. Dolayısıyla, var olan her şey kendisi için belirli koşullar sağlayan alt tabakalara bağlı bir ilişkiler ağıdır. Sonuç olarak, her aktüel varlık veya toplum karşılıklı olarak birbirlerini yapılandırdıkları bir çevrede var olur. Örneğin, bir birey atomlardan oluşurken diğer bireylerle ilişki içerisinde bir toplum oluşturur ya da dünya toplumlardan oluşurken kendisi de güneş sisteminin bir parçasıdır. Bu bakımdan evreni her noktanın birbiriyle ilişkili olduğu bir elektromanyetik alan ve her tabakanın bir üst tabakayı meydana getirdiği hiyerarşik bir düzen olarak düşünebiliriz.

Hegel gibi Whitehead de yaşam fenomenlerini mekanik indirgemeciliğe düşmeden açıklamaya çalışır; ancak organizmaların işleyişindeki nihai nedenselliğin yanı sıra ampirik olarak incelenen özellikleri de göz ardı etmez. İngiliz filozofa göre yaşamın özel bir "madde" olarak izole edilmesi, her varlığın yaşam fenomenlerini deneyimlediği karmaşık bir ortamda organizmaların işleyişini tam olarak açıklayabilmeyi bilim adına imkânsız kılar. Bu bağlamda, Whitehead organik ve inorganik arasındaki karmaşık etkileşimi incelemeyi amaçlayan özel bir bilim yaratmayı önermektedir. Whitehead'in sistemi daha önce de belirtmiş olduğum gibi tek bir kozmoloji tarafından yönetilen benzersiz bir evren tasavvur etmek için tüm varlık katmanları arasında bir sürekliliği formüle etmektedir. Böyle bir sürekliliği ve organik ile inorganik arasındaki karmaşık etkileşimi açıklamak için Whitehead zihinsel kutup kavramını ortaya atar. Bu perspektife göre her aktüel varlık fiziksel ve zihinsel olmak üzere iki kutba sahiptir. Whitehead bu noktada fiziksel olanı zihinselden ayırmamakla birlikte varlıkları her iki yönün birliği olarak tanımlar. Buradan anlaşılacağı üzere organizma felsefesi üniter bir evren anlayışına izin vermeyen Kartezyen düalizmi açıkça reddetmekte, fiziksel ve zihinsel ikiliğe zıt

olarak formüle edilmektedir. Burada altını çizmek gerekir ki tüm aktüel varlıkların zihinsel bir kutba sahip olması hepsinin bilinçli olduğu anlamına gelmemektedir.

Whitehead'e göre bilinç, istisnai entegrasyonları ve karmaşıklıkları nedeniyle yalnızca yapılandırılmış toplumlarda ortaya çıkar. Bir toplum eğer ikincil toplumlardan oluşuyorsa, yani hiyerarşik olarak düzenlenmiş toplumlardan meydana gelmiş bir ilişkiler ağıysa "yapılandırılmış" olarak adlandırılır. Bu anlamda kristal veya taş gibi varlıklar da birer yapılandırılmış toplumdur. Yapılandırılmış bir toplum, çevresi olarak düşünebileceğiz daha geniş toplumun içerisindeki değişimlere göre değerlendirerek istikrarlı veya istikrarsız olarak tanımlanır. Böyle bir toplumun istikrarı, içinde barındığı toplumun belirli özelliklerine bağımlı veya bu özelliklerden bağımsız olabilir. Bu tür bir bağımlılıkla yapılandırılmış bir toplum "uzmanlaşmış" olarak tanımlanırken içinde barındığı toplumdan bağımsız olan toplumlar "uzmanlaşmamış" toplumlardır. Whitehead'e göre doğanın amacı, yüksek karmaşıklığa sahip, yapılandırılmış ve uzmanlaşmamış toplumların üretimi olmalıdır çünkü bu tür toplumlar yeni bir çevreye uyum sağlamak ve hayatta kalma oranlarını artırmak adına yeni işlevler kazanabilme yeteneğine sahiptir. Bu hedef öncelikle tekdüzelik tercihi içindeki toplumlarda gözlenir ve böyle bir tercih daha düşük düzeyde yapılandırılmış bir toplum olarak sınıflandırılan cansız toplumların özelliklerinden biridir. Whitehead bir diğer yolu "iştah" kavramı üzerinden açıklar. İştah kısaca kendini koruma, hayatta kalma arzusudur ve bu arzu yüksek derecede karmaşıklığa sahip canlı varlıkların temel özelliğidir. Bu tür toplumlar yaşayan toplumlardır ve iştah yeniliği ifade eden adaptasyonun ön koşulu olarak kabul edilir. Yenilik, alınan verileri yaratıcı bir şekilde kullanan ve deneyimin öznelliğine karşılık gelen zihinsel (kavramsal) kutup ile ilgilidir. Bu bağlamda Whitehead yaşamın özgüllüğünü "iştah" adını verdiği kavramsal hissin orijinalliğiyle, yani geçmişin şimdinin yaratıcı üretkenliğine dönüştürülmesiyle ilişkilendirir. Bu durum aynı zamanda yaşamın bilimsel çalışma için erişilebilir olmasını sağlar.

Yaşamın özgüllüğünü açıklığa kavuşturma hususunda Whitehead moleküler reaksiyonların enerji seviyelerindeki yükselişe, inorganik toplumların canlı organizmalara katkısına ve yapılarındaki karşılıklı değişikliklere işaret ediyor. İnorganik toplumlar olmadan var olabilen bilinen hiçbir canlı toplum yoktur. Atom ve molekül gibi inorganik toplumların var olabilmek için canlı toplumlara ihtiyacı yoktur; ancak hücre gibi yaşayan toplumların değişen bir ortamda hayatta kalabilmek için inorganik toplumlara ihtiyacı açıktır. Bu noktada inorganik bir varlığın yaşayan bir varlığa göre daha az karmaşık ama daha bağımsız olduğunu görebiliriz. Öte yandan, her varlık deneyimini yoğunlaştırma çabasındadır ve bu da bize tüm davranışlarının tamamen geçmişiyle, yani etkin nedenle belirlenmediğini gösterir. Yaşam özgürlük yoluyla yoğunluk kazandığından dolayı herhangi bir cansız toplum tarafından tamamen işgal edilmeyen boş bir alanı ve nihai nedenin göz ardı edilemeyecek bir katılımını gerektirir. Dolayısıyla yaşam Whitehead'in yaşayan toplumlar dediği bir dizi varlığın karakteristik bir özelliği, çevrenin özelliklerine tepki olarak fiziksel bir düzenden belirli bir özgünlüğe geçiştir. Böylelikle Whitehead, çalışmalarının Londra döneminde savunduğu şekliyle, metodolojisini doğanın birliği ilkesine dayandırmaktadır. Toplum kavramı sayesinde canlı ve cansız varlıklar arasında keskin bir ayrımı reddederek varlık sınıfları arasında bir devamlılık formüle eder.

Hegel ve Whitehead'in yaşam kavramlarına dair bu kısa özetten sonra şimdi bu çerçevede yaşamın erekselliği üzerine kısa bir değerlendirme yapacağım. Daha önce de belirtmiş olduğum gibi Hegel'e göre yaşamın temel özelliği tüm anların birbirine bağlı olduğu kapsamlı bir teleolojik sistemle sonuçlanan bir kendi kaderini tayin sürecidir. Hegel çelişkiyi tüm hareketin ve yaşamın kökeni olarak ele alır. Her canlı, varlığı ile çevresi arasındaki karşıtlığı aşarak kendi iç amacındaki ideyi gerçekleştirmeye çalışır. Mutlağın yapısını içsel bir erek olarak ortaya çıkaran şey yaşamın kendisidir ve böylece yaşamın hareketini Hegel'in sistemi için bir analoji olarak görmek de mümkündür. Whitehead ise mutlak idealizm konumunu şiddetle reddetmektedir. İngiliz filozofa göre metafizik, bilimle ortak bir temelde ele

alınmadığı takdirde gerçeği ifade etme ayrıcalığına sahip değildir. Bu nedenle Whitehead için gerçeklik Hegel'in yapmaya çalıştığı gibi kendisini doğaya yabancılaştıran bir ide olarak açıklanamaz. Bu perspektiften baktığımızda, gelişmekte olan bir idenin diyalektiğinden doğanın kendisinden ziyade yalnızca doğa idesini elde edebiliriz. Yine de Whitehead'in yaklaşımı yanlış yerleştirilmiş somutluk yanılgısına düşmeden karşıtların birleşimini açıklar şekilde aktüel ile potansiyel veya yenilik ve kalıcılık arasında diyalektik bir ilişki formüle eder. Özele ifade etmek gerekirse, Whitehead organizmayı tüm evrenin modeli olarak görür ve kozmolojisine bütün bir yaşam sürecini bir organizmanın yaşam süreci olarak yansıtır. Bu düşünce tüm hareketsiz varlıkların aynı zamanda daha küçük organizmalardan oluşan organizmalar olduğu ve tüm inorganik varlıkların kendi içlerinde örtük bir şekilde yaşam taşıdıkları anlamına gelir.

Son olarak bu iki filozofun bakış açısını günümüz biliminin bakış açısından değerlendirmek faydalı olacaktır. Günümüzde bilindiği üzere tüm canlıların genetik materyalleri sayı ve dizilişleri farklı olmakla birlikte aynı nükleotidlerden oluşmakta ve her canlı bu materyali aynı şekilde kullanmaktadır. Tüm canlıların (tüm hücrelerin) her bireyde farklılık göstermekte olan bir genetik koda sahip olduğunu biliyoruz. Bu bize tüm canlılar arasında evrimsel bir ilişkinin varlığını gösterir. Tarih boyunca bir bireyden diğerine spesifik olarak değişen ve uygun özellikleri nesilden nesle aktaran bir genetik bilgi havuzuna sahibiz. Bu noktada bu bilginin ne olduğunu netleştirmek önemlidir. Kısaca özetlemek gerekirse genetik bilgi, nükleik asitlerdeki baz dizileriyle depolanır. Bu nükleobazların varlığı tüm canlılar için ortak olup dizilimleri farklıdır. Dolayısıyla bu bilginin belirli bir materyal olmamakla birlikte bir organizasyon olduğunu söyleyebiliriz. Bu noktada aynı zamanda moleküler ölçekte öz-organizasyon veya öz-birleşmeyi de dikkat çekebiliriz. Benzer şekilde, Hegel yaşamın cansız maddeye aşılanan fazladan bir bileşenden değil, özel bir kimyasal süreçler organizasyonundan ortaya çıktığını belirtmektedir. Daha sonra Whitehead, yine organizasyonun rolüne değinerek aktüel varlıkların kendi kendini yaratan süreçler

olduğunun, tüm varlıkların farklı katılım ve bağlantı biçimleri sayesinde oluştuğunun altını çizer. Organizma felsefesi aynı zamanda aktüel varlıkların oluşum süreçlerinde fiziksel geçmişin bugüne ve geleceğe katkısını, yani fiziksel anlamda şimdinin geçmişe uyumunu da açıkça hesaba katar. Bu bağlamda Hegel'in genetik çalışmaları yakalayamadığını, ancak bu çalışmaların temel ilkelerinin Whitehead'in zamanında keşfedilmiş olduğunu hatırlatmakta fayda var.

Yaşam ve canlılık kavramlarını yorumlayabileceğimiz başka bir alan olan ilişkisel biyoloji ise yaşamın belirli özelliklerinin derinlemesine analizine izin veren biçimsel modeller geliştirmektedir. Hegel'in işaret ettiği öz-göndermelilik kavramı hala tartışmalı bir konu olmasına rağmen, ilişkisel biyoloji genel yaklaşımında yaşamın otopoietik özelliklerinin öz-göndergeliliği ifade ettiğini savunur. Diğer bir deyişle, biyolojik organizasyonlar döngüsel bir şekilde işleyen süreç ağları olarak kabul edilir (Goudsmit, 2009). Öte yandan, sinir sistemi olmayan organizmalardaki biliş üzerine bir yorum yapmak için Whitehead'in yaklaşımını böyle bir tartışmaya entegre etmek faydalı olabilir. Bu bağlamda organizma felsefesi, sistem teorisi olarak da adlandırılan organikçilik açısından tamamlayıcı bir düşünme biçimi olarak ele alınabilir. Bildiğimiz gibi, Whitehead'e göre taş ve kaya gibi cansız nesneler de dahil olmak üzere evrendeki tüm varlıkları oluşturan aktüel varlıklar deneyimsel niteliktedir, yani deneyimlerdir. Bu perspektiften, evreni her noktanın birbiriyle ilişkili olduğu bir elektromanyetik alan ve her tabakanın bir üst tabakayı meydana getirdiği hiyerarşik bir düzen olarak düşünebiliriz. Benzer şekilde organikçilik, yaşamın karmaşık bir ağda yaşayan canlılar arasındaki karşılıklı ilişki olduğunu savunur (Herring & Radick, 2019). Bu yaklaşım deneysel biyolojinin sonuçlarını organizmaların kendi çevrelerindeki bütüncül gözlemleriyle birleştiren bir biyoloji yaklaşımını yansıtmakta ve canlıların entegre oldukları sistemlerdeki etkileşimlerini incelemeyi amaçlamaktadır. Whitehead ise bir olayın var olan her şeyle, yani diğer tüm olaylarla ilgili olması gerektiğini savunurken inorganik alanı da böyle bir ağdan dışlamaz. Öte yandan bütünsel kavramların deneysel olarak yararlı görülmediği doğrudur. Ancak bu

noktada, deneysel yöntemlerin teknolojik gelişmeye paralel olarak sürekli ilerlediğini hatırlatmakta fayda var. Bir örnekle açıklamak gerekirse sibernetik, düzenleyici sistemlerin yapısını inceleyen disiplinler arası bir alandır ve sistem teorisi ile yakından ilişkili görülmektedir. Biyoloji alanında sibernetik öncelikle hayvanların çevrelerine nasıl uyum sağladığına ve gen formundaki bilgilerin nesilden nesle nasıl aktarıldığına odaklanır (Kremyanskiy, 2017).

Bu çalışmada açıklamaya çalışmış olduğum gibi yaşam hem Hegel hem de Whitehead tarafından bir süreç olarak ele alınır. Bu nedenle bu iki filozofun sistemlerinin süreç ve bilgi ilişkisi açısından bir karşılaştırmasına yer vermek de faydalı olacaktır. Hegel'e göre hakikate ancak bilginin kendisini bir nesne olarak ele aldığı ve mutlak düşüncenin aynı zamanda gerçekliğin içeriğini oluşturduğu bir sürecin sonunda sahip olunabilir. Başka bir deyişle, mutlak bilgiyi "kendini bilen akıl", bilme sürecini ise mutlağın kendini gerçekleştirmesi olarak tanımlar. Öte yandan Whitehead bilginin yalnızca bilen bir öznenin zihninde gelişen bir süreç olmadığını, aynı zamanda böyle bir sürecin nesnenin ayrılmaz bir parçası olması gerektiğini, yani anlama nesnesinin de sürece tabi olması gerektiği belirtir. Anlam ancak bir süreçle açığa çıkarılır ve varoluş şeylerin statik doğasında anlamdan yoksundur. Whitehead'in anlayış ve süreç arasında formüle ettiği bu bağlantı spekülatif felsefesinin temelini oluşturur. Felsefeyi anlayışın aşamalı olarak zenginleşmesinin asla tamamlanmayan süreci olarak ele alır ve felsefenin bu karakteri onu doğa bilimlerinden ayıran şeydir. Sonuç olarak her iki filozof için de süreç en ileri bilginin ve nesnelliğinin temelidir. Bununla birlikte bu çalışmada göstermeye çalıştığım gibi, Whitehead yalnızca gerçek dünyanın evrim sürecini ve fiziksel yeniliğin ortaya çıkışını değil, aynı zamanda öznel yaratıcılığın merkezi rolünü de statik mekanik veya idealist bir konuma düşmeden başarıyla ortaya koymaktadır.

B. THESIS PERMISSION FORM / TEZ İZİN FORMU

ENSTİTÜ / INSTITUTE

Fen Bilimleri Enstitüsü / Graduate School of Natural and Applied Sciences ☐

Sosyal Bilimler Enstitüsü / Graduate School of Social Sciences ☒

Uygulamalı Matematik Enstitüsü / Graduate School of Applied Mathematics ☐

Enformatik Enstitüsü / Graduate School of Informatics ☐

Deniz Bilimleri Enstitüsü / Graduate School of Marine Sciences ☐

YAZARIN / AUTHOR

Soyadı / Surname : Karaosmanoğlu
Adı / Name : Toprak Seda
Bölümü / Department : Felsefe / Philosophy

TEZİN ADI / TITLE OF THE THESIS (**İngilizce** / English): THE THOUGHT OF PROCESS IN HEGEL AND WHITEHEAD: LIFE AND VITALITY

TEZİN TÜRÜ / DEGREE: **Yüksek Lisans** / Master ☒ **Doktora** / PhD ☐

1. **Tezin tamamı dünya çapında erişime açılacaktır. /** Release the entire work immediately for access worldwide. ☒
2. **Tez iki yıl süreyle erişime kapalı olacaktır.** / Secure the entire work for patent and/or proprietary purposes for a period of **two years. *** ☐
3. **Tez altı ay süreyle erişime kapalı olacaktır.** / Secure the entire work for period of **six months**. ***** ☐

***** *Enstitü Yönetim Kurulu kararının basılı kopyası tezle birlikte kütüphaneye teslim edilecektir. / A copy of the decision of the Institute Administrative Committee will be delivered to the library together with the printed thesis.*

Yazarın imzası / Signature .....

Tarih / Date .....
(Kütüphaneye teslim ettiğiniz tarih. Elle doldurulacaktır.)
(Library submission date. Please fill out by hand.)

Tezin son sayfasıdır. / This is the last page of the thesis/dissertation.