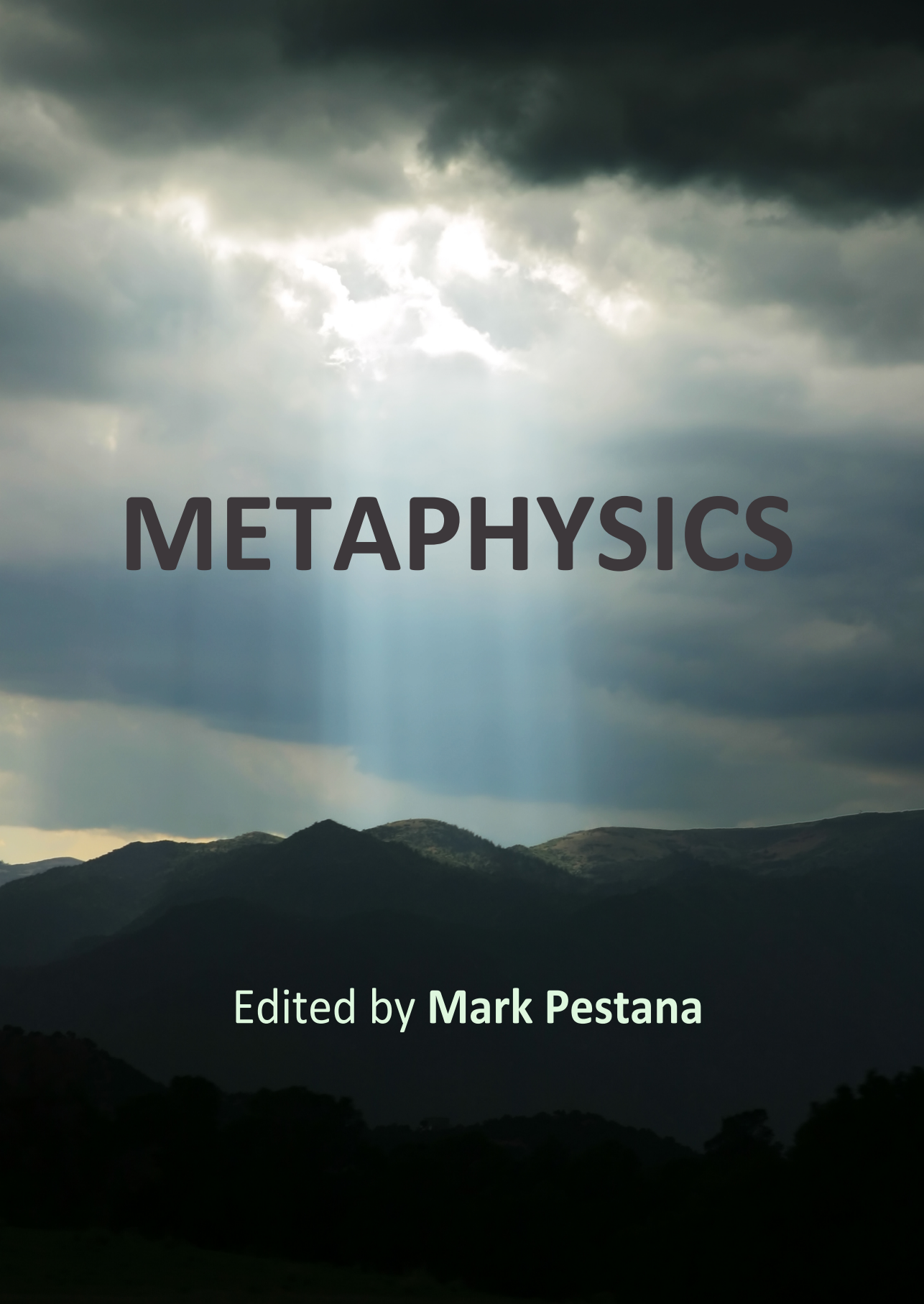
METAPHYSICS
Edited by Mark Pestana

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Contents

Preface VII

Introductory Chapter 1
Mark Pestana

Chapter 1 **The Metaphysical Character of Philosophy 9**
Marie-Élise Zovko and Jure Zovko

Chapter 2 **Appearance and Reality in Parmenides 45**
Kenneth Dorter

Chapter 3 **The Nature of Metaphysics and Science: The Problem of the One and the Many in Thomas Aquinas 65**
Curtis L. Hancock

Chapter 4 **Metaphysics Between Reductionism and a Non-Reductionist Ontology 83**
D.F.M. Strauss

Chapter 5 **Whiteheadian Structured Societies as Open-Ended Systems and Open-Ended Systems as Whiteheadian Structured Societies 111**
Joseph A. Bracken

Chapter 6 **The Meaning of Education in the Age of Technology 127**
Bogomir Novak

Preface

The papers in this volume provide us with a good sample of contemporary metaphysical inquiries. The first essay, by Zovko and Zovko, develops an account of the nature of metaphysical inquiry in general, which account is grounded in the history of this discipline. Their essay illuminates the great divide between ancient and medieval thought, on the one hand and modern and post-modern metaphysical thinking, on the other. The authors finally argue for a species of anti-realist idealism and for the necessity of metaphysical thinking within the dominant contemporary focus on the subject of experience. They conclude with a powerful argument for the social embedded-ness of metaphysical reflection.

The next three essays, by Dorter, Hancock and Strauss, are inquiries into the work of classical metaphysicians. As noted above, not all metaphysical work survives the test of time. However, the works that have survived this brutal test are always worth revisiting because their original formulations of thought (or system of thoughts) are in many ways impossible to improve upon. Fresh insight can be gained from returning to the sources. The second essay in this volume is an investigation of a fundamental account of perhaps the fundamental metaphysical problem—the distinction between appearance and reality as first articulated by the (great grand) father of metaphysics, Parmenides. Dorter explores a fundamental topic addressed in human thought via problems that have arisen in the interpretation of Parmenides' thoughts about that fundamental topic. And his essay is a perfect example of how reality can be illuminated for our minds by means of explicating a great and ancient thinker's thoughts. The second historically oriented essay, by Hancock, addresses a comparably fundamental metaphysical problem—the problem of "the one and the many". The issue here is that being is one, i.e., all things have being and just in so far as they have being or are beings, all beings are one being (or one in being) *and* being is many, i.e., all things are different from each other in their being and constitute a multitude of beings. So, the problem is to make sense of how being is both one, undivided, unitary, single, singular, the same *and* multiple, divided, plural, diverse, the different. Hancock explicates Thomas Aquinas' Aristotelian answer to this question (and explains Thomas' points of departure from Aristotle). In the course of this dense explication Hancock articulates a classical realist account of how the mind comes to know in general and how our minds "work" when we engage in inquiry into metaphysical realities. He includes, as needed in explaining the solution to the

problem of the one and the many, an account of the classical Aristotelian distinctions between form and matter and a (brief) account of Aristotle's metaphysical categories of being. This essay will excite readers into further exploration of the Thomistic-Aristotelian metaphysical system of thought, perhaps the most massively complex system of such thinking in the Western tradition (the opposite of Quine's "desert landscape" ontologies).

The fourth essay with historical content (by Strauss) addresses the famous problems raised by Zeno concerning the reality of motion (and more generally the reality of change). In this insightful and stimulating work Strauss argues against giving in to reductionist tendencies in our thinking about the nature of being. He demonstrates that such reductionism can lead to unsolvable antimonies, by explicating the attempt in modern mathematics to explain the continuous entirely in terms of the discontinuous and the attempt in ancient physics to explain or explain away motion. He ends by arguing that a non-antimonious ontology can only rest on a irreducible plurality of fundamental categories of being (instead of Quine's desert, a tropical rainforest landscape).

The final two works in this collection bring us to the present. Joseph Bracken explains and champions the metaphysics, or more properly the theory of nature, developed by Alfred North Whitehead in the early part of the 20th century (and in spite of the anti-metaphysical positivism of that time). Whitehead's intriguing and powerful development of Aristotle's basic analysis of becoming has always been of interest to scientists and scientifically oriented philosophers. In recent decades the study of "complex systems" has blossomed and Whitehead's conceptions of the fundamental nature of nature perfectly extend such rational inquiry from the sensorily accessible realm of the real (studied by the empirical sciences) into the abstractly conceivable and foundational realm of the real (studied by metaphysics). Bracken introduces the reader to and explains the fundamental concepts that Whitehead developed for understanding the fundamentals of reality, such as "prehension", "societies of being", "creative systems". Work of this sort is relevant to contemporary attempts to explain living matter, conscious matter and other self-organizing, self-referencing realities. Bracken connects the Whiteheadian foundational analysis with analyses developed by Kaufmann, Sloan Wilson, Varela, Luhmann of the nature of such self-similar, fractal-like systems.

The final paper returns to issues concerning the very nature of metaphysical inquiry. The overarching theme of this closing chapter concerns the relationship between technology and education and the basic claim that Nocak advances is that technology has brought about a significant loss of meaning for human beings. The reality we now encounter, so Novak argues, is completely mediated to us through technologies and, thus, "our" reality is now essentially artificial or artifactual. The consequent impact of this fact on our metaphysical understanding of reality, on our most fundamental grasp of the most fundamental realities is tremendous—the ultimate meaning of everything is also artificial. Thus, metaphysics as the science of

being as being has now become the science of artificial being as being! This is catastrophic for the human psyche since to the extent that we are what we know, we ourselves have become artificial in a fundamental sense. Accordingly, Novak issues a clarion call to our educators to explicitly inform their charges of these facts and thereby pre-empt our descent into un-reality. There is much to ponder in this closing essay.

It is our hope that this collection will give readers a sense of the type of metaphysical investigations that are now being carried out by thinkers in the Western nations. We also hope that the reader's curiosity will be peaked so that further inquiry will follow.

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Introductory Chapter

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1. Introduction

Metaphysics has enjoyed something of a revival in the Western intellectual world in recent decades. Earlier in the 20th century the discipline had suffered serious setback and exclusion at the hands of logical positivists and existentialists. This sort of death and rebirth has occurred throughout the history of metaphysics, a discipline with has a tendency to "bury its gravediggers". But what is the nature of this field of inquiry and why does it have such a convulsive history? As should be expected, Aristotle provided the first systematic definition of the field and his characterization is helpful still. In his book that came to be called The Metaphysics, he construed this type of inquiry as the study of being as such or of being qua being. In other words, he understood metaphysics to be a highly abstract scientific investigation into the fundamental principles or structures of being itself (and not an investigation of the principles, etc. of particular types of beings—they are the province of the specialized sciences). Such inquiry is scientific because it deploys the same methods of reasoning to arrive at certain conclusions that are used in all types of rational inquiry. This scientific inquiry is highly abstract precisely because it targets the general, overarching characteristics of all things that have existence of any sort whatsoever and the very being of those things. In short, metaphysics answers questions about the nature of being itself, the fundamental types of beings that exist, the ways in which things exist, etc. Any search for answers to these sorts of questions differs, in Aristotle's originating conception, from the search for answers to questions concerning the fundamental nature of change or changing being or becoming. The underlying principles of becoming form the basic structures of the world of which we have sensory experience and which is systematically investigated by the specific sciences. Aristotle addressed these issues in his book which has come down to us as The Physics (clearly the meaning of this term is different from the contemporary name of the specific empirical science). The questions that physical inquiry answers are questions about the very nature of change as such, the fundamental types of change, the ways things change, etc. Aristotle was a realist and he regarded both of these investigations, into being as such and into becoming as such, as differing from reflective inquiry into the nature of our knowing activities. This latter type of epistemological study is of the psychological powers and their specific activities that result in knowledge. However, many Western intellectuals since the 17th century eschew realism and accordingly a clean separation of metaphysical (and physical) and epistemological problems and studies is not possible for them. Because of their Cartesian "turn to the subject" metaphysical (and physical, in Aristotle's sense of the term), inquiry evolved for them into investigation of the fundamental principles of the mind, or basic forms of consciousness or deep and universal structures of language. The apotheosis of this was the change wrought by Immanuel Kant on the Aristotelian "categories of being", the basic types of things that are. Kant turned these principles of real,

extra-mental being, into the fundamental schemata of consciousness by which a world of apparently real entities is constituted by the mind (or by a transcendental unknowable). Metaphysical inquiry was turned into, in Kant's system of thought, an inquiry into the very nature of and structures of our own minds.

However one conceives of the object of such investigation (as an extra-mental reality or as of the mind itself), metaphysical investigation is rational, argumentative, reasoned inquiry. In other words, claims concerning the fundamental structure of reality require justification and are in principle refutable, defeasible. This distinguishes metaphysics from divinely inspired revelation about reality, from mystical experiences concerning existence and from poetical intuitions of being. But if this type of inquiry is carried out in total abstraction from the world of our sensory experience (including sensory experience aided by scientific instruments) then how can any meta-empirical claim be corroborated or refuted? There seems to be no testing of the results of metaphysical investigation. This was Kant's great complaint about the accumulated history of such inquiry that had preceeded him—participants in these investigations could make any claim whatsoever without fear of refutation and hence various and contradictory metaphysical viewpoints perdure over the centuries. However, Kant overstated his concern. There are two basic tests of any metaphysical claim or system of metaphysical claims and many such claims and systems of metaphysical thought have been rejected throughout history for failing to measure up (people tend not to study thinkers whose thoughts have been soundly refuted). The first test of any metaphysics is simple internal consistency. If the claims concerning the nature of being, the types of beings that exist, etc. are incoherent then they cannot be true and are not countenanced. The second test is simply external consistency, coherence with everything else we know to be true (or have good reason to think true, or etc.). This test is especially important in contemporary metaphysical inquiries—their results must not contradict what the empirical sciences tell us about the nature of reality (or must not contradict the way in which empirical science works). We are now all beholden to the extraordinary successes of the empirical sciences in revealing to us the nature of particular types of beings. Accordingly, any results from an attempt to discover the fundamental principles of being as such must be in agreement with the results of discoveries concerning specific types of beings. Now, the first point to note here is that many metaphysical claims are in the dustbin precisely because they have failed these tests. No one regards ancient Greek atomism as correct (though with massive modification it can be turned into a system of thought approximating contemporary physics), no one takes Leibniz's metaphysics seriously, no one accepts Descartes' theory of the two substances (and no one believes the Australian Aborigine's claim that reality ultimately is the dreaming of the green ants). A second point to note is that the refutation or corroboration or testing of a metaphysical system takes time, a long time, hundreds of years in fact. Thus, at any one time in our intellectual history there has always been a plurality of conceptions of the fundamental character of being, of becoming, of things, etc. At any time these will be undergoing testing (for internal consistency and coherence with all else we know). So, it always looks as though there are multiple, and mutually contradictory, conceptions of the basics and it is easy to throw up one's hands in despair of acquiring metaphysical knowledge we can be assured of. Furthermore, the same basic sorts of metaphysical claims made about the ultimate nature of being, about the nature of ultimate being, etc. constantly appear on the scene. In other words, there have persisted throughout the history of metaphysical inquiry the same major

schools of thought—the claims of which are contradictory, are constantly undergoing testing, are constantly being revised and updated revising, and which seem to pass the testing with more or less the same scores (as it were). These major schools of metaphysical thought vary along several parameters and various combinations of the parameters are possible (and of course, synthetic, syncretistic positions have been articulated which attempt to combine the polarities of the various dimensions).

First and foremost is the division between materialist and idealist schools of thought concerning the ultimate nature of being as such. Materialism claims that all reality is material, that being as such is material in nature. Of course, the understanding of materiality has undergone tremendous transformation since the day of the ancient Greek atomists (reality consists of empty space and matter in the form of atoms in motion) to contemporary materialism (reality is an 11 dimension manifold of energy in wave packet form undergoing transformations). However, the fundamental contrast with the idealists remains. Idealism claims that all reality is ideal, that being as such is ideational or noetic in nature. The evidence each viewpoint adduces in its favor is throughout the ages drawn from distinct sources. Materialism traditionally appealed to the evidence the senses and now appeals to the empirical sciences, whereas idealism traditionally appealed to and currently appeals to the evidences of mathematical inquiries. What is revealed in each of these types of inquiry is taken to disclose something to us of the ultimate nature of reality, of being as such. It is worth noting here that this divide in metaphysical thought cuts across the distinction between realism and anti-realism in epistemology. The staunchest advocates of idealism, e.g. Berkeley, have advocated realism (noetic being is real being, i.e., exists independently of our consciousness of it). A contemporary post-modernist scientist might advocate an anti-realistic materialism (i.e., appearances themselves are all there is and have only physical characteristics).

A second recurring division among metaphysical schools of thought, and one usually related to the just noted distinction, is between naturalist and super-naturalist conceptions of reality. According to naturalism (which usually goes hand in hand with materialism, Spinoza being a notable exception), the system of nature is all that there is, the universe revealed to us by empirical science exhausts the domain of being. And the only types of beings that exist are those that can be (or have been, are or will be) studied by such sciences. Super-naturalism makes fundamental transcendental claims about what is real—reality is more than, over, above, beyond what we experience in the ordinary way or in the scientific way. In fact, so the transcendentalist claims, the fundamental "part" of reality is just that which is beyond the ordinary. Being as such then must include in some way both the reality of the commonplace and the reality of the beyond. The evidence claimed by the protagonists in this dispute concerns the sufficiency of our explanations of experience. Naturalists claim that all of our experience can be sufficiently explained in terms of what is contained in or carefully reasoned from our sensory experience (of the world of nature), whereas super-naturalists claim that no such explanation suffices and hence that a final explanatory appeal must be made to a little known and little knowable (though most real) ultimate being.

Metaphysical systems have historically diverged on the more esoteric issue of the singularity of being as contrasted with the universality of being. Singularists, more commonly known as nominalists, claim that being is individual, that reality consists of singular beings, concrete and, usually material in nature. The evidence adduced in favor of

this view concerns our immediate and direct contact with what is, i.e., the world we experience appears immediately to us to consist of concrete, determinate individual entities and that is all there is to it. Universalists, most famously Plato, have claimed that being is universal in nature, that reality consists of universals and that singular beings are in some sense or other less real (they have less being). The arguments for the universality of being (being as universal in nature) appeal to the nature of necessity, the plurality of instances of the same kind of being and to the possibility of possible beings.

The basis of yet another fundamental division between results of metaphysical inquiries was just noted in passing. Throughout the ancient and medieval periods of thought it was argued (or taken for granted) that being admits of degree. Some things are more real than others, they have a greater measure of existing than do other lesser entities. What counts as evidence for such a claim depends heavily upon how the difference in degrees is defined in the first place. If as Plato seems to have indicated, things are more real only in the sense that they are more able to act on other beings or more capable of being affected by other beings then the evidence of our senses would point to such differences in degree of reality. At any rate, this view contrasts sharply with conceptions according to which an entity either is or is not, there is no in between, "it's all or nothing". This modern and contemporary way of understanding being seems to comport well with what we know about reality from the empirical sciences. This general division is intimately related to the division within conceptions of being between being as actual and being as possible. Here the distinction lies between schools of thought that countenance possible beings in addition to (as it were) actual beings. Some schools of thought, especially existentialistically oriented metaphysics, emphasize actuality or actual being to the exclusion of possible being. In other words, being is only actual and possible being is non-being, there simply is no such thing. Other schools of thought emphasize possibility, i.e., reality includes possible beings, the being of which is possible which is a less real mode of existing than is actual existing.

Other parameters along which schools of metaphysical thought can be sorted include thing ontologies versus event ontologies, substance ontologies versus relation ontologies, top down ontologies (being proceeds from one to many) versus bottom up ontologies (being proceeds from many to one).

Clearly many combinations of such different parameters are possible though not all such combinations have seen the light of day in Western thought. In what ever way the parameters are combined the result is either a monistic metaphysical conception or a dualistic conception (or more generally a pluralistic conception). That is to say, in the final analysis it is claimed either that reality is homogeneous, all being is of one type or it is claimed that reality is heterogeneous, all being consists in more than one type of being. Using these basic parameters it is possible to trace in broad brush the history of metaphysical inquiry in the West.

In the ancient and medieval periods metaphysical thinking was realistic and super-naturalistic. Thinkers during these great ages assumed that real being existed independently of human knowledge of it, that the human mind could access reality as it is in itself (though doing so required systematic sustained investigation), and that reality consisted of more than could be experienced directly through our sensory powers. All of this changed in the modern period and in spite of contemporary reactions against modernity all of us now think

within two aspects of modernist paradigm. First, Descartes initiated (and Kant solidified) the great shift to anti-realism. If real being exists independently of our consciousness then we can only know how it appears to us. We therefore have no reason to suppose that real being exists independently of our consciousness, so we are left with only appearances (not appearings *of* some thing, merely appearings *to* a subject). Being consists then in those appearings (the subject is merely an appearance to its self, a merely phenomenal ego). Second, Spinoza initiated (and 20th century science confirmed) the great shift to naturalism. "What you see is what you get." There is nothing more to being than is revealed by/in scientific investigation of appearances and what must be posited in a lawlike manner in order to explain in a lawlike manner the order of those appearances (no appeal to transcendent mysteries is allowed).

However, in the 20th century alongside of the anti-realist, naturalistic though scientific metaphysics (of the appearances of things and events) there arose an existentialist reaction against all such formalistic ontologies of things and their essential natures. This was most forcefully stated by Heidegger in his famous critique of all Western thought as guilty of a "seinsvergessenheit", a forgetfulness of being. By conceiving of being entirely in terms of the essences of things the occidental mind has become oblivious to the sheer existing of beings. Of course, it was precisely conceiving of being as essence that made modern science possible (Western science has uniquely revealed to the peoples of the world *what* things are). This divide indicates yet another dimension along which metaphysical thoughts differ. Many systematic metaphysical accounts in the West have been "essentialist" in their conception of being—being equals essence, the whatness of being is all there is to being. And this contrasts sharply with an existentialist metaphysics which focusses on the sheer existing of things, the be of entities, and especially on the be-ing of human being. Their metaphysical inquiries attempt to determine the various ways in which human beings are, existentially. This 20th century existentialist critique of thing/substance/essence ontologies again calls our attention to the important fact about the history of metaphysics noted above—no age is monolithic in its metaphysical conceptions. Alongside antirealist phenomenologists in the last century there have been champions of classical realism. And notwithstanding Heidegger's critique, recent work in metaphysics has been precisely in the essentialistic tradition, most notably in the formal ontology movement which began in the 1990s. This fascinating development in philosophy appears to have partly arisen out of attempts to create and manage virtual realities in cyber space. The problems encountered in these efforts to bring worlds into being are precisely the problems of classical metaphysical inquiry: what is a world, in what sense do these worlds exist, how are worlds populated with entities, what are entities, how are entities differentiated into types and into individuals, what sorts of fundamental properties do entities possess, under what conditions does change occur to these entitites, what is change, can a world as such change, etc.? This short list indicates some of the problems that contemporary metaphysicians are investigating. The formal ontology movement has completely resurrected the problem of fundamental categories of being, the classical topic of metaphysical inquiry.

Other problems being addressed emphasize the following sorts of issues: the identity of entities over time as they undergo changes; the nature of the properties possessed by such entities (the old problem of the ontological status of universals); the nature and individuation of events; the nature of and relations between space and time; the nature of

causality and whether causal relations are deterministic and/or indeterministic; consciousness, mind and brain; and of course, the nature of mathematical entities.

The papers in this volume provide us with a good sample of contemporary metaphysical inquiries. The first essay, by Zovko and Zovko, develops an account of the nature of metaphysical inquiry in general, which account is grounded in the history of this discipline. Their essay illuminates the great divide between ancient and medieval thought, on the one hand and modern and post-modern metaphysical thinking, on the other. The authors finally argue for a species of anti-realist idealism and for the necessity of metaphysical thinking within the dominant contemporary focus on the subject of experience. They conclude with a powerful argument for the social embedded-ness of metaphysical reflection.

The next three essays, by Dorter, Hancock and Strauss, are inquiries into the work of classical metaphysicians. As noted above, not all metaphysical work survives the test of time. However, the works that have survived this brutal test are always worth revisiting because their original formulations of thought (or system of thoughts) are in many ways impossible to improve upon. Fresh insight can be gained from returning to the sources. The second essay in this volume is an investigation of a fundamental account of perhaps the fundamental metaphysical problem—the distinction between appearance and reality as first articulated by the (great grand) father of metaphysics, Parmenides. Dorter explores a fundamental topic addressed in human thought via problems that have arisen in the interpretation of Parmenides' thoughts about that fundamental topic. And his essay is a perfect example of how reality can be illuminated for our minds by means of explicating a great and ancient thinker's thoughts. The second historically oriented essay, by Hancock, addresses a comparably fundamental metaphysical problem—the problem of "the one and the many". The issue here is that being is one, i.e., all things have being and just in so far as they have being or are beings, all beings are one being (or one in being) *and* being is many, i.e., all things are different from each other in their being and constitute a multitude of beings. So, the problem is to make sense of how being is both one, undivided, unitary, single, singular, the same *and* multiple, divided, plural, diverse, the different. Hancock explicates Thomas Aquinas' Aristotelian answer to this question (and explains Thomas' points of departure from Aristotle). In the course of this dense explication Hancock articulates a classical realist account of how the mind comes to know in general and how our minds "work" when we engage in inquiry into metaphysical realities. He includes, as needed in explaining the solution to the problem of the one and the many, an account of the classical Aristotelian distinctions between form and matter and a (brief) account of Aristotle's metaphysical categories of being. This essay will excite readers into further exploration of the Thomistic-Aristotelian metaphysical system of thought, perhaps the most massively complex system of such thinking in the Western tradition (the opposite of Quine's "desert landscape" ontologies).

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only rest on a irreducible plurality of fundamental categories of being (instead of Quine's desert, a tropical rainforest landscape).

The final two works in this collection bring us to the present. Joseph Bracken explains and champions the metaphysics, or more properly the theory of nature, developed by Alfred North Whitehead in the early part of the 20th century (and in spite of the anti-metaphysical positivism of that time). Whitehead's intriguing and powerful development of Aristotle's basic analysis of becoming has always been of interest to scientists and scientifically oriented philosophers. In recent decades the study of "complex systems" has blossomed and Whitehead's conceptions of the fundamental nature of nature perfectly extend such rational inquiry from the sensorily accessible realm of the real (studied by the empirical sciences) into the abstractly conceivable and foundational realm of the real (studied by metaphysics). Bracken introduces the reader to and explains the fundamental concepts that Whitehead developed for understanding the fundamentals of reality, such as "prehension", "societies of being", "creative systems". Work of this sort is relevant to contemporary attempts to explain living matter, conscious matter and other self-organizing, self-referencing realities. Bracken connects the Whiteheadian foundational analysis with analyses developed by Kaufmann, Sloan Wilson, Varela, Luhmann of the nature of such self-similar, fractal-like systems.

The final paper returns to issues concerning the very nature of metaphysical inquiry. The overarching theme of this closing chapter concerns the relationship between technology and education and the basic claim that Nocak advances is that technology has brought about a significant loss of meaning for human beings. The reality we now encounter, so Novak argues, is completely mediated to us through technologies and, thus, "our" reality is now essentially artificial or artifactual. The consequent impact of this fact on our metaphysical understanding of reality, on our most fundamental grasp of the most fundamental realities is tremendous—the ultimate meaning of everything is also artificial. Thus, metaphysics as the science of being as being has now become the science of artificial being as being! This is catastrophic for the human psyche since to the extent that we are what we know, we ourselves have become artificial in a fundamental sense. Accordingly, Novak issues a clarion call to our educators to explicitly inform their charges of these facts and thereby pre-empt our descent into un-reality. There is much to ponder in this closing essay.

It is our hope that this collection will give readers a sense of the type of metaphysical investigations that are now being carried out by thinkers in the Western nations. We also hope that the reader's curiosity will be peaked so that further inquiry will follow. Below is a very short list of anthologies of articles on metaphysics and introductory texts on the subject for those interested in further fundamental inquiry into the fundamental nature of all being. With the exception of the Grondin book, which surveys continental metaphysical writings, all of these works are in the tradition of analytical thought.

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1

The Metaphysical Character of Philosophy

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1. Introduction

In the history of philosophy there exists a clear continuity regarding investigation of the epistemic conditions of understanding and explanation of reality. Herein lies philosophy's essentially metaphysical character – and the reason why metaphysics continues to comprise an indispensable constituent of philosophizing and a philosophical approach to life. Drawing on selected paradigms from classic works from the history of philosophy, we focus on metaphysics of subjectivity as fundamental philosophical discourse of modernity, which finds its archetypal expression in Kant's conception of the unity of self-consciousness (transcendental unity of apperception), as precondition for our understanding and explanation of objectivity and the world of our experience. This opens a range of possibilities for innovative analysis of the metaphysical character of philosophy.

Today, no consideration of metaphysics is possible without reference to "post-metaphysical" thought, that is, to the "destruction" or rejection of metaphysics which emerged from Kant's and the Idealists' critique of traditional metaphysics, as well as from criticism directed towards the German Idealists' own "absolute-dialectic" brand of metaphysics.[1] The situation of "metaphysics after metaphysics", however, requires more than theoretical illumination of the epistemic conditions of human knowledge and self-consciousness; it requires a deep connection to the implementation of our role and purpose in the world and in society. One possible source for active renewal of metaphysics in the post-metaphysical era may be found in the communal aspect of *interpretation*, the basis of all knowledge and communication, as exemplified by Royce's reconceptualisation of Peirce's semiotics and his expansion of Peirce's idea of the "community of scientific investigators", within the context of an "absolute pragmatism" and a "philosophy of loyalty" to the ideal of universal community of interpretation.

The methodology of exposition applied here exemplifies what is described by Wolfgang Wieland[2] as a productive relationship of philosophizing to its own history. In Wieland's

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[1] Cf. L. Nagl. *Das Verhüllte Absolute. Essays zur zeitgenössischen Religionsphilosophie.* (Frankfurt am Main: Peter Lang, 2010), 13.
[2] "Über den Grund des Interesses der Philosophie an ihrer Geschichte," in: Rolf W. Puster (hrsg.) *Veritas filia temporis: Festschrift für Rainer Specht* (Berlin: de Gruyter, 1995) 11-30.

estimate, study of the history of philosophy can play an integral and productive role in philosophy, if philosophy takes as its aim not only to learn *about* its history, but to learn *from* it, when history is taken as a source of truth.[3] Although the precise method and the rules for successful study and interpretation of philosophical texts often remain unreflected, it is the question of doing justice to an historical work's ability to be a carrier of truth which is at the center of this approach. Every text has both a material and an intentional aspect. The former concerns the circumstances of its genesis – its time, author, the conditions under which it was composed, the whole constellation of psychological, social, individual, and transindividual relationships which led to its existence as a thing and object of study. The latter regards the capacity of the text, as a "sign", to refer to something other than itself. The text functions thereby as a medium by which to turn the reader's attention to the subject matter in question, a medium which allows us to reflect upon the "truth content" it is intended to convey.

In this article, selected texts from the history of philosophy serve as a medium for consideration of the specific problem of the possibility of metaphysics and the metaphysical character of philosophy. The historical circumstances of the selected texts is of secondary importance. This approach entails the reader's active participation in a dialogue with specific previously existing attempts to formulate and resolve the philosophical problems at hand. For, properly understood, the search for truth and the process by which philosophical problems emerge, whether in older or more recent philosophical texts, is part of a permanent and ongoing process of interpretation, an exchange in which the interpreter attempts to draw forth the truth content of the text to be interpreted for those for whom it is to be interpreted and who, by their own act of reflection, carry forward the process of interpretation, participating thus as co-interpreters in the larger process of inquiry and exchange.

1.1 Metaphysics and the post-metaphysical era

Metaphysics is a fundamental, defining discipline of the European philosophical tradition. The origin and original meaning of the word "metaphysics" is disputed, having in all likelihood been coined by the first editor of Aristotle's writings, Andronicus of Rhodus, to designate the body of more or less contiguous writings grouped together "after the physics".[4] These writings dealt with "being as such", its "principles" and "causes", the subject matter of what Aristotle variously calls "first philosophy", "wisdom", "theology".[5] Therewith, Aristotle takes up central questions which first arose among his predecessors, the so-called Presocratics, whom Aristotle in this respect calls the "first philosophizers"[6], and with his own teacher Plato: what (really) is? what makes it the way it is? where does it come from? how does it come to be? The word metaphysics, thus a more or less accidental creation, becomes in medieval philosophy a general designation for reflection on issues connected

[3] ibid.
[4] Cf. H. Flashar, Aristoteles. In: *Grundriß der Geschichte der Philosophie*. Bd. 3, *Ältere Akademie-Aristoteles-Peripatos*, ed. H. Flashar(Basel/Stuttgart: Schwab, 1983) 256.
[5] Aristotle, *Metaphysics*, 982 a 1-3; 983 a 8-9.
[6] ibid. 983 b 5-6.

with these fundamental questions, questions which continue to define the central concerns of the discipline known as metaphysics from Ancient times until the present.

Prominent thinkers from the field of classical metaphysics attempted accordingly to answer questions regarding the "first" or "highest" principles and causes of things and being as a whole, as well as of our knowledge of them, i.e. of reality, its causes and principles. Historians of philosophy customarily differentiate three main periods or stages in the history of metaphysics: the Ancient and Medieval period, when the discipline which later came to be known as "ontology" concerned itself with the question of the *being of that which exists*[7]; second, the modern period extending from Descartes until the collapse of German Idealism, during which metaphysical reflection was directed toward establishing the epistemic conditions of our knowledge of reality, taking the form, thus, of a primarily subjective, foundationalist metaphysics of (self-)consciousness; and finally, from the second half of the 19th century onwards, the "post-metaphysical" era of philosophy in its various forms.[8]

This division is heavily influenced by the thought of Martin Heidegger and his claim to have "destroyed" the history of metaphysics and its purported "forgetfulness of being" by what he calls "thinking from another beginning", i.e. from "being itself" in the verbal (extra- or non-categorical) sense of its "existing" or "occurrence" (Ereignis). Heidegger opposes his approach to what he sees as traditional metaphysics' concern with conceptualisation of the "being-ness of being" (Seiendheit des Seienden), which in his estimate always involves imposing a certain inappropriate "thingfulness" (Dinglichkeit) on what cannot be described by general characteristics or made into a thing possessing even the most eminent properties.[9] Heidegger's "destruction" of the history of metaphysics largely neglects currents of thought like (Neo-)Platonism, from thinkers like Plotinus and Proclus, Medieval and Renaissance Platonism to Platonists or Platonist-influenced thinkers of the modern period and German Idealism, whose thinking on the relationship of finite things and the unconditional source of all that is and is thought tends to contradict central assertions of Heidegger's interpretative stance and purported "destruction" of metaphysics.[10] This has

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[7] In contrasting the perspectives of the Ancient & Medieval period on the one hand, and the modern and postmodern period on the other, our selection of thinkers and texts is necessarily limited. While striving to be representative, our exposition focusses on the problems themselves, and is not intended as a valuation of individual thinkers. For reasons of space, and because their treatment presupposes consideration of the encounter between the major religious traditions: Judaism, Christianity and Islam, and works of Classical Antiquity, thinkers of the Medieval period are not considered in this article.

[8] Cf. J. Habermas, *Nachmetaphysisches Denken. Philosophische Aufsätze* (Frankfurt a. M: Suhrkamp, 1988) 20f.

[9] Heidegger's standpoint after the so-called "Kehre" ("turn", "conversion") represents a development of Schelling's later philosophy, with its opposition of "negative" and "positive philosophy" and advocacy for a historical and "positive" philosophy over metaphysics of essence. Cf. M.E. Zovko, "Die Spätphilosophie Schellings und die Kehre im Denken M. Heideggers." In: *Jahrbuch für Philosophie des Forschungsinstituts für Philosophie Hannover* (10) 1999, 135-173.

[10] Cf. M.E. Zovko, *Plotinovo i Heideggerovo Poimanje vremema.* (Zagreb: Filozofska iztraživanja, 1991; Magisterarbeit: Freiburg i. br., 1985). Regarding similarities and differences between Heidegger's approach to philosophizing from the "other beginning" and Platonist views of the highest principle of thought and being "beyond being", cf. M.E. Zovko, (1999) 143. Concerning Fr. Schlegel's influence on

done little, however, to attenuate its wide-reaching influence and its role in ushering in a new "post-metaphysical" era. Additional impetus for the idea of the "end" of metaphysics was provided, moreover, from another corner, by the movements known as analytic philosophy and logical positivism, as initiated by Frege, Russel and Wittgenstein, and their view that philosophy has to do not with higher truths, principles or causes, but with the analysis of propositions.

In contrast to the view that following Kant and the German Idealists philosophy irrevocably entered a post-metaphysical era, we shall attempt in this article to delineate the thematic unity and continuity of European philosophy as concerns inquiry into the epistemic preconditions of knowledge and explanation of reality. It is this thematic continuity, we argue, which constitutes what may be called the metaphysical character of philosophy and which, regardless of the changing aspect of philosophy's specific interest and expression, cannot be revoked or eliminated – short of elimination of philosophy, and consequently, of humanity itself.

1.2 Classical origins of metaphysics and epistemic conditions of knowledge: Plato and Aristotle

Plato (and in an historical and foundational respect his predecessors among the Presocratic thinkers, in particular Parmenides and Heraclitus[11]) may be credited with two important discoveries upon which the whole of European metaphysics is founded: first, the principle of identity, that a thing is what it is, with its complement, the principle of non-contradiction, according to which it is impossible "for the same thing to be attributed and not to be attributed at the same time to the same thing in the same respect."[12] These together comprise the precondition of coherent speech, scientific argumentation and successful communication. The second discovery is that of the primacy of concepts as the basis of explanation. This discovery is embodied in Socrates' so-called "flight to the *logoi*" (*kataphugē eis tous logous*), as described in the *Phaedo*, outcome of his youthful fascination and ultimate frustration with the search for causes, or rather, with the manner in which the investigation of nature (*historia peri tes psuchēs*) had hitherto been conducted. By replacing the unending regress entailed by mere enumeration of the successive phases or

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Heidegger's critique of Western metaphysics, cf. also Michael Elsässer, *Friedrich Schlegels Kritik am Ding*, (Hamburg: Meiner 1994). Cf. also Etienne Gilson, *Being and Some Philosophers*, Pontifical Institute of Mediaeval Studies, 1952, as well as John Caputo, *Heidegger and Aquinas: An Essay on Overcoming Metaphysics*. (Fordham University Press, ²1982).

[11] Cf. M.E. Zovko, "Plato's Heracliteanism Reconsidered," *Dionysius*, 20 (2002): 23-50.

[12] *Cf. Plato, Rep. 436b:* "The same thing will never do or suffer opposites in the same respect in relation to the same thing and at the same time". Cf. *Phaedo* 102e, *Theaetetus* 188a, *Sophist* 220b, 602e; Cf. Aristotle's three formulations, *Met.* IV 3 1005b19–20, with respect to existent things: "'It is impossible for the same attribute at once to belong and not to belong to the same thing and in the same relation'"; 1005b 23-24, in the form of an "ultimate belief" which anyone trying to demonstrate anything refers back to: "it is impossible for the same man to suppose at the same time that the same thing is and is not; for the man who made this error would entertain two contrary opinions at the same time"; and finally, in its logical form: "the most certain of all beliefs is that opposite statements are not both true at the same time" (1011b13-14).

stages in a sequence of natural phenomena, i.e. of proximate "causes" and their "effects", with the the hypothesis of ideas[13], Plato provided philosophy with a unified explanatory approach to ontological, epistemological and ethical phenomena. This enabled him to turn his attention to human beings' role as *subjects* of philosophical inquiry into the constitution of reality – and to the implications of such inquiry for the conduct of our lives.

Plato recognized that the phenomena of the sense world can only be known and explained by concepts or *ideas* which name or correspond to them. Knowledge of phenomena is made possible by "participation" of the matter of sensation in ideas, and of ideas in the matter of sensation. In other words, sensation itself (and hence experience, knowledge) is impossible without ideas. These he postulates as the unchanging principles and causes of things whose essence they (the ideas) define or express. At the close of the dialogue *Cratylus* (339c-340c), an argument is presented by which to explain how our knowledge and understanding of changeable phenomena can be enduring and reliable. The logos lends to our perceptions, and therewith to the changing phenomena of the world of flux, eidetic stability. The ineluctable and undifferentiable fluidity of change achieves solidity, stability, and form for our experience only by means of conceptualisation and linguistic expression. In this respect, Harold Cherniss' claim is justified that the world of phenomena can only be "saved", that is, aequately explained, with the help of ideas: "The instability of phenomena can be explained only by assuming a world of Ideas as source of phenomenal characteristics".[14] This hypothesis proves to be the only adequate basis for explanation in the realm of epistemology, ontology, and ethics.

Plato's discovery that one and the same idea is present in diverse phenomena and that as such ideas possess the explanative structure of "one in the many" (*hen epi pollon*), is called by Aristotle the "argument from science" (*logoi ek ton epistēmon*).[15] Plato is therewith one of the first philosophers to recognize the fact that we explain the experiential world by means of eidetic structures which are the result of our process of cognition.[16] Simply put, there exist ideas for all the data of which we have knowledge. This, however, is for Plato not a purely epistemological insight. The central, burning question of the early dialogues is how to achieve a good and happy life.[17] While physicalist and scientistic neo-ontologies attempt to reduce knowledge to its descriptive content and associated practice to potential technological applications, for Plato and his teacher Socrates knowledge of things is

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[13] Cf. the anecdote regarding the "second-best route" (*deuteros plous*), Plato *Phaedo* 96 a-100a (followed by Socrates' summary of the "theory of ideas", 100b-102a). Cf. H. Cherniss, „The Philosophical Economy of the Theory of Ideas", *American Journal of Philology* 57 (1936), 455. The "economy of the theory of ideas", i.e. Plato's demonstration of the indispensability and adequacy of the hypothesis of separate and substantive ideas as causative and explanatory principles of being, knowledge and value, is characterised in Henrich's interpretation as the replacement of the "unity of nature" by the "unity of concepts" (Cf. Henrich 1987, 62). Cherniss' argument turns on the "determination of intellection as an activity different from sensation and opinion" and on the priority of the former with respect to the latter (cf. Cherniss 449).

[14] Cherniss 452f.

[15] *Met*. A9 990 b12.

[16] Heraclitus was arguably the first to explicitly recognize this fact. Cf. Zovko (2002).

[17] Republic I, 352d.

inextricably tied to the Delphic imperative to "know thyself". Definition and argument are inextricably bound to the attainment of the inherent excellence (*aretē*) of the knower and of the things known. Theory is thus inseparable from morality.

In modern science, the criteria of a theory's validity is its ability to accurately describe observable phenomena and reliably predict their future behaviour on the basis of mathematical models and replicable experiments. Despite their efforts to maintain complete "objectivity", however, the sciences are never, in fact, "value neutral". Every theory is influenced by the standpoint of the researcher, and by value-related assumptions, and has implications or consequences which require ethical reflection and choice. Purportedly "objective" descriptions of phenomena, furthermore, do not in themselves provide a meaningful context for human action, including qualifying reasons for choosing one set of actions or aims, one path in life over another. Pragmatists appeal to the principle according to which thought distinctions are to be resolved by their practical consequences. The question remains, however, – above all with respect to technological development and application of theoretical discoveries in practice: why should one set of consequences be preferred over another?

In Plato's "theory of ideas", descriptive, mathematical, and ethical predicates are ultimately grounded in the triad of ideas: beauty, goodness, and justice, which function not only as standards of truth and causes of being, but as *ideals* for the direction of our moral behaviour. The ethical predicates, for their part, possess particular relevance, not only for the constitution of our individuality and for the conceptualisation of our life's orientation, but also for the foundation of knowledge. In other words, there are ideas of things, mathematical ideas, ideas of virtues, but these are never hermetically separated from each other; and all ideas are founded ultimately in the idea of the good. Ideas establish thus not only *what a thing is by nature and how it behaves*[18], but also the criteria or point of orientation towards which we may "turn our gaze" (*apoblepein*) in the search for knowledge, as to a standard and paradigm (*paradeigma*), by which to judge whether our actions and the actions of others are just, prudent, pious or otherwise.

With the Analogy of the Line, Plato elaborates his understanding of the epistemic conditions of knowledge and reality. The Line functions as image or *interpretandum*, of the interrelationships of knowledge (*epistēmē*), probable opinion or belief (*doxa*), and their objects, intelligible and sensible reality (*noēta*, *aisthēta*). Socrates presents the image of the Line in the manner of a mathematical problem: he asks Glaukon to first imagine a line and then to cut it into two unequal parts, and when this has been accomplished to divide each part *according to the same ratio* (*ana ton auton logon*). Plato utilizes thus a geometrical proportion as analogue of the complex relationship of the knower to the content of his knowledge, providing at the same time perhaps the first explicit example analogical reasoning as a specific *method* of investigation.[19] In keeping with the law of proportion, the

[18] Heraclitus' formulation of the original task of the philosopher, Cf. H. Diels/W. Kranz *Die Fragmente der Vorsokratiker* . Vol I(Hildesheim: Strauss & Cramer, 1985), 22 [12] B 1; and Zovko (2002) 35.

[19] Recent research in the fields of psychology, cognitive science and artificial intelligence regards analogical reasoning as one of the most highly advanced operations of human intelligence. On structures of analogical reasoning and recent research on this topic cf. M.E. Zovko, "The Way Up and

cross products, i.e. the products of the means and of the extremes, can be used to find a missing term. The three known terms of the analogy can thus be used to discover a fourth missing term. The original ratio of unequal sections is repeated in each of the ratio's component parts. This implies the proportionality of the subordinate ratios both to each other and to the original ratio, illustrating not only the reflection, or refraction in another dimension, of the original ratio of knowledge and opinion, the sensible and the intelligible, in each of the constituent members of the proportion, but also the analogy of the internal relationships of the analogues from each individual realm to each other and to the whole (i.e. the analogy of the relationship between imagination [*eikasia*] and belief [*pistis*], to the relationship between discursive [*dianoia*] and intuitive thought [*noēsis*], as well as of the corresponding relationships between their respective objects [for *eikasia* the *eikones* or images/ for *pistis* the *zoa, phuta, skeuasta* (animals, plants and the "whole class of objects made by man", of which things the *eikones* are likenesses)/ for *dianoia* the *mathēmatika* / for *noēsis* the *ideai*] and of both analogies to the overarching division of knowledge and reality into opinion and "science", sensible and intelligible (*doxa*/with its objects the *horata* or *aisthēta*: *epistēmē,* also called *noēsis* in a broader sense, including *noēsis* and *dianoia* as subordinate functions/with its objects the *noēta*).

The layered proportionality of the Line admonishes against a dualistic interpretation of Plato's division of reality and the corresponding activities of the soul.[20] While the Line represents a *unity in duality*, the primary duality is not that of opposition of the intelligible and the sensible, but what might be called a *duality of reference*, the Line referring, on the one hand, as a complex *sign* or *symbol*, to the whole of reality and on the other to the integrated functioning of the faculties of the soul or intelligence which make reality accessible to us. Each section of the complex proportion of the Line represents both an activity or function of the soul and the specific object or aspect of reality which that particular activity "intentionally" contains or refers to. At the same time, according to the fundamental image of the Line, reality is *one*: the functions of the soul which enable cognition of reality are *one* and convey *one reality* by means of its different aspects. Intelligence is *one* taken in the entirety of the process of knowing and in unity with the reality which the diversity of its functions conveys. The law of proportion (the method of analogy) which forms the basis for analogy appears, moreover, as a specific, indirect method of discovery (as opposed to identification, recognition, deduction, induction and

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the Way Back are the Same. The Ascent of Cognition in Plato's Analogies of the Sun, the Line and the Cave and the Path Intelligence Takes," in: *Platonism and Forms of Intelligence* (Berlin: Akademie Verlag, 2008), 313-341; 334f. and n. 49-52. The Analogy of the Line has been widely interpreted, particularly in Anglo-american literature. Cf. R. N. Murphy, *The interpretation of Plato's Republic,* (Oxford: Clarendon Press 1951), 157-160; R. Robinson, *Plato's Earlier Dialectic.* (London: Oxford Press 1953), 147-201; A. S. Ferguson, „Plato's Simile of Light. I. The Simile of the Sun and the Line“, *Class. Quarterly* (15) 1921, 131-152; cf. also Th. Ebert, *Meinung und Wissen in der Philosophie Platons* (Berlin: de Gruyter 1974), 173-193; H. Krämer, Idee des Guten. Sonnen- und Liniengleichnis (Buch VI 504-511e), in: O. Höffe (ed.) *Platon. Politeia* (Berlin: Akademie Verlag 1997), 179-204.

[20] Even though Plato in places, for example, in the first part of the *Parmenides,* appears to favour a dualistic conception of the relationship of ideas to sensible particulars, the complexity of his exposition must not be ignored, and requires a correspondingly complex interpretation. W. Wieland, *Geschichte der Philosophie in Text und Darstellung. Bd. 1 Antike. Einleitung* (Stuttgart: Reclam 1988), 25.

other forms of inference).[21] The constellation of relationships which holds among the individual sections of the line proceeds thus not from simple gradation of degree or a simple opposition of terms, but proportionately and organically – with unexpected consequences for our understanding of the relationship between knowledge and reality.[22]

Excursus: The Metaphysical Character of Philosophy according the Plato's Divided Line[23]

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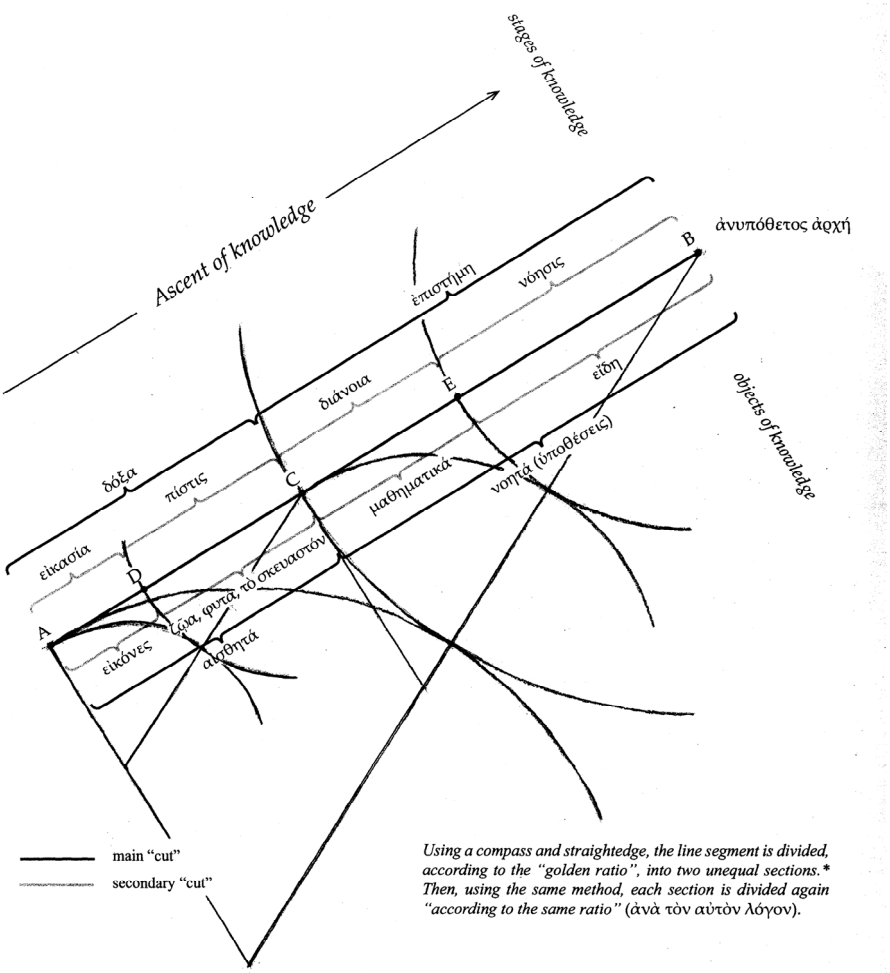
[21] Socrates explicitly mentions this method in connection with the investigation of the virtues as a method of discovering a fourth, unknown term (*Republic* 428a). Since in the *Politeia,* the image of the state and its constitution (its division and parts, the proper education of its citizens, its injustice or justice) is intended as an analogy of the soul (its division and parts, its proper education, of the path to the realisation of its virtue/ justice, i.e. the good life), the same method can be applied, at a multitude of levels, to the interpretation of the dialogue as a whole.

[22] On the mathematical properties of the proportion equation and, cf. Zovko (2008) 326 f., and n. 37, 40, 41. For complete mathematical formulation of the proportion equation and its component ratios cf. J. Adam, *The Republic of Plato. With Critical Notes, Commentary and appendices.* 2nd ed. with an introduction by D.A. Rees, Vol. II (Cambridge University Press ²1963), 64 n. 3. The fundamental ratio CB:AC gives the equivalencies CB:AC::EB:DC and CB:AC::CE:AD and furthermore CE:EB::AC:DC, *componendo*, CE + EB: EB::AD+DC::DC, in other words CB:EB::AC:DC, and so forth (for the remaining steps of the formulation cf. Adam 141, n. to 534a). Although in Plato's time the proportion was solved geometrically, and the numerical value was not calculated until the 16th century, Plato frequently refers to the so-called "rule of three", the method by which, on the basis of an original ratio, when three terms are given, a fourth can be derived (cf. above n. 21 and Zovko [2008] 327 f.). Plato is also credited with having been the first to study the proportion known as the "golden ratio", whose discovery is attributed to the Pythagoreans. The Line may have been intended to be sectioned according to the golden ratio, to which Plato refers in the *Timaeus* 31c-32a in describing the regular or Platonic solids, some of which contain the "golden section". "The golden ratio, also known as the divine proportion, golden mean, or golden section, is a number often encountered when taking the ratios of distances in simple geometric figures such as the pentagon, pentagram, decagon and dodecahedron." Wolfram Mathworld http://mathworld.wolfram.com/GoldenRatio.html (16 December 2011). The term "golden ratio" was not used until much later. Euclid calls this "division into the mean and the extreme", "the line *AB* is divided in extreme and mean ratio by *C* if *AB*:*AC* = *AC*:*CB*" (*Elements*, Book 6, Definition 3).

[23] On the Analogy of the Line, its interpretation and graphic illustration, cf. Adam (1963), 63ff. notes to 509dff. and Appendices to Book VII, I: "On the Similes of the Line and the Cave" 156-163; cf. also M.E. Zovko (2008), 323ff. Any diagram of the Line is necessarily inadequate to the task of depicting the dynamics and complexity of the Line's construction and exposition. Step-by-step illustration of the unfolding of the proportion and its interpretation, including possible alternatives and disputable aspects, would be more appropriate. The method of reasoning by analogy, namely, though employing analysis and inference, is not that of demonstrative proof, but an experimental awakening of insight into the actual content of our experience and the premisses on which that experience is based. G. Patzig provides an illustration of the Line similar to the one provided here, dividing the line, "for the sake of simplicity" and "in order to ease our understanding" into nine equal parts, and making the original cut at the "third partial division from below" , whereby he obtains as fundamental ratio 2:1 (*Tatsachen, Normen, Sätze* [Stuttgart: Reclam 1988], 134, cf. 132f.). Plato, a geometer at heart, in all probability would not have taken this approach. It is likelier he would have constructed the Line geometrically, "in the extreme and mean ratio" (for example, using triangles or the "golden rectangle") to produce what was later termed the "golden section", such that "as the



* Cf. M. Frings, *Der Goldene Schnitt,* http://www.marcus-frings.de/texte/text-gs.htm (12. April 2012); *Die Elemente von Euklid,* nach Heibergs Text aus dem Griech. übers. und ed. von Clemens Thaer, 8. Aufl. (Darmstadt 1991), VI, Def. 3, cf. II, Prop. 11; *Goldener Schnitt,* http://de.wikipedia.org/wiki/Goldener_Schnitt#Konstruktionen_mit_Zirkel_und_Lineal (12. April 2012); B. Peter, *Goldener Schnitt,* "Geometrische Konstruktionen (1)," http://www.dr-bernhard-peter.de/Goldsch/seite74.htm (12. April 2012); R. Herz-Fischler, *A Mathematical History of Division in Extreme and Mean Ratio* (Waterloo: Wilfrid Laurier Univ., 1987).

Fig. 1. Diagram of Plato's Line transected according to the Golden ratio

The Analogy of the Line is a seminal text in the history of philosophy and of metaphysics. Its division of the stages of knowledge and their objects was of pervasive influence for subsequent divisions of human faculties from Antiquity to the Modern period. As Adam maintained, the Line contains "perhaps more

whole line is to the greater segment, so is the greater to the less" (cf. Euclid, *Elements* Bk VI, Def. 3, and above n. 22). On various methods for dividing a line segment according to the "golden section" cf. R. Knott, *The Golden section ratio: Phi* http:// www.maths.surrey.ac.uk/hosted-sites/R.Knott/Fibonacci/phi.html and *Two-dimensional Geometry and the Golden section* http://www.maths.surrey.ac.uk/hosted-sites/R.Knott/Fibonacci/phi2 DGeomTrig. html#phi2D (16 December 2011).

δόξα – doxa = (more or less probable) opinion

ἐπιστήμη – epistēmē = (well-founded, true) knowledge

εἰκασία – eikasia = image-making ability, apprehension by means of images, imagination

πίστις – pistis = belief (confidence that something is what it is perceived to be)

διάνοια – dianoia = discursive thought, including deductive, inductive, inferential abilities

νόησις – noēsis = intuitive thought, grasp of the whole

ἀνυπόθετος ἀρχή – anupothetos archē = unconditioned beginning, first principle

εἰκόνες – eikones = images

ζῷα, φυτά, τὸ σκευαστόν – zōa, phuta, to skeuaston = animals, plants, manufactured things (the content of sense experience)

μαθηματικά – mathēmatika = objects of rational/analytic thought, discursive reasoning

εἴδη – eidē = ideas, principles of knowledge and being, object of noetic/intuitive thought

αἰσθητά – aisthēta = sensible things, objects of sensation, perception, belief, opinion

νοητά – noēta = intelligible things, objects of rational and intuitive thought

ὑποθέσεις – hypothēseis = hypotheses, assumptions, first, in the sense of self-evident assumptions, objects of rational thought, then, in a genuine sense, as provisional hypotheses of intuitive thought

Fig. 2. Transliteration and meaning of terms from the diagram of the Line

Platonic teaching than any passage of equal length in Plato's writings and is of primary and fundamental importance for the interpretation of his philosophy."[24] The Analogy of the Line is preceded by the Analogy of the Sun and followed by the Analogy of the Cave. Together the analogies of the Sun and the Cave, it forms the centerpiece of Plato's *Republic* in its search for an answer to the question "what is justice", or "what does it mean to live well?" (*eu zen*).[25] The Analogy of the Sun provides the backdrop for the Line, depicting the fundamental relationship between the realms of sense and intellection, sensible and intelligible things. The Sun is conceived as "offspring of the Good which the Good begot to stand in proportion to itself." An ontological correspondence and hierarchy is thereby established, the image of the Sun, the eye and its objects able to act as analogue for the realm of the intelligible, intellect and the Good, *because* of the latter's role as principle and archetype of the former. Thus, it may be said that: "as the good is in the intelligible region to reason and the objects of reason, so … [the sun] in the visible world to vision and the objects of vision."(508c).[26] In the Analogy of the Line, Socrates proceeds to elaborate the stages by which we attain to knowledge of being. He does this by presenting a task, the resolution of which will establish the preconditions for greater depth of reflection and independence of thought on the part of the interlocuter – insofar as he or she is able to "crack the code". At first, it is left to the reader's imagination to decide what the orientation of the Line should be, and which of the sections, the longer (larger) or the shorter (smaller), should represent the realm of

[24] Adam (1963) 63 n to 509d ff.
[25] The three central Analogies of the *Republic* may be taken to form a proportion of their own, whose fourth term is to be inferred from the "ratios" of the other three. Cf. M.E. Zovko (2008), 328f.
[26] For a detailed interpretation of the Analogy of the Sun cf. Adam, *loc. cit*. and M.E. Zovko (2008), 319ff.

intelligible, which the realm of visible things. It is unclear whether the sections should be assigned according to quantitative criteria (i.e. the relative "portion" of our experience which each occupies – whether in temporal or spatial terms, or by degree of intensity), or according to their relative value (the longer section representing what is more valuable, the shorter that which is less valuable). Subsequently, the criteria of relative clearness, reality and truth are introduced, but again the imagined interlocuter must decide how these relate to the individual functions of the soul and their objects and how they "map" onto the sections of the Line. Towards the close of the initial interpretation (the Line is further expanded on 533ff), Socrates speaks of "ascent", and of "higher" and "lower" sections of the Line (cf. 511e f.); and, in fact, the hierarchical relationships described in the Analogy the Sun are repeated in their gnoseological dimension in the Line. The orientation of the line corresponds furthermore to the stages of ascent described in the "pedagogical" image of the Cave. The Line is drawn here accordingly, not vertically, but as a diagonal, in order to convey the quasi-physical aspect of the ascent. The differentiation of "higher" and "lower" regions is, moreover, a natural one with regard to human beings' geocentric experience of the cosmos, "higher" regions generally being associated with what is of greater value and more akin to the divine, "lower" with that which is of lesser value, the bodily and the physical, which draw one earthwards.[27]

Plato's vision of the integrated functioning of a complex whole of sensible and intelligent faculties corresponds to a complex integrated whole of sensible and intelligent reality. True opinion (*doxa*) as based on the integrated functioning of image-making (*eikasia*, basis for sense perception and memory), and belief (*pistis*, the initial preconceptual recognition or identification of the "things" of sense experience for what they *are*), no matter how inferior to true knowledge (*epistēmē*) of ideas, provides the indispensable material foundation for these, whereby ideas are taken to be "clearer" (*saphesteron*), "truer" and "more real" than the things which are formed in their "likeness".[28] Nonetheless, the same universal ontological and gnoseological principles inform and enable the existence and knowability of both sensible and intelligible being. As the highest principle of being and knowledge, the Idea of the Good is the "unconditional" or "groundless beginning" (*archē anupothetos*) from which both ultimately proceed. As in the Analogy of the Sun the Idea of the Good is called not *ousia*, but the cause (*aitia*) or condition of being and truth which enables them to be and to be known,[29] so in the Analogy of the Line the *anhypotheton arhe* is not itself a *hypothesis*, is not itself an idea in the sense of an assumption made in the process of thought – but the unconditioned principle of thought and intellect itself.[30]

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[27] One might justifiably represent the Line as the radius of a sphere, proceeding (in its "lowest" stages) from any point on the periphery toward the center, the latter corresponding to Idea of the Good (from the Analogy of the Sun), and to the *anupothetos archē* of the Line, as the "highest" point of the "ascent" of knowledge. An analogous relationship is suggested by the (Neo-)Platonic geometrical metaphor, describing God as principle of reality: "Deus est sphaera cuius centrum ubique peripheria nusquam." Cf. D. Mahnke, *Unendliche Sphäre und Allmittelpunkt. Beiträge zur Genealogie der mathematischen Mystik.* Halle/Saale: Max Niemeyer, 1937. 6ff.

[28] Cf. *Republic* 510a-b; 511c. The relationship of "the likeness to that of which it is a likeness" (τὸ ὁμοιωθὲν πρὸς τὸ ᾧ ὡμοιώθη *Republic* 510b) establishes a thematic unity which extends through the whole of the Analogy, the understanding of which is essential for proper understanding of the interrelationships among the analogues. Images, for example, are likenesses of animals, plants, the whole class of manufactured products. Each of the following sections on an ascending scale "treats as images the things imitated in the former division" (τὸ μὲν αὐτοῦ τοῖς τότε μιμηθεῖσιν ὡς εἰκόσιν 510b), i.e. contains intentionally the more real and true "things" of which the things "below" were only a "likeness", the clearer and more real and truer being "the things seen only by the mind"(511b).

[29] *Rep.* 509b.

[30] Cf. *Rep.* 510b7; 511b7.

Strictly speaking, as principles of definitional unity, ideas cannot themselves be defined, but are presupposed by the process of definition itself and are assumed in the form of a hypothesis[31] to be tested. In the Analogy of the Line, two uses of hypotheses are described: an axiomatic use and one which is in a true sense hypothetical. In the first, the "technical" and "mathematical" use of hypotheses, hypotheses are employed as "arbitrary starting-points", i.e. as self-evident assumptions from which to deduce whatever may be deduced. In the ascent to the ideas described by the "highest" section of the Line, however, "reason itself lays hold [of the intelligible] by the power of dialectics" and "treating its assumptions not as absolute beginnings but literally as hypotheses, underpinnings, footings, and springboards" is able to "ascend to that which requires no assumption and is the starting point of all"[32], i.e. to the unconditional ground of hypothetical thinking itself. Having attained this, and taking hold of that which directly depends on it, it "descends" again, "making no use whatever of any object of sense but only of pure ideas moving on through ideas to ideas", arriving at last at the ideas of sensible things of experience from which our theoretical reasoning took its point of departure.[33] Ideas are thus presupposed as hypotheses which enable thinking itself. How then are these first principles of knowledge and being themselves to be discovered and what "knowledge" can we have of them? In what does the "being" of a first principle consist if it is not "like" the things of our experience? Why and to what extent is knowledge of first principles necessary to knowledge and experience as a whole?

In *Metaphysics* IV, 1003 a 31, Aristotle asserts that, as opposed to other sciences, which specialize in knowledge of the particular characteristics of beings and things, metaphysics as "first science" and "first philosophy" concerns itself with the "causes and principles of being in so far as it is" (*to on hē on*), insofar as things are what they are with respect to their essence and existence. Since the concept of being is multivalent (*pollachos legomenon*), Aristotle turns his attention to being as it is considered "in relation to the one and to one nature“ (*pros hen kai mian tina phusin*)[34]. It is a question here of the structural principle which enables the unity and connection of things, which is considered by Aristotle as the relationship between substance and the categories. Aristotle's position is that in the manifold of all that we call being we can find something in common, first of all the "characteristic" of existence, that which Aristotle calls "ousia" in the original meaning of the word. The task of philosophy is to recognize this principle as the ground of all being.[35] In considering "being as being" we rely on principles which are presupposed as *conditio sine qua non* of our argumentation, of which the most important is the principle of (non-)contradiction, since it excludes the possibility that something is and is not at the same time. Every word signifies something, and that which is signified cannot at the same time be the opposite of what it is, for example, „human being“ and "not human-being“. Anyone who would assert that something identical is at the same time not what it is would deny the principle of non-contradiction, the most reliable foundation (*bebaiotate ton archon*) of our knowledge and thought. This would result,

[31] the "strongest *logos*", cf. *Phaedo* 101a.

[32] μέχρι τοῦ ἀνυποθέτου ἐπὶ τὴν τοῦ παντὸς ἀρχὴν ἰών , *Rep.* 511b.

[33] *Rep.* 511b.

[34] Met 1003 a 34

[35] Cf. I. Düring, Aristoteles. *Darstellung und Interpretation seines Denkens* (Heidelberg: Carl Winter 1966), 596.

in Aristotle's eyes, in the annihilation of "substance and that which being is" (*ousian kai to ti ēn einai*)[36]. Aristotle affirms thereby the metaphysical character of philosophy, while suggesting that we come to knowledge of the original principles of knowledge by our constant use them in our reasoning.[37]

The relationship of identity in Aristotle (the *pros-hen*-relationship) represents a complex constellation of semantic and ontic interrelationships, in which words and things permeate each other in the focus of their shared identity and their interconnection.[38] With the help of the relationship to the "one", Aristotle considers the cognitive process, adopting therewith *de facto* Plato's explanation of phenomena on the basis of their eidetic characteristics.[39] Cognition takes as its point of departure that which is "more known" to us according to the senses (*gnorimoteron hēmin*) and proceeds towards what is more known to us according to its nature (*gnorimoteron tē phusei)*.[40] Explanation of the substantial structures of reality begins accordingly with sensibly perceivable "substances", which may be corruptible or perennial, but finishes with explication of the eidetic structures which are the principles and causes of unity and knowledge.

In *Metaphysics* III 4, Aristotle admits that on purely epistemic grounds it is necessary along with the endless multiplicity of particular things which exist in the phenomenal world to postulate the existence of other entities which enable their cognition: „we in fact know all things (*panta*) only insofar as they are one (*hen*), the same (*auto*) and general (*katholou*).“[41] Metaphysics, as first philosophy, concentrates primarily on that which in a *conceptual* sense is one and identical in things (*hen ti kai to auto*).

Aristotle conceives of his ontology as a refutation of Protagoras' relativism, as expressed in the statement: "man is the measure of all things, those which are that they are, and those which are not that they are not."[42] Being and reality are considered by Protagoras exclusively from the standpoint of our subjective relationship to them, that is, as they appear to us. For Aristotle, the fact that *knowledge* itself, albeit of contingent and corruptible being, does not decay, provides the main argument against relativism and scepticism.

2. Subjectivity and the metaphysical character of philosophy

From Antiquity to the modern period, metaphysics persists as general ontology, carrying forward Aristotle's inquiry into "being as being" through investigation of the structural unity in diversity of our experience and knowledge. Modern metaphysics begins with Descartes' methodical doubt, by which knowledge of being in general is reduced to its firm

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[36] *Met*. 1007 a 20.

[37] W. Wieland, *Die aristotelische Physik. Untersuchungen über die Grundlegung der Naturwissenschaft und die sprachliche Bedingungen der Prinzipienforschung bei Aristoteles*. 2. durchgesehene Auflage mit einem Nachwort. (Göttingen: Vandenhoeck & Ruprecht 1970), 218.

[38] G. E. L. Owen speaks in this context of "focal meaning", cf. „Logic and Metaphysics in Some Earlier Works of Aristotle“, in: I. Düring/ G. E. L. Owen, *Aristotle and Plato in the mid-fourth century*, (Göteborg 1960), 163-190, 179.

[39] Cf. *Met*. A 989 a 15; Z 1208 a 32; Q 1049 b 11; M 10077 b 2.

[40] *Met*. Z 3, 1029b 3-12.

[41] *Met*. 999 a 28-30.

[42] Cf. Diels-Kranz, Vol 2, 80 [74], B 1.

and unshakeable foundation in human self-consciousness. The metaphysical principle which Descartes arrives at by the method of doubt, upon which *fundamentum inconcussum* the reliability and certainty of our knowledge and thought processes are based, is the self-consciousness of the thinking subject: the *cogito me cogitare*. Thought (*cogitatio*) is the one constituent of human existence which cannot be eliminated in the process of doubt. By the establishment of the principle of self-consciousness in modern philosophy, metaphysics begins to distance itself from the traditional concept of being and its trancendent principles. The concept of an *ordo essendi* which dominated traditional metaphysics since Aristotle is therewith replaced by the concept of an *ordo cognoscendi*. Even though Descartes believes that the *res cogitans* needs to be founded in God's omnipotence and perfection, that is, in the concept of an *ens necessarium* – his equation of the concepts „dubito" and „cogito" in his method of doubt effectively constitutes the passing of traditional metaphysical realism. This pivotal event in the history of philosophy receives characteristic expression in Kant's position, as expressed in the *Critique of Pure Reason*, that the world is able to be known theoretically only as it appears to us, not as it is in itself.

2.1 Kant and the conditions of the possibility of knowledge

The ability of the human mind to find in itself sufficient principles of knowledge is equated by Kant with the idea of a „transcendental critique" , whose object of investigation are not books and historical thought systems, but the "conditions of the possibility of cognition *a priori*". These are the inherent conditions and principles of the self-conscious mind, according to which human reason and understanding necessarily function and by which experience is constituted. In this connection, Kant asserts that it is „only possible to learn to philosophize, that is, to put the talent of the mind into practice, by following its universal principles". He emphasizes therewith reason's need and incontestable right to investigate, reject or confirm those principles and origins.[43]

Kant fervently hoped that the transcendental method of critique would establish the metaphysical principles on the basis of which could be constructed a new *metaphysica generalis*.[44] In other words, while Kant believed that a transcendental critique was necessary in order to determine the boundaries and validity of our reasoning and understanding, he also believed that such a critique would enable the discovery of the apriori conditions which apply to any object of knowledge. This, he believed, would enable the establishment of a new kind of metaphysics, whose goal would be not to expand the boundaries of theoretical knowledge beyond sense experience, but to discover the "elements and highest maxims" of reason which enable "the very *possibility* of some sciences" and which govern "the use of all sciences." This newly established metaphysics would not attempt to usurp the primacy of the sciences in the investigation of nature and the realm of empirical cognition, but would

[43] Cf. *Critique of pure Reason* (B 866), henceforth *CR*. Quotes from Kant, if not otherwise noted, are given in the translation of W. Pluhar: Immanuel Kant, *Critique of Pure Reason,* tr. W. Pluhar, intro. P.W. Kitcher, (Indianapolis: Hackett, 1996). Cited according to the page numbers of the second edition from 1787 listed in the margins.

[44] Despite the disrepute and contempt into which metaphysics had fallen as a result of its neglect of the necessary propaedeutic which only a transcendental critique of pure reason could provide, Kant was sure "that we shall always return to metaphysics as we would to a beloved woman with whom we have had a quarrel" Cf. B 878.

reestablish philosophy's primary objective of referring "everything to wisdom". For whereas mathematics and natural sciences have a "high value as means to purposes of humanity", they remain focussed on the means to "contingent purposes", and only in the end on the means "to essential purposes of humanity". Metaphysics, on the other hand, "a rational cognition from mere concepts," provides "the completion of all *culture* [*cultivation*] of human reason" – a task which remains "indispensable" even after the false assertion that metaphysics is possible as a science is set aside. The fact that metaphysics has a primarily negative role to fulfill with respect to the sciences, as regards its establishment of the boundaries for the application of the categories of understanding and the ideas of pure reason, does nothing to reduce its value. Rather, it "gives to metaphysics dignity and authority through the censor's office that it operates" , securing "the general order and the concord...indeed the prosperity of the scientific community", and at the same time ensuring that "that community's daring and fertile works" do not deviate from their primary purpose, which is to ensure human happiness.[45]

By its influence on subsequent developments in philosophy, Kant's *Critique of Pure Reason*, together with his later *Critiques* of practical reason and of judgment, extended the scope of transcendental critique beyond its function as a propadeutic to the proper use and role of concepts of pure reason in scientific endeavour to establish the foundations for a metaphysics of subjectivity. The foundational aspect of Kant's idea of *Critique* crystallizes in the centerpiece of his investigation of the structure, application and epistemic scope of human reason, the "*Deduction of the pure concepts of reason*".[46] Kant's goal in the Deduction was to demonstrate that pure reason comprises not merely the ability for formal-logical reasoning, but the unified source of "pure" categories of understanding, the original and singular "synthetic activity" which produces the "concepts" or "forms" of judgment operative prior to sense experience. These enable, together with the synthesis of "apprehension" through (external and internal) sense intuition under the apriori forms of space and time, and the "synthesis of reproduction in imagination," the complete synthesis of whatever is "given" to us in sense perception into a coherent whole of experience.[47] Whereas in the "metaphysical deduction" of the categories, Kant preemptively establishes "the apriori origin of the categories as such through their complete concurrence with the universal logical functions of thought,"[48] his goal in the "transcendental deduction" is to justify his assertion of the categories' role in cognition – since they are neither discoverable in experience nor deducible from self-evident concepts. In the transcendental deduction, he thus attempts to determine how the categories of understanding arise from our spontaneous ability to synthesize, the "transcendental unity of apperception", and how, as conditions of the possibility of cognition, they are able to refer to objects of experience "a priori", i.e. antecedent to actual experience. In other words, in the transcendental deduction Kant seeks to determine how "subjective conditions of thought" can have "objective validity".[49] The transcendental deduction thus refers to a specific form of self-consciously directed reflection

[45] ibid.
[46] Cf. ibid. A XVI.
[47] Cf. ibid. A 98f., A 100f.
[48] Kant took the table of logical functions which he adopts on the basis of Aristotle's system of logical categories and syllogisms to be a complete description of those functions. Cf. ibid. B 159.
[49] ibid. B 122.

on a formal aspect of our experience which is separable in thought, though in fact never separated from the sensible occasion of experience.[50]

Kant's original insight and the basis for his deduction of the categories of the understanding is his recognition of the fact that the fundamental form of any judgment whatsoever, the connection of a subject with a predicate, enables insight into certain preexisting formal criteria of cognition, and thus recognition of forms of thought which constitute our self-consciousness. In the "metaphysical" and "transcendental" deduction of the categories, Kant showed that the categories are conditions of our understanding of anything "objective" whatsoever. In this respect, transcendental philosophy establishes the basis for a new form of metaphysics, a metaphysics of subjectivity. The world and the phenomena of experience appear to us according to inherent conditions of sense perception by means of the synthetic unity of apperception under the categorical criteria of our self-consciousness as derived from the logical functions of understanding, which unify everything which we perceive and concepts of quantity, quality, relation, and modality.

With the help of the so-called "schematism"[51] of judgments, Kant ties the four cardinal divisions of the categories: quantity, quality, relation, modality, as the preconditions that allow anything to be thought as unity, to actual sense experience, arriving thus at four principles of judgment:

- the principle of the necessary extensive magnitude which allows the objectivisation of phenomena;
- the principle of the necessary intensive magnitude or corporal perceptibility of objective phenomena;
- the principle of necessary causal connection (Zusammenhang);
- the principle of modal determinability with respect to whether experience is possible, actual or necessary.

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[50] Cf. ibid. 118.

[51] The ability to "subsume" empirical content under the unity of the forms of judgment derives from the integrated synthetic functionality of our powers of understanding, sense intuition, and imagination, "a blind but indispensable function of the soul without which we would have no cognition whatsoever, but of which we are conscious only very rarely." (B 103) Since concepts of understanding are heterogenoeous with respect to sensible intuitions, a third thing is required to enable an intuition to be "subsumed" under a category and categories to be applied to appearances (B 176f.). A "transcendental schema" is the third thing that mediates between the two, being homogeneous with the category, on the one hand (as being universal and resting on an apriori rule), and the appearance, on the other, "insofar as every empirical presentation of the manifold contains *time*" (B 177f.). Kant determines the schema to be a "transcendental time determination". The "schematism" itself, i.e. our understanding's application of forms to the appearances "is a secret art residing in the depths of the human soul ... whose true stratagems we shall hardly ever divine from nature" (B 180f.), but which involves the imagination's production of an image, the "schema" of sensible objects being "a product and, as it were, a monogram of the pure apriori imagination through which, and according to which, images become possible in the first place", "a transcendental product of the imagination which concerns the determination of inner sense as such, according to conditions of that sense's form (viz. time), in regard to all presentations insofar as these are to cohere a priori, in conformity with the unity of apperception, in one concept." (B 181)

With respect to these four principles of possible objective experience, Kant is able to assert that transcendental subjectivity, the "highest principle of all synthetic judgments", must be seen as the foundation of objectivity. For „[E]very object is subject to the conditions necessary for the synthetic unity of the manifold of intuition in a possible experience." The possibility of metaphysics understood as *metaphysica generalis* is contained in the application of these four principles. Synthetic judgments, namely, "are possible a priori", if the "formal conditions of a priori intuition, the synthesis of the imagination, and the necessary unity of this synthesis in a transcendental apperception" are referred to "experiential cognition as such" (as the conditions of its possibility). If we accept, furthermore, that "the conditions of the *possibility of experience* as such are at the same time conditions of the possibility of the *object of experience*", then the conditions of synthetic judgment, including the principles of judgment, "have objective validity in a synthetic a priori judgment."[52]

The objective deduction of the pure concepts of reason is only achieved in the schematism, that is, in the so-called proof of the principles of judgment. In other words, only in the application of judgments to our experience is it possible to speak of truth and falsehood. The synthetic unity of self-consciousness represents thereby for Kant "the highest point to which should be tied all use of understanding, even the whole of logic, and in accordance with it transcendental philosophy; indeed, this power is the understanding itself."[53] As Kant affirms in a letter to Prince Beloselsky, it is the sphere of higher powers of cognition derived from that unity which represents the specificum of human beings, and sets them apart from other living beings, whereas sense apprehension and mere representation of external objects without the synthetic unity of self-consciousness is characteristic of animals: "*...apprehensio bruta* without consciousness is only for lifestock, ... the *sphere* of *apperception*, that is of concepts, comprises the sphere of understanding as a whole." Nevertheless, "[T]hrough neglect, human beings can sometimes fall back to the emptiness of stupidity (*betise*)".[54] In his 1790/91 lectures: „Directions on the Knowledge of the World and of Man" („Anweisungen zur Welt- und Menschenkenntnis"), Kant emphasizes that "understanding is called the higher, and sensibility the lower faculty of knowledge". In contrast to the primarily receptive character of the "lower faculty", i.e. of sense intuition and representation of objects, "[T]he dignity of the understanding is comprised by its spontaneity, that is, its ability to freely act." Understanding, thus, as "the ability (Vermögen) to be conscious of every state of mind (Gemüt)", is "the ruler in the house", and we must allow it to rule, if we are not to be left to empirical dissipation in the "throng of phenomena" (im Gewühle von Erscheinungen).[55]

Kant's transcendental deduction is thus fundamentally opposed to an epistemology which conceives of knowledge as a purely descriptive represention of external reality. His transcendental project is not limited to explication of the epistemic structures of self-consciousness, however. Rather, the "transcendental logic", whose task is to determine the "source (Ursprung), extent and validity (Gültigkeit)" of every kind of knowledge,[56] is to be

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[52] ibid. B 197.
[53] ibid. B 134 n.
[54] Kant, *AA* 11: 345.
[55] Cf. *Immanuel Kants Anweisungen yur Welt- und Menschenkenntnis. Nach dessen Vorlesungen im Winterhalbjahre 1790-1791*. Ed. F. Chr. Starke, Leipzig 1931, 7; cf. CR A 111, 108. Cited in: G. Schulte, Immanuel Kant (Frankfurt/New York: Campus, 1994[2]), 97, 98.
[56] ibid. B 81.

completed and crowned by the deduction of the *transcendental ideas*. Together with the exposition of the other preconditions of knowledge, the deduction of transcendental ideas is intended to permit their expansion to a metaphysical system of thought. From Kant's transcendental viewpoint, an idea is "a necessary concept of reason for which no congruent object can be given in the senses."[57] Ideas, thus, can "never become cognition of an object". Nevertheless, those "presentations" (Vorstellungen) of reason which we call ideas have a specific indispensable function in human cognition, thought, and action. Ideas and the associated "problem of the supersensible", arise, namely, from reason's demand "for the unconditioned for the given conditioned". This demand is inherent to the nature of reason and occurs with respect to each of the higher cognitive powers: the power of understanding, of judgment and reason per se, with respect to theoretical knowledge, reflective judgment and the practical use of reason.[58] Ideas, taken "in the broadest sense", refer thus "to an object according to a certain principle (subjective or objective)." [59] The tendency of the higher cognitive powers to expand their use beyond application to objects which can be intuited through sense experience (or, in the case of aesthetic and teleological ideas, beyond concepts which can be applied to such objects) gives rise to the realm of ideas as a whole, including "ideas of reason" , "practical ideas"[60] , "aesthetic ideas"[61] and what might be termed

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[57] ibid. B 384.

[58] ibid. For each of these higher cognitive powers, there arises, when its use is expanded beyond the realm of conditioned objects, an antinomy, "(1) *for the cognitive power*, an antinomy of reason concerning the theoretical use of the understanding when this use is extended up to the unconditioned; (2) *for the feeling of pleasure and displeasure*, an antinomy of reason concerning the aesthetic use of judgment;" and "(3) *for the power of desire,* an antinomy of reason concerning the practical use of our intrinsically legislative reason." This division, and the corresponding division of ideas, may be seen to correspond to the three questions which according to Kant express the entire *interest* of reason: what can I know? what should I do? what can I hope for? whose intention is seen to converge and culminate in the one question which comprises the whole concern of philosophy and in itself describes the whole field of philosophy in its "cosmopolitan" significance: "What is a human being?" "The first question is merely theoretical…The second is merely practical… The third: if I do what I ought, what may I then hope for, is theoretical and practical at the same time…For all hope concerns happiness, and is with regard to the practical and to moral law the same thing, as cognition and natural law with respect to theoretical knowledge of things." Cf. *CRV* B 832f.; cf. Kant, *Logik* AA 16: 25.

[59] *Critique of Judgment* § 57, Comment I, 342. the *Critique of Judgment* differentiates two main kinds of ideas, the aesthetic or those which refer to an intuition, "according to a merely subjective principle of the mutul harmony of the cognitive powers (imagination and understanding)", and the rational, i.e. those which refer "to a concept, according to an objective principle" although they can never yield cognition of the object (*CJ* 342). Among ideas of the second type, Kant counts ideas like "the supersensible substrate of all appearances generally", but also the "rational concept of the supersensible that must be regarded as underlying our power of choice in relation to moral laws, i.e. , the rational concept of transcendental freedom." ibid. 343. In the case of ideas of reason, it is the "*imagination* with its intuitions" which fails to reach the given concept, whereas in the aesthetic ideas it is the "*understanding* with its concepts" which "never reaches the entire inner intuition that the imagination has" "in its free play" "and connects with a given presentation." The distinction between rational and aesthetic ideas undergirds the transition from knowledge to morality, providing the basis for a theory of motivation and inspiration to moral action.

[60] I. Kant, *Critique of Practical Reason,* tr. W. Pluhar, introd. by S. Engstrom (Indianapolis/Cambridge: Hacket 2002), 134f (pagination of the *Akadamie Ausgabe*). Practical reason requires the existence of the "postulates of practical reason" – God, freedom, immortality - for the possibility of its object, the

"teleological" ideas.[62] The first are the particular topic of the Transcendental dialectic, the second come into their own in the *Critique of Practical Reason*, while the last two are the topic of the *Critique of Judgment*.[63]

Ideas of reason, though not *constitutive* of human knowledge and although their own "objective reality cannot be cognized in any way", are "not abitrarily invented", but "imposed by the nature of reason itself",[64] and must insofar be "purposive" and "accordant" with reason's correct use.[65] Thus, while their tendency "to expand positively the realm of the

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"highest good". The practical postulates – as "assumptions in necessarily practical regard", are "theoretical", but "indemonstrable" propositions which proceed from the "principle of morality", a "law by which reason determines the will directly". Kant also speaks of the practical ideas: the idea of immortality "flows from the practically necessary condition of the adequacy of duration to the completeness of fulfillment of the moral law", the idea of freedom "from the necessary presupposition of dependency on the sense world and the ability to determine one's will according to the law of an intelligible world", the idea of the existence of God "from the necessity of the condition of such an intelligible world". These concepts remain "problematic", i.e. merely thinkable, yet they are affirmed (though not cognized) as concepts to which real objects correspond, "because practical reason unavoidably requires the existence of these for the possibility of its object, the highest good", which in practical respect is absolutely necessary. The idea of freedom, paradoxically, is the only idea of pure reason which finds its object among matters of facts, since its reality, as idea of "a special kind of causality (the concept of which would be transcendent if we considered it theoretically), can be established through practical laws of pure reason and, [if we act] in conformity with these, in actual acts, and hence in experience." Cf. *CJ* 468.

[61] Unlike, *transcendental ideas* or "concepts of reason", which are "indemonstrable", that is, for which no corresponding object can ever be given in sense intuition, *aesthetic ideas* are "*unexpoundable* presentations of the imagination", for which no adequate concept of the understanding can be found (*CJ* 342).

[62] Here it is a question of the idea of "purposes", "purposiveness" or "final causes", i.e. reason's "regulative" concept of "a causality distinct from mechanism" , a concept which serves as a "guide" for reflective judgment by which to conceive of organized natural products, their production and also the whole of nature, according the subjective principle of judgment, which is that of a "purposiveness without purpose" (*CJ* 226, 236, 241). According to this principle "we must judge certain things in nature (organized beings) and their possibility in terms of the concept of final causes", i.e. not according to an objective view of finality, but "as if" they had been produced by "a cause that acts according to intention….in a way analogous to the causality of an understanding" (ibid. 389, cf. 397f.). This is not to say that we can "objectively establish the proposition" that an intelligent being exists which produced things according to its intention, but that "given the character of our cognitive powers, i.e. in connecting experience with the supreme principles of reason, we are absolutely unable to form a concept of [how] such a world is possible except by thinking of it as brought about by a supreme cause that *acts intentionally*." For although "we do not actually *observe* purposes in nature as intentional ones, but merely add this concept…in our *thought* as a guide for judgment in reflecting on these products", "it is quite certain that in terms of merely mechanical principles of nature we cannot even adequately become familiar with, much less explain, organized beings and how they are internally possible." (ibid. 399, 400)

[63] Kant defends his decision to adopt the word "idea", based on Plato's use of the word to signify "archetypes of things, and not merely keys to possible experiences." Plato's endeavor with respect to the origin of moral and natural things from ideas is one "that deserves to be respected and followed". For "Plato well discerned" that "our cognitive power feels a much higher need than to merely spell out appearances according to synthetic unity in order to be able to read them as our experience." Cf. B371ff., B374ff.

[64] ibid. B 384, 386, cf. B 310.

[65] ibid. B 670.

objects of our thought beyond the conditions of our sensibility" creates an "irresistible" illusion,[66] nonetheless, it is not the ideas themselves , but their misdirection which leads to "errors of surreption".[67] Directed toward "the purposive engagement" of the understanding, ideas of reason have a legitimate "regulative" use. By means of ideas, reason sets "a certain collective unity" or "*focus imaginarius*", "as the goal of the understanding's acts, which otherwise deal only with distributive unity."[68]

Ideas of reason refer hence to the "use" of understanding in its entirety, "in order to prescribe to the understanding the direction leading to a certain unity …which aims at collating all acts of understanding… in an *absolute whole*."[69] These ideas consider "all experiential cognition as determined by an absolute totality of conditions." They seek "to take the synthetic unity of thought in the category up to the absolutely unconditioned", i.e. to a "concept of *totality of conditions* for a given conditioned".[70] Corresponding to the three "kinds of relations that the understanding presents by means of the categories", three types of unconditioned arise with respect to the synthesis of intuitions under the categories: the "*categorical* synthesis" in the ultimate *subject* of all predications, the "*hypothetical* synthesis" of the the *complete series of conditions* or causal relations, and "the *disjunctive* synthesis of the parts in a *system*" in the idea of completeness of all that is possible. Kant thus arrives at the transcendental ideas of the Soul (the "complete" or "substantial" subject), World, and God. [71]

The actual cause of reason's tendency to expand the use of pure understanding beyond the realm of possible experience, and its attempt to make possible intuitions "conform to concepts – instead of concepts' conforming to possible intuitions", lies in the fact "that apperception, and with it thought, precedes all possible determinate arrangement of presentations."[72] In referring "necessarily to the entire use of understanding", ideas of reason have transcendental or subjective reality.[73] As epistemic conditions of experience, ideas of pure reason have a central role to play in the new metaphysics of subjectivity – in conjunction with the postulates of practical reason: God, immortality of the soul, freedom, with the aesthetic ideas of Beauty and the Sublime, and the teleological ideas of purposiveness in organic beings, in nature as a whole, and in human beings as final purposes.

The central role of the postulates of pure practical reason: God, immortality, freedom in Kant's transcendental project is manifest by his lectures on metaphysics, where Kant affirms that we cannot break our understanding of the habit of asking the questions of metaphysics,

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[66] ibid. B 672, Cf. B 311, B 343f.

[67] The error of "slipping in a concept of sense as if it were the concept of an intellectual characteristic" Cf. Pluhar, *CR* B 672 n. 14.

[68] *CR* B 672. In their proper use, ideas of reason not only "guide" and "further" cognition, but also make possible "a transition from the concepts of nature to the practical concepts" (Cf. ibid. B 386).

[69] ibid. B 383 f., B 378.

[70] ibid. B 383, Cf. B 379.

[71] *Prolegomena* § 43, Cf. *CR* B 379. The exposure of the necessary illusion which arises from reason's attempt to apply these concepts to the realm of theoretical knowledge is the task which Kant sets himself in the Paralogisms, the Antinomies and the exposition of the Transcendental Ideal (Cf. *CR* B399ff.).

[72] ibid. B 345.

[73] ibid. B 384.

so intimately are they bound up with our way of thinking. Those who would do so only create for themselves a new form of metaphysics: for those ideas are so "woven into the nature of the mind… that we cannot simply rid ourselves of them," and all those who, like Voltaire, would appear as "despisers of metaphysics" have, in fact, "their own metaphysics …because every one wants to think something about his soul."[74]

Despite his critique of misguided attempts to expand the realm of theoretical knowledge beyond the boundaries of sense experience, Kant is thus deeply aware that there is a sense in which *knowledge* of what transcends the realm of empirical knowledge as condition of its possibility, and of the ideas which provide the world of our experience with meaning and purpose, *is* possible, though he admits „that this type of investigation will always remain difficult, because it contains in itself a *metaphysics of metaphysics.*"[75]

2.2 Post-metaphysical thought and metaphysics of subjectivity – Evolving the transcendental approach

Kant's limitation of "theoretical" knowledge in a strict sense to the realm of sense perception, and his critique of traditional proofs for the existence of God, went hand in hand with relocation of metaphysical questions to the realm of practical reason, and aesthetic and teleological judgment, that is: with an understanding of the complexity of knowledge in relation to the whole of our being and experience in the diversity of its forms. The advance of experimental and mathematical testing of hypotheses in the natural sciences since Galileo, on the other hand, tended to favour descriptive knowledge as a representation of empirically observable phenomena, and the associated dichotomy of fact and value. This preference contributed to the rise of physicalism and logical positivism, with its one-sided reading of Kant and rejection of metaphysical questions out of hand as meaningless. With their "professionalistic" rhetoric and scientistic reductionism, the language and analytic schools of philosophy which came to dominate Anglo-American philosophy departments in the 20th century effectively banned rational discourse on topics such as transcendence and the absolute in art, religion and speculative philosophy from the arena of serious philosophical debate, denying its meaningfulness and possibility (analytic "triumphalism"[76]). Despite efforts to eradicate interest in traditional metaphysics, however, the "post-metaphysical" era heralded in by phenomenologists, existentialists, logical positivists and scientistic reductionists alike, proved unsuccessful in eliminating interest in metaphysical questions. Instead, as Nagl noted, a pluralism of new approaches to transcendence and to metaphysical questions emerged among representatives of Critical Theory (Habermas and Adorno), Deconstructionism (Derrida), Pragmatism and Pragmaticism (Royce, James, Peirce) and Neopragmatism (Rorty, Putnam). The crisis of metaphysics produced thus not only physicalism and the scientistic reductionism of logical empiricism, but also a more "restless" variant of post-metaphysical philosophical reflection, an interest in "metaphysics after metaphysics", to which alternative Nagl reckons important

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[74] Henrich, *Konzepte. Essays zur Philosophie in der Zeit* (Frankfurt/M: Suhrkamp 1987) 14; I. Kant, *AA* 29: 765.

[75] Cf. letter to M. Herz from May, 1781; Kant, *AA X,* 195.

[76] Cf. Nagl 13.

thinkers of the 20th and 21st century: Benjamin, Adorno, Habermas, Wittgenstein, Putnam, Cavell, Arnold Davidson, James Conant.[77]

Post-metaphysical interest in metaphysics is embodied in a specific form by contemporary metaphysics of subjectivity, which has its roots in renewed reflection on central insights of the philosophy of Descartes, Kant and German Idealism, and attempts to develop those insights within the context of contemporary scientific achievements, modern attitudes, and our present-day experience of the world.[78] Evolving Kant's transcendental approach, German Idealism took as its point of departure the premise that the spontaneous and productive activity of the subject contains the foundation for philosophizing. Finite subjectivity, however, if it is to provide insight into the highest, autonomous principle of being and thought, must be liberated from its own inherent boundaries, from its dependency on the object (of knowledge, of desire, of action), on the one hand, and from its finitude, on the other. This can only occur through a specific form of self-directed, self-conscious reflection native to our subjectivity, but discoverable only by preliminary abstraction from and carefully deliberated re-construction of our conscious experience of ourselves and the world according to what may be inferred (from structures which may be elucidated in every conscious and self-conscious act) to be the stages of its natural development.[79]

The efforts of the German idealists to explain thought and human existence from analysis of the deep structures of human self-consciousness, as they evolve from the spontaneous activity that is the source of self-consciousness, gained renewed attention in the representatives of contemporary metaphysics of subjectivity. Along with renewal of metaphysics from the standpoint of a "speculative" analysis of self-consciousness, contemporary metaphysics of subjectivity emphasizes the subject's consciously reflected orientation and direction of its life, harking back, thus, to the original unity of epistemology, ontology and ethics from which the history of philosophy took its point of departure. In a polemical exchange with Habermas,[80] D. Henrich, one of the main representatives of metaphysics of subjectivity, defends the assertion that metaphysics is neither a palliative nor

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[77] Cf. Nagl 15. Thinkers like Putnam and Austin reject the encroachment of descriptive cognitive language into contexts where it does not apply (eg. vis-à-vis "speech-acts", and the manifold situations, from promising to judging to praying, where we "do things" with words) . Description, as Nagl argues – drawing on Kant's philosophy of religion and contemporary philosophers of religion whose thought has been influenced by it – is not the primary function of language and not the universal standard by which all other types of "language game" can be judged.

[78] Cf. J. Ritter, *Subjektivität. Sechs Aufsätze.*(Frankfurt a. M.: Suhrkamp 1974). D. Henrich, *Bewußtes Leben. Untersuchungen zum Verhältnis von Subjektivität und Metaphysik.* (Stuttgart: Reclam 1999); D. Henrich, *Denken und Selbstsein*. Vorlesungen über Subjektivität (Frankfurt a. M.: Suhrkamp 2007); M. Frank (Hg), *Selbstbewusstseinstheorien von Fichte bis Sartre*. (Frankfurt a. M.: Suhrkamp 1991); M. Frank *Selbstbewußtsein und Argumentation* (Assen: Van Gorkum 1997); M. Frank *Selbstbewusstsein und Selbsterkenntnis* (Stuttgart: Reclam 1991); R. Wiehl, *Subjektivität und System* (Frankfurt a.M.: Suhrkamp 2000).

[79] Such as, for example, carried out by J.G. Fichte in his *Foundation of the Whole Science of Knowledge* from 1794. Cf. *Grundlage der gesammten Wissenschaftslehre*, in: *Fichtes Werke,* Vol. I, ed. I. H. Fichte (Berlin: de Gruyter 1971) 83-328; cf. I. Teil, 91-123.

[80] Henrich, „Was ist Metaphysik – was Moderne? Zwölf Thesen gegen Jürgen Habermas“ u: *Merkur* 439/440 (1985), 898 f.; *Konzepte, Essays zur Philosophie in der Zeit* (Frankfurt/M: Suhrkamp, 1987), 11-43.

obsolete, but a fundamental aspect of philosophy and constituent of modernity, retaining a position analogous to that which it held in older philosophical tradition. In Henrich's estimate, the most important thinkers and inventors of the 20th century were at heart metaphysicians, or demonstrated an openness to metaphysical thought: „That is true of Cantor, Einstein, Kandinsky, Klee and Becket, just as it is for Heidegger and Wittgenstein."[81] On the other hand, as Putnam recognized, the physicalism and reductivism of the "old" analytic school of philosophy engendered an uncritical neo-ontology of its own.[82]

Representatives of a metaphysics of subjectivity do not conceal their satisfaction that the second generation of analytical philosophers (Thomas Nagel, Roderik Chisholm, Sidney Shoemaker, Robert Nozick, Wilfrid Sellars) has abundantly contributed to the destruction of scientific naturalism, imposed upon thinkers of the Anglo-American world by W. V. O. Quine. This eminently antimetaphysical approach, at base a coherently argued materialism, advocates the reduction of philosophy to a physicalistic description of the world, whose final goal, in Henrich's estimate, is the self-annihilation of philosophy and the disappearance of all fundamental philosophical questions.[83] In the physicalist view of the world, which came to prevalence in the wake of Wittgenstein's declaration that the thinking subject does not exist, there is no place for subjects and subjectivity.[84] In recent decades, however, physicalism has lost its universal appeal, its demise ushered in by contemporary theories of self-knowledge. Wilfrid Sellars, in „The Myth of the Given"[85], showed the relationship of thought and reality to be far more complex than mere representation of external reality. Hector-Neri Castañeda recognized the importance of self-consciousness in the mediation between the world and thought, and Arthur Danto drew attention to the need for reflection on that which is called objective mind and to the fact that it is not sufficient, if we are to distinguish human beings from animals, to define human beings as *entia repraesentantia.*[86] Quine's disciple, Thomas Nagel, convincingly showed that the concept of subjectivity cannot be reduced to the linguistic use of the first person singular, nor does it disappear in a physicalist picture of the world. Sidney Shoemaker has shown in detailed analyses of the descriptivity of "selfhood" how these always presuppose self-consciousness, while Robert Nozick has brought Fichte's theory of identity of "selfhood" *mutatis mutandis* to new relevance, showing selfhood's role in efforts to genuinely understand things within the context of a meaningful whole, as opposed to a type of philosophical discourse confined to unconnected and contextually unintegrated proofs.

Taking Kant's unification of the three fundamental questions of philosophy in the key question of how to reflect upon the nature of human beings as model, representatives of a metaphysics of subjectivity advocate focussing modern ontology on human subjectivity. In their view, only

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[81] Henrich, *Bewußtes Leben*, 82.
[82] Cf. Nagl 313.
[83] Cf. Henrich, *Konzepte, S. 72*. Frank (1997), 13 f.
[84] Wittgenstein, *Tractatus logico-philosophicus,* 5.631: „Das denkende, vorstellende, Subjekt gibt es nicht"; „Das Subjekt gehört nicht zur Welt, sondern ist eine Grenze der Welt" (5.632).
[85] Cf. W. Sellars, *Empiricism and the Philosophy of Mind* [EPM*], edited by Robert Brandom, (Harvard University Press. 1997).
[86] Cf. Arthur C. Danto, *Connections to the World: The Basic Concepts of Philosophy*. New York: Harper & Row 1989, cap. 40.

by such a focus can the gap between theoretical and practical life be overcome, and only then will theory be in a position to articulate fully our experience of the world and ourselves. The task of philosophy is accordingly to consider the questions which arise from the activity and structure of our consciousness – whether in our experience of everyday life or in the world of scientific investigation – in the light of their *reasons* and their interconnectedness in a context.

Advocates of a metaphysics of subjectivity like D. Henrich, J. Ritter, M. Frank, and R. Wiehl grant that "metaphysics" and "subjectivity" may not be the most readily accessible terms for those engaged in contemporary philosophical debate. This is due to the fact that practically all paradigm changes of the modern period (linguistic turn, pragmatic turn) have been directed against just these terms. All major philosophical movements of the 20th century argued decidedly for the superfluousness both of metaphysics and of subjectivity in philosophy. Representatives of logical positivism, philosophy of language, pragmatism, phenomenology, hermeneutic philosophy and post-modernity, for all their differences, agree in their blanket rejection of every form of metaphysics and every aspect of abstract subjectivity. Nevertheless, no more suitable concepts are available for the task of reflection on and articulation of conscious and self-conscious life. Any attempt to eliminate the term "self-consciousness", moreover, belies the essential role which the individual human subject plays in the organization and planning of an intentionally led life.[87]

2.3 Henrich's analysis of self-consciousness as a basis for metaphysics

Representatives of metaphysics of subjectivity apply various models from modern philosophy in their theory of conscious life, for example, Descartes' prereflexive acquaintance with our knowledge of ourselves, Kant's concept of transcendental unity of apperception and the associated insight into the inseparability of self-knowledge from knowledge of the categories as pure concepts a priori, Fichte's theory of self-consciousness as distilled in the question: whence the „I“ knows that it relates to itself when it relates to itself, and last, but not least, Hegel's concept of the self-conscious Absolute which „recognizes itself in the other of itself as itself“ („Sich im Anderen seiner selbst als sich selbst wissen).[88] Appealing to the founder of the philosophy of modernity, Kant, Henrich affirms that metaphysics is formed and constituted "in the spontaneous thought of every individual".[89] Like Kant, Henrich sees all questions of philosophy are united in the fundamental question: what exactly does each of us think of himself and the last questions which by nature preoccupy us human beings? In Henrich's view, it is this fundamental question which enables us to differentiate and recognize things in world, provides the coherency and groundedness of our argumentation, establishes the relevancy of the structures and autonomy of subjectivity for our ethical actions, and allows us to reflect upon and give meaning to our own existence.

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[87] Cf. M. Frank (1997), 13: „Wenn wir ...darauf verzichten, uns ...als Subjekte zu verstehen, können wir überhaupt nicht mehr Philosophie treiben ... nach der Elimination von Subjektivität [ist] keine Möglichkeit mehr den humanen Gehalt zu retten, der in einer der Formulierungen von Kants kategorischen Imperativs verkörpert ist.“

[88] Cf. Dieter Henrich, *Fluchtlinien. Philosophische Essays.* (Frankfurt: Suhrkamp 1982), 175.

[89] Henrich, *Konzepte* 14.

Henrich admits that the concept of subjectivity has much in common "with what Kierkegaard called *existence* and Heidegger...*Dasein*."[90] These terms, however, are inadequate for description of the structures of self-knowledge, of the *truth* contained in the explication of those structures, and of the fundamental unity and reality in which they are rooted. Knowledge of self and of the productivity of the human mind – the activity by which the human intellect constantly re-creates the content which invests our lives with meaning – comprises the fundamental characteristic of a metaphysical theory of subjectivity, wherein human beings are distinguished from all other animals: „We are *subjects* by having such knowledge of ourselves and on the basis of this knowledge we come to knowledge with a claim to truth and in acting realize our lives in the world."[91]

Detailing his theory of self-consciousness, Henrich affirms that the "I" is that which relates to itself, is "conscious of itself", and thus presupposes the existence of self-consciousness. Without this close "familiarity" (Vertrautheit) with oneself it would be impossible to explain the relationship of the subject to any "objective" state of things and vice versa. Self-consciousness, which constitutes itself in the "identity of its relata", and articulates itself by means of the principle "I = I", attains philosophical relevance only if it is conceived as the "I" which in understanding becomes conscious of its identity with itself. The possibility is opened thus for philosophy to consider mind and consciousness in the life of human beings and to interpret their conscious life with respect to the „unity of meaning"and the possibility of its harmonious integration with the "all-encompassing unity" (All-Einheit).[92]

Henrich's primary intention in showing self-consciousness to be the foundation of human life and knowledge is thus not epistemological, but to demonstrate that it is self-consciousness which enables us to discover how to direct our lives in a meaningful way: "The fact that our life is conscious, is the precondition for us to be able to *lead* our lives", – and not have our lives simply occur or happen to us.[93] Human beings exist not as abstract concepts, but as persons who are able to distinguish themselves as *acteurs* from inanimate things, plants, animals and from other human beings. As human beings we live in a concrete, shared world and are capable, at the same time, of rising above the world as a whole, both in knowing the world as the totality of what we think, know and experience, and in realizing our lives under the aspect of the demand for truth and harmony.[94] Only in light of the question: "Who am I really?" is it possible for us as subjects of knowledge and action to realize a harmonious unity between ourselves and the world, because only then

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[90] D. Henrich, *Versuch über Kunst und Leben. Subjektivität – Weltverstehen – Kunst*. (München: Hanser 2001), 343 (our italics).

[91] Henrich, *Bewußtes Leben* 15.

[92] Henrich, *Bewußtes Leben*, 25; Henrich, *Versuch über Kunst und Leben*, 157. As opposed to Hegel and British Hegelians like John M. E. McTaggert ("The Relation of Time and Eternity", *Mind* 18, 343–362), Henrich does not advocate abstraction from temporality, but sees temporality rather as a fundamental constituent of thought and self-consciousness. Cf. also Dan Zahavi, *Subjectivity and Selfhood: Investigating the First Person Perspective* (Cambridge, MA: MIT Press, 2006). Taking Husserl's transcendental phenomenology of the subject as a basis, Zahavi is able to maintain the irreducible character of Self-consciousness. Cf. John Crosby, *The Selfhood of the Human Person*, (Washington, D.C.: Catholic University of America Press, 1996). Both thinkers provide insightful analyses of subjectivity.

[93] Henrich, *Bewußtes Leben*, 13.

[94] Cf. Henrich, *Konzepte* 117f.

can our conscious life unfold within the context of an ordered, interconnected and meaningful whole (*Ordnungszusammenhang*).

The focus of these considerations is the "final context" (*letzter Zusammenhang*), which Henrich calls "the connected meaningful order of human life" (*Sinn-Zusammenhang des menschlichen Lebens*). Meaning becomes manifest in human life when when we understand ourselves and our world. The explanation of life from this meaning which manifests itself to us, is what the ancient Greeks called wisdom, what Henrich calls an authentic form of life (*Lebensform*).[95] Meaningful interpretative explanations of life (*Lebensdeutungen*) are a fundamental characteristic of the history of humankind. The great religions tried to interpret and explain the interconnectedness of the world (*Weltzusammenhang*) by offering hope of redemption from our lost state – from trials and conflict, sickness and decay, evil, imperfection, finitude, frailty, death – and of our restoration in a world of harmony after death. In the Christian tradition, for example, the purpose of this visible world is to prepare us for salvation in a world to come. As a universal world view encompassing life, death and the afterlife, the religious symbol system provided an interpretative pattern capable of investing human existence with meaning at every level at which it finds expression, from the daily life of the individual to its greatest literary and cultural productions. In today's world, it is is no longer possible for the unified symbolic systems of traditional religions to provide a universally acceptable interpretation of human experience. Nonetheless, the undeniable need persists for (re-)interpretation of our image of the world from the point of view of our present-day experience of conscious life. Radical changes resulting from advances in modern science, industrialisation, technological advancement, mass production and consumption have not eliminated, but rather fueled the need for reconceptualization of human experience, and of the motives and questions once formulated in mythical, symbolic or artistic form by religion. Philosophy, in this respect, has become, according to Henrich, a successor to religion in an age characterized by the collapse of traditional symbol systems.

For Henrich, a universally accessible foundation capable of providing a meaningful context for human life and action is to be sought, on the one hand, in reflection on the "ground" and source of our self-consciousness which manifests itself in our consciousness (*Grund im Bewußtsein*), and, on the other, in the "sense of unity" (*Einheitssinn*), which directs all our metaphysical reflection.[96] The "last thoughts“ (*letzte Gedanken*), i.e. the "final" questions which preoccupy all human beings, represent in this connection a path for interpretation of the meaning of life (*Lebensbedeutung*). Reflection on the "final questions", when conducted within the context of reflection on the "ground" of self-consciousness, and on the "sense of unity" with oneself and the totality of being, allows us, according to Henrich, to realize our being-in-the-world in such a manner as to attain inner tranquillity, satisfaction and happiness. To lead a conscious life in this manner means then: "to be conscious of one's disappearance in time, the transitoriness of one's own existence, and thereby not to fall into melancholy“, but to know in every passing moment how to "pluck the days of one's time like precious flowers in a garden".[97]

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[95] Henrich, *Fluchtlinien* 13.

[96] Henrich, *Bewußtes Leben* 126.

[97] ibid. 12.

But what justifies Henrich's assertion that reflection on the ground of self-consciousness in consciousness is capable of ensuring such an outcome? Is it not equally conceivable that such reflection might lead to resignation, for example, in the face of thoroughgoing determination of our conscious life by the whole process of nature and history? Conversely, how does reflection on the ground in conscious life lead to affirmation of the meaning of this transient and corruptible existence? Might not the same reflection lead to something more like Spinoza's conviction of the immortality of the human mind, whose only offer of relief from the burden of finitude appears to lie in the attribution of its limitations to our present finite perspective? Henrich's doctrine of All-unity represents his attempt to synthesize transcendental analysis of the conditions of self-consciousness with traditional metaphysics of substance, as well as with the temporal condition of human existence. By his analysis of self-conscious life, Henrich attempts, thus, on the one hand, to illuminate the fragility of human existence. On the other hand, he places human consciousness at the center of a unified context of meaning constituted by consciousness' own inherent tendency to self-interpretation and by its inalienable demand for harmonious integration within a larger whole. Human self-consciousness appears thereby as part of a cosmic order in which it constitutes its own meaning and contextuality. In order that the outcome of reflection on the "final questions" might not lead to melancholy, quietism, scepticism and despair, it suffices, in Henrich's view, to focus on this metaphysical dimension of our understanding of self as it emerges from reflection on the ground of conscious life, and on the integration of that reflection into a meaningful context of validating structures gained through our experience of ourselves in the world, and supported by scientific and philosophical investigation.

Metaphysics of subjectivity attempts then to return to philosophy that which was removed by Heideggers "fundamental ontology", above all to return the subject to "Dasein". While it is undeniable that fragility, temporality, finitude are fundamental aspects of human experience, the need and inner requirement to realize one's life as a meaningful entirety in the face of uncertainty, failure, and finitude is an equally pervasive aspect of human experience - and a binding imperative confronting every human individual in her relationship to herself. Freedom appears in this connection as indispensable foundation for human action in its contingence and as the primary factor in self-conscious realisation of personal existence. Yet it is a freedom determined and limited by certain inescapable threats to the self-conscious life of the individual. "Besides sickness, frailty, and death, which we share with the animals," Henrich highlights three dangers which are constantly imminent in the course of our consciously led lives and which can prevent us from realizing our proper "telos", the goal or aim which we espouse for our lives:

1. the danger that it is not possible to retain the continuity of our life as a person;
2. the danger that we will no longer be able to take responsibility for our lives;
3. a permanent loss of consciousness.[98]

Human existence is permeated thus not only by fragility, contingence and fallability, but by our *conscious awareness* of ourselves as such: as threatened in our own identity and selfhood, and limited in our ability to plan and carry out our lives both with regard to finitude and in the face of these particular threats. Knowledge of self comprises in this respect the

[98] D. Henrich, *Selbstverhältnisse, Gedanken und Auslegungen zu den Grundlagen der klassischen deutschen Philosophie* (Stuttgart: Reclam, 1982), 99.

precondition not only for our intelligent relationship towards things and processes in the world, but also for our ability to gain insight into the *unity of meaning* (*Einheitssinn*) which permits all things to be *understood*, both in themselves and as members of a single unified world.[99]

It was the great achievement of Husserl and Heidegger to have shown that human understanding presupposes a coherent, unified, and interconnected context (*Einheitszusammenhang*) in which unfold our exposition and interpretation of life (*Lebensdeutungen*).[100] A weakness of Heidegger's "metaphysics of finitude"[101], however, is its focus on finitude and temporality as fundamental characteristics not only of human existence, but also of the intelligible and intellectual world in which we live. This focus deprives our outer and inner world of redeeming qualities which self-conscious reflection might otherwise attribute to the living context of human life and action, eg. by finding in the unique constellation of human and material relationships which comprises the individual context of our lives not only a reflection of our own finitude and corruptibility, but the positive means by which to achieve meaningful interpretation of the same .[102] The concept of a metaphysics of subjectivity, because of its orientation toward a wholistic context of meaning, retains a more optimistic character than existential philosophy or Heidegger's temporally structured "fundamental ontology", stripped as it is of a theory of consciousness and subjectivity. For in a metaphysics of subjectivity human beings are not considered primarily from the point of view of finitude, uncertainty and mortality (*Sein zum Tode*), but as beings which – thanks to the inherent transcendental organisation of our (self-)conscious life – can justifiably be taken to be the "center of the world".[103] By directing our attention toward the "last questions", which comprise the "deep layers of our subjectivity", metaphysics of subjectivity can provide our conscious life with stability, consolation, and the motivation and justification for responsible action. The undeniable fact that we live a conscious life deserves in itself thorough interpretation, just as it is necessary to explain the deeper meaning beneath the layers of apparently self-evident comprehensibility of the empirical world. For a metaphysics of subjectivity, this entails exposition of the entirety of our experience together with the realities which contribute to it from the point of view of self-consciousness, its structures and principles, as well as the transcendental preconditions which make it possible for us to intentionally *lead* a conscious life.[104]

The aim of a renewal of metaphysics in our time is not therefore the transformation of our self-conscious experience of finitude into a form of "immaterial realism"[105], rather, as Henrich sees it:

> revisionary metaphysics is *interpretation* of conscious life on the part of conscious life. It is by no means the disclosure of supramundane realm which we could conceive as

[99] Henrich, *Bewußtes Leben*, 25.
[100] Cf. Henrich, *Fluchtlinien,* 16.
[101] Cf. Heidegger, *Kant und das Problem der Metaphysik*, 222f.
[102] Cf. Heidegger, *Einführung in die Metaphysik*, 34.
[103] Henrich, *Fluchtlinien,* 113.
[104] ibid. 12.
[105] D.Henrich, *Fixpunkte. Abhandlungen und Essays zur Theorie der Kunst* (Frankfurt/M: Suhrkamp 2003), 295.

> the domain into which we have to transform ourselves. What undergoes transformation is our *understanding* of ourselves and our condition. Thus, the very world in which we live appears in a new light once it has become subject to new description.[106]

Henrich's "revisionary metaphysics" is concerned with the "last thoughts", which are capable of investing our conscious life with stability, by allowing us to orient ourselves in the context of modernity. It remains to be seen whether this focus on the "final questions" offers a viable alternative to life interpretations formerly provided by traditional symbol systems and religious world-views.

Henrich conceives of his metaphysics as a unitary process of making oneself understood to oneself (*Selbstverständigung*). This involves self-elucidation of conscious life as it emerges from "total unity", a development of Kant's concept of a transcendental anthropology (*anthropologiae transcendentalis*),whose aim was to explain the position of human beings as point of mediation among ideas. In this regard, a succcessful life without metaphysics would appear to be no more plausible than a metaphysics which denies its origins in the antinomian problems which determine our experience of life and the world.[107] The concept of "total unity" (*All-Einheit*) emerges from transcendence of the distinction between subject considered in general and the individual person, between the relationship of the individual consciousness to itself and its relationship to the world, and between particulars and the entire order of things in the world – formerly the subject matter of a "natural ontology". This process of transcendence is made possible by the principle of self-consciousness, the "ground from which subjectivity proceeds, ... which it cannot reliably cognize",[108] reflection upon which, however, permits a coherent self-description of conscious life. The transcendent(-al) moment in the finitude of conscious life consists according to Henrich in our finitude not being opposed to the absolute, but entering "absolutely" into everything "particular", forming thus together with particulars a "unified totality" (*All-Einheit*), which preserves the individuality and singularity of its constituents within itself. Human beings are thereby for Henrich the "place or moment, where the impersonal principle of the world or anonymous all-consciousness [*Allbewußtsein*] comes to awareness of itself".[109] By absolute participation of the principles and structures of self-consciousness in every aspect of human experience the possibility of a new ontology as a constructive theory is established.[110]

2.4 The Individual and the community of interpretation: Royce's philosophy of loyalty as the basis for a renewal of metaphysics

Whether or not one agrees with his proposal for a renewal of metaphysics, Henrich's idea of "Selbstverständigung", as the source of such a renewal appears to be incomplete. The task of "making oneself understood" requires more than communication of meaning to oneself, both for the achievement of a genuinely meaningful understanding of one's life context, and for the consitution of consciousness itself. It requires participation in a larger

[106] Henrich, *Konzepte,* 122.
[107] Cf. Kant, *CR* A VII, B 432ff.
[108] Henrich, *Versuch über Kunst*, 131; 39.
[109] Henrich, *Fluchtlinien,* 24.
[110] Henrich, *Selbstverhältnisse*, 196 ff.

process of interpretation and communication. In this point, the potential for further development of a metaphysics of subjectivity may be perceived. The communal aspect of interpretation and self-interpretation was advanced by Charles Peirce's semiotic, in his idea of the "community of scientific investigators".[111] This concept was then further expanded by Josiah Royce to include investigation in the human sciences, as well as the process of interpretation which forms an integral part of every aspect of daily life. This, Royce's expanded concept of the "universal community of interpretation", offers a promising point of departure for fruitful expansion of contemporary theories of self-conscious life.

In his later philosophy, as presented in his lectures on *The Problem of Christianity*, Royce distinguishes two "levels of human life", the level of the individual and the level of the community.[112] Royce conceives of the problem of the individual and his self-conscious life with respect to what he calls "community of interpretation." Relying on his understanding of the "Spirit" of the early Christian community[113], Royce passes beyond denominational boundaries to derive, on the basis of his own psychological and anthropological insights, a theory of universal community as the ideal goal of humankind. In Royce's view, namely, Christianity's original groundedness in the Spirit of community and aim to realize a Universal community must be regarded not only as a "plan for the salvation of man but a revelation concerning the origin and fate of the whole cosmos", an "account of the universe."[114]

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[111] Cf. C.S. Peirce. *Collected papers.* Vols. 1-6 ed. C. Hartshorne and P. Weiss; vols. 7-8 ed. by A. W. Burks. (Cambridge: Belknap Press of Harvard University Press, 1958-1966); 5, 407. Nagl (2010) 232 f.; 241ff. Peirce provides therewith a concise formulation of the modern understanding of scientific research according to which no individual scientist works alone, i.e. all science is conducted within a community of scientists. As J. Royce saw it, Peirce was the first philosopher to investigate the "community-dependent processes" in the sciences which are distinct from the essentially bipolar relationship of perception and conception to "external" reality, "interpretation" comprising a "third" factor which cannot be reduced to the dyadic relationship comprised by rational analysis of sense data.

[112] J. Royce. *The problem of Christianity : lectures delivered at the Lowell Institute in Boston, and at Manchester College, Oxford*, vols. 1, 2 (New York: Macmillan 1914), vol. 2, 57f.

[113] While inspired by his understanding of the "Spirit" of the early Christian church and his interpretation of Pauline Christianity, which Royce takes to be "in its essence, the most typical, so far in human history, the most highly developed religion of loyalty" (ibid. vol. 1: xviii), Royce's philosophy of loyalty and of community has an undeniably universal appeal. Whatever the fortunes of Christian institutions or traditions, Royce is convinced that what he calls "the religion of loyalty", "the doctrine of the salvation of the otherwise hopelessly lost individual through devotion to the life of the genuinely real and universal Community, must survive, and must direct the future of religion and of [hu]mankind, if [hu]man[ity] is to be saved at all." (ibid. xix). The doctrines of Christianity as Royce interprets it need "no dogmas of any historical church to define them", but are "based on deep metaphysical truths whose significance is more than human". What Royce sees as "vital" in Christianity depends on his understanding of "certain aspects of the Christian social experience and of human destiny" (xx, xxii) capable of transforming the experience and destiny of humankind as a whole. The "essence of Christianity" depends for Royce, correspondingly, not on the person of its founder, about whom Royce declines to advance any "positive thesis" or "opinion" (xxviii f.), but on what Royce calls his doctrine of the "Beloved Community", the "ideal of one beloved and united community of all [hu]mankind" (ibid. vol. 2: 11) a doctrine which he believes is "empirically verifiable" and "metaphysically defensible as an expression of the life and the spiritual significance of the whole universe." (vol. 1: xxvi)

[114] ibid. vol. 2: 6, cf. 7.

Royce is convinced that many of the problems of metaphysics, for example, the problem of the One and the Many, can be resolved with reference to the idea of Community. In contrast to Henrich's reflection on the universal "ground" in individual self-consciousness, Royce's analysis takes as its point of departure the problem of "individually distinct minds or selves", i.e. the fact that "challenged to explain who we are, none of us finds it easy to define the precise boundaries of the individual self or to tell wherein it differs from the rest of the world, and, in particular, from the selves of other [human beings]." Our "social common sense" insists, on specific "gaps", which are in a certain sense "impassable", and separate us from our fellows, defining us as individual selves. First, there is the "empirical sundering of feelings", the fact that you do not feel what I do and vice versa. Then, we become aware of the separation of our individual "intentions, thoughts and ideas", i.e. the "law that our trains of conscious thought and purposes are mutually inaccessible through any mode of direct intuition". Finally, we recognize that a person is individuated by his deeds, each of us having "a soul of his own, a destiny of his own, rights of his own, worth of his own, ideals of his own, and an individual life in which this soul, this destiny, these rights, these ideals get their expression", and that, when I choose, my choice is my own and "coalesces with the voluntary choice of no other individual", and consequently my act, my responsibility, and my guilt are my own.[115]

The distinctness of social individuals as delineated by Royce provides the basis for a somewhat different perspective on individual self-consciousness than that which is emphasized by Henrich and the metaphysics of subjectivity. The problem of how the apparently unbridgeable chasm between selves may be overcome forms, namely, an integral part of Royce's "psychology of the social consciousness", in which the separation of our individual selves is contrasted with the phenomenon of community. A community has a highly developed social organisation. Communities "in many cases" behave "as a unit", making them appear as though they have a life of their own. As opposed to social groups which "have little or no history", and to social processes of relatively short duration, which are characterised by "either the predominantly pluralistic form of the relatively independent doings of detached individuals, or to the social form of the confused activities of a crowd" , *community* is a product of a "coherent social evolution, which has gone on... for a long time, and is more or less remembered by the community in question." A community is thus not, as W. James believed, a "mere blending of various consciousnesses" involving "a sort of mystical loss of personality on the part of its members". True community is a product of a "time-process". It has institutions, organisation, coherent unity, a history, traditions: community "has a past and will have a future". The *memory* of the community is thereby not only of "facts", but may also contain legendary elements. This is "beside the point", however, insofar as these elements – legendary, historical or factual – play an integral role in the formation of the highly developed consciousness of the community, "its consciousness that it *is* a community, that its members are somehow made one in and through and with its own life." In this sense, a community – not just the isolated human individual – is possessed of a "mental life".[116]

On the surface of it, with regard to the individual self and its striving to formulate a meaningful life interpretation, Royce is very much in accord with contemporary

[115] ibid. 18, 19, 22f., 24.
[116] cf. ibid. 25, 36, 29, 30, 36, 37, 39.

metaphysics of subjectivity. A meaningful interpretation of the self's life context, however, emerges, in Royce's account, not exclusively and not primarily from analysis of the structures of self-consciousness, but from an integrated view of the personal, psychological, historical, social, and cosmological aspects of the individual self, and from the universal process of interpretation which Royce sees as comprising the order of the universe. A self, in the first analysis, is by its essence "a being with a past": "One must look lengthwise backward in the stream of time, in order to see the self, or its shadow, moving with the stream..."[117] "Considered simply in this passing moment of my life, I am hardly a self at all", "just a flash of consciousness...not a coherent personality". Memory, however, "links me with my own past", though "not, in the same way, with the past of any one else." Rather, my self is cut off "by various barriers from the lives of other selves", constituting in its "stream of tendency" "an intelligible sequence", each individual's present carrying on the plan of her past, making the individual human self "one more or less coherent plan expressed in a life". In this sense, it may be truly said that the "Child is Father to the Man".[118]

I thus "define myself with reference to my own past." My "idea of myself", as "an interpretation of my past", is tied "to an interpretation of my hopes and intentions as to my future". However, I am myself not only by reason of what *separates* me from other selves, but "by reason of what links me, in significant fashion, to the remembered experiences, deeds, plans and interests of my former conscious life." Therefore, I am in need of "a somewhat extended and remembered past to furnish the opportunity for myself to find, when it looks back, a long process that possesses sense and coherence", and I rely for this on "my fellows", who help me to "interpret the sense, qualifications and the possessions of my present self" on the basis of my "antecedents".[119] Here, the question of "other selves" is resolved by our individual consciousness of our need for a community of interpretation in order to establish our own individual identity. "I know you are real," says Royce, "because my life needs and finds its interpreter."[120] My understanding of my self depends on the understanding mediated by a whole "community of interpretors" with reference to a common past. This necessarily involves an "interpretation of the significance of facts" which "extends the quasi-personal memory" of the individual into memory of a past which can be "indefinitely long and vast" (the memory of the past of my family, people, country, of humankind, and of the universe), but which is at the same time "significantly linked" with my personal history.[121] In this connection, Royce introduces the concepts of "community of memory", and "community of expectation", which is also, in a modified sense, called a "community of hope". "Community of memory" refers to the phenomenon that a community "is constituted by the fact that each of its members accepts as part of his own individual life and *self* the same *past* events that each of his fellow members accept." A "community of expectation" "…is constituted by the fact that each of its members accepts, as part of his own individual life and self, the same expected *future* events that each of his fellows accepts." *Community of memory* and *community of expectation* describe the "community of interpretation" which exists between individual members of a community and their shared understanding of certain past and future events.

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[117] ibid. 40.
[118] ibid. 41. Cf. G.M. Hopkins, *Poems* 1918; and W. Wordsworth, "My Heart leaps Up..." 1802.
[119] Royce vol. 2: 42.
[120] ibid. 315.
[121] ibid. 48f.

While it can be seen how the community is constituted by individual selves, it is Royce's special achievement to have shown that individual selves require participation in a community of memory and a community of hope "in order to secure their significance".[122]

Royce recognizes *community* thus as the second of two kinds of "mental being" which make up our human world, inseparable from the first, the self-conscious life of the individual.[123] The constituting activity of the individual that results in conscious experience *includes* the participating activity of other individual consciousnesses distinct from but intimately and inextricably woven into my own. The universal community of interpretation constitutes itself as a community of mutually experiencing subjects and this is the only way in which consciousness can occur. In effect, the epistemic conditions of reality which Kant demonstrated to be the foundation of human experience are shown by Royce to require our participation in such a community. The fact that "The real world itself is, in its wholeness, a Community,"[124] is discovered by the method of interpretation, which is also the method of comparison, based on the theory of signs. The universe, so Royce's thesis, constitutes a "World of Interpretation", "dominated by social categories". The "system of metaphysics" which is required in order "to define the constitution of the World of Interpretation" is that of a "generalized theory of an ideal society."[125] Utilizing Peirce's concept of the sign as "an object to which somebody gives or should give an interpretation", Royce expands Peirce's semiotic beyond what he sees as its original intention as the basis for "a logical theory of the categories" to provide the basis for a new metaphysical system.[125] With Peirce, Royce admits that "just as percepts have, for their appropriate objects, individually existent Things; and just as concepts possess, for their sole objects, Universals, - so interpretations have, as the objects which they interpret, Signs." Royce takes the existence of signs and their interpretation as evidence that "there are beings in the world that are neither individual objects of perception nor yet beings such that they are mere universals, the proper objects for conception", but selves distinct from my individual self, and for the existence of community: "If the sign-post is a real sign post there is in the world a community constituted of at least three distinct minds."[126] A Sign is, namely, in its essence, the expression of a mind or a "quasi-mind – an object that fulfills the functions of a mind." For example, a clock-face, a weather-vane, a gesture are expressions of a mind and require interpretation through a mind which acts as mediator between the sign or the maker of the sign and one for whom the sign needs to be "read" or interpreted Such an interpretation is again an expression of the interpretor's mind and needs in its turn to be interpreted, creating thus an endless sequence of signs and interpretations.

Royce sees his metaphysical theory as a "doctrine of signs", "the very being of the universe" consisting "in a process whereby the world is interpreted." The "history of the universe" comprises an unending sequence of acts of interpretation – forming the basis for an infinite community of interpretation. The "temporal order" reveals itself, accordingly, as "an order of purposes and deeds", and an order of interpretation, since "it is of the

[122] ibid. 50f., cf. 52f.
[123] vol 1: 164.
[124] vol. 2: 279
[125] ibid. 282.
[126] ibid. 288, 287; cf. 282.

essence of every rational deed to be an effort to interpret a past life to a future life". "[E]very act of interpretation aims", furthermore, "to introduce unity into life, by mediating between mutually contrasting or estranged ideas, minds, and purposes." The conciliating force of this community of interpretation provides then the foundation for Royce's doctrine of Universal community.[127]

3. Conclusion: The metaphysical character of philosophy and the universal community of interpretation

Royce believed that "loyalty" to the "Spirit" of community, and ultimately to the idea of a Universal and Beloved Community, is "able to supply us not only with a 'philosophy of life,' but with a religion which is 'free of superstition' and which is in harmony with a genuinely rational view of the world."[128] With Royce, we must agree that his philosophy of loyalty contains "novel views" concerning "the central life-problems of all of us", and that its "successive expressions" together form "a consistent body of ethical as well as religious opinion and teaching, verifiable, in its main outlines, in terms of human experience". Conjoined with the ideas of Henrich and the representatives of a metaphysics of subjectivity, Royce's philosophy of loyalty is "capable of furnishing a foundation for a defensible form of metaphysical idealism"[129] and of providing firm evidence for the metaphysical character of philosophy as a whole. Royce was justified, however, in distinguishing his position from that of James (and herein also from later forms of a metaphysics of subjectivity) who in his *Varieties of Religious Experience* "deliberately confined himself to the religious experience of individuals", whereas it is "a social form of experience...upon which loyalty depends." [130] Royce's idea of loyalty to the spirit of the universal community of interpretation provides therewith the missing link required for a complete renewal of metaphysics, allowing for verification of its principles on the basis of an "absolute pragmatism"[131] and a "psychology of the social consciousness".

What Royce calls community "exists in countless different forms and grades" throughout history.[132] Human beings in their present state, so Royce, are "lost". In other words, we are incapable, in isolation from true community, of attaining "the true goal of life", prevented as we are by the limitations imposed on us by our finitude and the dispositions of our own nature, as well as by our situation in the physical and historical world. The "natural and social cultivation of the conscience" enacted by modern education manifests itself as a "training in self-will", favouring the perpetuation of a "community of hate". What is required for the "salvation" of the individual is loyalty to a "community of love".[133] The thesis which Royce's "philosophy of loyalty" ultimately attempts to defend is that "we are saved, if at all, by devotion" to the spirit of universal Community.[134] "Loyalty", the

[127] ibid. 282, 283, 284f. 285f.
[128] ibid. vol 1, vii.
[129] ibid. ix.
[130] ibid. xiv.
[131] An aspect of Royce's philosophy which cannot be further pursued in this context. Cf. Nagl 221f.
[132] ibid. xxxvi.
[133] ibid. xl.
[134] ibid. xvii.

"thoroughgoing, practical and loving devotion of a self to an united community" of humankind[135], is the only path to "salvation" of the "lost individual", for "[i]f by salvation one means a winning of the true goal of life, the individual, unaided, cannot be saved."[136] The help which humans need for overcoming their "lost state" must come from some other source "entirely above" our own level, a source which is in some sense "truly divine".[137] Loyalty is the "loving aspect of the 'will to interpret'"[138]. "My life", so Royce, "means nothing, unless I am a member of a community", the community of interpretation: "I win no success worth having, unless it is also the success of the community to which I essentially and in virtue of my real relations to the whole universe, belong."[139] My knowledge of self depends on knowledge drawn from the community of interpretation. Only by participation in the ongoing process of interpretation which comprises the order of time and the process of the whole universe do I attain the truth about my being, as so poignantly expressed by Royce:

> Alone I am lost, and am worse than nothing. I need a counsellor, I need my community. Interpret me. Let me join in this interpretation. Let me be the community. This alone is life."[140]

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[135] ibid. 114.
[136] ibid. 117.
[137] ibid. cf. 116.
[138] ibid. vol. 1, xlv.
[139] ibid. vol. 2, 315.
[140] ibid. 325.

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2

Appearance and Reality in Parmenides*

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1. Introduction

Of all the Presocratic philosophers it is Parmenides who continues to attract the widest interest among contemporary philosophers, but the reasons for that interest vary considerably from reader to reader. Virtually every sentence of the remaining fragments of his book has become a bone of contention among his interpreters because the relative weight given to them leads to antithetically different pictures of what he thought. Part of the problem is that, "Like the thought, so too the language is new and it was created as the language of this thought. The individual term, as a linguistic expression, is thus to a great extent unknown and unprecedented."[1] Parmenides has been read as a materialist on the strength of descriptions like, "it is complete on all sides, like the bulk of a well-rounded ball, evenly balanced in every way from the middle; for it must be not at all greater or smaller here than there" (B8.43-5).[2] But he has also been read as an idealist, or as a phenomenological ontologist, in the light of statements like, "the same thing is for thinking and for being" (B3).[3] Again, he is read as a logician who believes we can discover the truth about reality only through abstract reasoning, by following the implications of the laws of non-contradiction ("in no way may this prevail, that things that are not, are", B7) and excluded middle ("it is or it is not", B8.16).[4] Or as a philosopher of linguistic

*An earlier version of this essay was presented as 'Sense Perception and Reason in Parmenides', at the Canadian Philosophical Association meetings at Concordia University, Montreal, June 2010.

[1] Hölscher 1968, 90. My translation.

[2] Cf. Burnet 1930, 178-9; also Finkelberg 1986, 303-17. But cf. Cornford 1939, 45; Palmer 2008, 3.5. Unless otherwise specified translations from the Presocratics follow those of McKirahan 1994, occasionally modified.

[3] Thus Reinhardt writes that for Parmenides "muß diese ganze Welt notwendig falsche sein, das heißt subjektiv sein, griechisch ausgedrückt, sie kann nur νόμῳ und nicht φύσει existieren." "Über die Schwierigkeit hinwegzuhelfen hat er sich freilich nur durch einen ungeheuren Sprung gewußt; aber wo gibt es einen Idealisten, der über dieselbe Frage glatt hinübergekommen ware?" (1977, 30 & 81). For the phenomenology-influenced interpretation of Heidegger see Heidegger 1957, 73-133 *passim*, and Heidegger 1954, 231-256. For discussion of the materialist and idealist interpretations see Tarán 1965, 195-201.

[4] Cf. Cornford 1939, 28: "Parmenides is the prophet of a logic which will tolerate no semblance of contradiction" (29); "he will set all common sense at defiance, and follow reason". For a recent variant of this view see Lewis (2009) who argues that Parmenides' rejection of the ordinary view of reality derives from an illicit modal inference.

predication, on the basis of statements like "That which is there to be spoken and thought of must be" (B6).[5] And he has been read as a mystic for whom we can know the truth only by the grace of a divine revelation, like that of the goddess who addresses to him the words of his poem.[6]

In addition to these five models, interpretations are also divided by the variety of strategies for reconciling the two parts of Parmenides' book. The most influential strategy in the twentieth century, and which continues to be defended today, regards Parmenides as distinguished both by the rigor of his logic and the naivety of his judgment: on one hand the father of western analytic philosophy, the first to use explicit logical reasoning in the service of philosophical inquiry, subtle enough to have anticipated Descartes' cogito demonstration (although in the service of "it is" rather than "I am"[7]) while on the other hand a rigorous adherence to inadequate logical principles is believed to have led him unknowingly toward a conclusion that is neither reasonable nor Cartesian, namely that nothing ever changes and that he himself, along with the rest of the world, does not exist.[8] Cornford does not put it strongly enough when he writes that Parmenides "seems to suggest that mortals are responsible for the apparent (though unreal) existence of sensible qualities… Why the senses delude us, how false appearances can be given, he cannot tell" (1939, 50). The problem on this view is not merely how mortals are deluded, but how the multitude of changing human beings can be said to be deluded if they do not exist.[9] It is widely believed that although this is a fatal difficulty, Parmenides' failure to recognize it can be excused by his early date:

> What Parmenides has not succeeded in establishing is any logical relationship between the truth and its counterfeit, or any logical status for the world of seeming… It is hardly a criticism of Parmenides to say that in the very moment of a discovery which changed the whole face of philosophy there was not also revealed to him a means of accounting for the false semblance of reality exhibited to mortals by the world of appearances, nor of bringing the two worlds into any logical relationship again without contravening the new and austere canons of thought which he himself had just laid down.[10]

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[5] Mourelatos 1970, Nehamas 2002, Curd 2004.

[6] Cf. Bowra 1937; Verdenius 1949; Lagan 1982; Kingsley 1999 esp. 49-149, and 2003 esp. 17-294; Geldard 2007; Gemelli Marciano 2008; Granger 2010, 35-36; also see the discussion in Guthrie 1969, 7-13.

[7] Cf. Owen 1975, 48-81, 60-61.

[8] Although the most widely held view of Parmenides there have been numerous dissenters. Heidegger, for example, connects appearance with Being rather than with nonbeing: "Sein und Schein zusammengehören stets beieinander sind und im Beieinander immer auch den Wechsel von einem zum anderen und damit die ständige Verwirrung und aus dieser die Möglichkeit der Verirrung und Verwechslung anbieten" (1957, 83). Previously Reinhardt reconciled the ways of truth and appearance in terms of the oppositions out of which the physical world is constructed: Parmenides' opposites, like Empedocles' elements, are themselves eternal and unchanging; only the things formed by their combination are transitory (1916/1977 esp. 70-81); also see Miller 1978, 12-35; and Finkelberg 1999, 233-48. More recently Curd reconciles them by what she calls predicational monism ("each thing that is can be only one thing; and must be that in a particularly strong way") 2004, 5 & 80n38.

[9] "More serious is the denial of reality to Parmenides himself and all men if the sensible world is entirely false. Yet it is not clear that this troubled Parmenides himself or later Eleatics" (Long 1975, 82-101).

[10] Guthrie 1969, 75-6. Cf. Verdenius 1942, 58; Kahn 1969, 705; Stokes 1971, 142.

Nevertheless if Parmenides failed to notice a difficulty so devastating, or if he saw the problem but was not bothered by it, and even if he was bothered by it but saw no way to resolve it, then Guthrie is too generous, for it should be very much a criticism of Parmenides that he was oblivious to such a fundamental objection, or that he continued to promote in the most uncompromising terms a philosophy that he saw no way to reconcile with our experience of reality. We do him no favor by excusing his lapses until we have done our best to make certain that they really are lapses. In the case of a work so incompletely preserved we may need to look more intensively than usual at the possible implications of what remains, which is something we are less likely to do if we are too ready to excuse any difficulties. I shall try to show that Parmenides' ideas are not only fully defensible but illuminating even today.

In John Palmer's (2008) terminology, the previously mentioned view of Parmenides as unable to account for multiplicity and change is the strict monist interpretation. Prior to it the most widespread view, going back to Parmenides' earliest interpreters, is what Palmer calls the aspectual view, the view that being and appearances are two aspects of the same reality. Before returning to this view in more detail I want to consider Palmer's own approach which he calls the modal interpretation, and which is based on the principle that "Parmenides was the first philosopher rigorously to distinguish what must be, what must not be, and what is but need not be" (Palmer 2008, 3.5). Unlike the aspectual interpretation, according to which the same reality can be seen as necessary and unitary in one aspect, but contingent and multiple in another aspect (like Spinoza's *natura naturans* and *natura naturata*) Palmer believes that Parmenides is referring to two kinds of reality, the world of contingent beings and a necessary being which permeates it the way Anaxagoras' *Nous* permeates all things. B4 constitutes "an apparently insurmountable difficulty" for the aspectual view, Palmer believes. I shall show later why I do not believe that to be the case, but another fragment, B16, lends itself to the aspectual interpretation far more readily than Palmer's modal interpretation:

> For as each person has a mixture of much-wandering limbs,
> so is mind [νόος] present to humans. For that which thinks [φρονέει] –
> the nature of the limbs <combined in the body> – is the same
> in all people and every one; for the full is thought [νόημα].[11]

The first sentence presents us with an analogy: mind is present to human beings the way people are related to their body parts: diverse human beings are unified within the same mind the way diverse limbs are unified within a single body. The second sentence explains: although our limbs themselves differ from one person to another, their nature is the same in each of us, and that nature manifests itself in mind (that which thinks) which is therefore the same in all of us. The phrase, "the same in all people and every one" [ἀνθρώποισιν καὶ πᾶσιν καὶ παντί] makes the point both collectively and distributively. Distributively it means that each of us has the same mental nature as every other. Collectively it means that all humans together are unified and have their nature as parts of the same rational nature, the way our limbs are unified and have their nature as part of the same person. In the same way that hands and feet have their function only as part of a body, each of us has our function only as part of the rational whole.

[11] Words in angle brackets added. This difficult fragment is extensively discussed in Mourelatos 1970, 253-9.

And in the same way that what unites the limbs of our body is life, what unites all individuals in Being is rationality.[12] All of this is summed up in the final clause: "for the full is thought", which recalls B4: "things which although absent are securely present to the mind [νοεῖν]. For you will not cut off what is from clinging to what is". This explains what the goddess meant at the end of B1 when she said, "the things that appear must be in an acceptable sense [δοκίμως] because they permeate all things completely."[13] Just as there is no body without its constituent limbs, there is no Being without the things that appear and permeate everything. And just as our limbs lose their separateness in the realm of life as part of a living person, all things that appear to our senses lose their separateness in the realm of the timeless and spaceless.[14]

An examination of the various themes in Parmenides book will show how this aspectual interpretation accords with the fragments as a whole. There are five overlapping sections: 1. The Status of Appearances; 2. Being, Nonbeing, and Change; 3 Space and Time; 4. Logic and Mysticism; 5. Existence and Value.

2. The status of appearances

Parmenides' book is traditionally divided into two parts, *Alêtheia* or Truth, and *Doxa* or Appearance (or Opinion). In the earlier part the goddess argues, first, that what-is can not have come into being:

> For what birth will you seek for it?
> How and from where did it grow? I will not permit you to say
> or to think <that it grew> from what is not; for it is not to be said or thought
> that it is not. What necessity would have stirred it up
> to grow later rather than earlier, beginning from nothing?
> Thus it must either fully be or not. [B8.6-11]

In other words, what-is can not have come into being for it would have had to come from what-is-not, but what-it-not is nothing, and nothing comes from nothing. "In this way coming to be has been extinguished and destruction is unheard of" (B8.21). There is no explicit argument against destruction. Parmenides evidently believes that it follows from the argument against coming-to-be, which may be what he meant by saying, "On this way there are signs exceedingly many – that being ungenerated it is also imperishable" (B8.2-3). One of those signs is that nonbeing has been shown to be impossible – it cannot be conceived or described – but what-is cannot become something impossible. Another is that since what-is could not have come into being it has always existed, and the only explanation for its existence is that it exists necessarily.[15] But if it exists necessarily, it cannot cease to exist.

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[12] Cf. Mourelatos 1970, 258: "thought is the whole (cf. οὖλον), the all-together-one (cf. ὁμοῦ πᾶν ἕν), the cohesive (cf. συνεχές), the fullness of what-is (cf. ἔμπλεον ἐόντος), the consorting of what-is with what-is (cf. B8.25)."

[13] "permeating all things completely" is Gallop's translation of διὰ παντὸς πάντα περῶντα. McKirahan 1994, following Owen's text, has "being always, indeed, all things."

[14] Like most assertions about Parmenides, the spatiality of reality is debated on both sides. See, for example, Granger 2010, 29&n34.

[15] Cf. B8.16-19: "But it has been decided, as is necessary [ἀνάγκη], to let go the one road as unthinkable and nameless (for it is not a true road) and that the other is and is genuine" and B8.30-31: "For mighty Necessity [Ἀνάγκη] holds it in the bonds of a limit."

The impossibility of coming-to-be implies not only the impossibility of destruction but also the unreality of change:

> Fate shackled it
> to be whole and unchanging [ἀκίνητον]; wherefore it has been named all things
> mortals have established, persuaded that they are true –
> to come to be and to perish, to be and not <to be>,
> and to change [ἀλλάσσειν] place and alter [ἀμείβειν] bright color. [B8.37-41][16]

As with the inference from the impossibility of coming-to-be to the impossibility of destruction, the inference to the impossibility of change is not explicit. The point here seems to be that to change place is to come-to-be somewhere from previously not-being there, and to change color is for a color to come-to-be from previously not-being there; but Parmenides has shown that nothing can come to be from having not been.

The goddess who is instructing Parmenides introduces the second part of the book, Appearance, with the words:

> At this point I stop for you my reliable account and thought
> concerning Truth; from here on, learn mortal opinions [δόξας],
> listening to the deceitful ordering of my words…
> I declare to you all the ordering as it appears [ἐοικότα],
> so that no mortal judgment [γνώμη] may ever overtake you. [B8.50-52, 60-61]

What follows is a meticulously detailed explanation of the principles by which the world of changing appearances operates, an explanation that is believed to have been at least twice as long, and perhaps far longer, than the account of Truth.[17] Does this mean the goddess is offering a third road that softens the stark alternatives between the necessary Way of Being ("It is") and the impossible Way of Nonbeing ("It is not")? If so, why did she deny the reality of change in B8, and why did she say in B2 that "the only roads of inquiry there are for thinking" are "that it is and that it is not possible for it not to be" and "that it is not and that it is necessary for it not to be"? Why would the goddess say these are the only roads of inquiry if the Way of Appearance is meant to be taken at all seriously?

Because of this difficulty it is usually assumed that there is no difference between the Way of Nonbeing and the Way of Appearance: whatever is not Being is nonbeing. It is only our ignorance and lack of critical judgment that leads us to think that appearances are anything other than absolutely non-existent.[18] There are, however, two problems for this interpretation. First and most obviously, why would Parmenides have devoted his life and energies to changing people's (non-existent) minds to the view that change is only an illusion, and in a book that is an allegorical account of his own life-changing discovery, a book which denies the possibility of motion or change but is presented as a journey and

[16] For a recent discussion of some interpretive problems regarding these lines see McKirahan 2010.
[17] See Gallop 1984, 21 & 29n8.
[18] Cf. Tarán: "any difference from Being is absolute non-Being, and as such unthinkable" (1965, vii *et passim*); also Owen 1975, 51; Mourelatos 1970, 91; Cordero 2004, 147. Contrast Reinhardt 1977, 46.

refers throughout to truth and Being as a road (ὅδος) to set out on?[19] The other problem is how to reconcile the fact that at least two thirds of his book is spent in an explanation of how things change, with the goddess's warning against such thinking.

The usual answer to the first problem is that when people are led by their reasoning to conclusions that inhibit practical activity, they tend to ignore the discrepancy in order to be able to live in the world, however incoherent the result. On this view, just as Hume who rejected the reality of causation conceded that we must nevertheless live as though causality were a fact, Parmenides who rejected the reality of changing things had to live as if he believed that the changing appearances were real. But this would be a far greater incoherence than Hume's since Parmenides denies not merely the objective basis of a perceived relationship (cause and effect) but the objective existence of any changing being including, by implication, Parmenides himself.

The severity of the second difficulty – why the goddess would spend as least twice as much time earnestly instructing Parmenides in a teaching that she regards as not only false but illusory, as she did in teaching him the truth – is attested by the lack of any consensus among its proponents as to how to render it plausible: according to various views, the goddess either includes the Way of Appearance hypothetically, "to explain how mortals came to accept as reality the unreal sensible world;"[20] or as the best of a bad lot so that "no mortal will ever give an account of appearance which presents fewer violations of the laws of Truth;"[21] or else to inoculate Parmenides against the false views of mortals;[22] or to "show the disciple what the error consists in;"[23] or she is mocking this view by presenting it with irony and sarcasm.[24] But in the fragments that have come down to us there is nothing to indicate that the goddess shows how the specific cosmology she presents is to be decisively rejected. Nor would we expect her to: since she has already demonstrated in B2-B8 that there can be neither multiplicity nor motion or any other kind of change, why would she need to demonstrate it again with reference to any particular cosmology? The goddess's argument there was an *a priori* argument. It showed that any change, no matter how conceived, would be incoherent and must therefore be illusory. Given an all-conquering *a priori* argument, there is nothing to be gained by refuting an individual cosmology on its own terms. Such a refutation would have to make use of the *a priori* argument in any case,

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[19] This aspect of the poem is extensively discussed by Cherubin 2001 and Barrett 2004. It is hard to reconcile Mourelatos view that Parmenides denies the existence of motion and change with his recognition that "The route '_is_' is *essentially* a route; it is not a route by poetic license or the purposes of rhetorical effect" (1970, 134, emphasis in original). On the question of whether the proem is allegorical see Bowra 1937; Granger 2010, 33-36.

[20] Tarán 1965, 207, cf. 216.

[21] Stokes 1971, 147-48; McKirahan 1994, 174-5.

[22] Gallop 1984: 23.

[23] Cordero 2004, 32.

[24] "[A] case study in self-deception, indecisiveness, and confusion" (Mourelatos 1970, 222-8, 260). Thus too Mourelatos' student Austin (1986). I am more inclined to agree with Reinhardt, who writes, "Ich halte es für eine Täuschung über den Ton, den Stil, die Stimmung, glaube man aus ihren Worten Eristik, Ironie, Polemik und den ganzen schlecht verhehlten Ärger eines angegriffenen Schulvorstehers herauszuhören" (1916, 27-8). Cf. Cornford's judgement that the Way of Appearance is presented "without a hit of irony, caricature, or criticism" (1939, 49); and Verdenius: "There is, however, no trace of any controversial, critical, or ironical flavour" (1942, 45).

and given that argument, all merely particular refutations are redundant. If we can prove that any house built in a particular area will necessarily sink into quicksand, we do not need to examine the blueprints for the best possible house to show that it too will get swallowed up.

The fragments following B8 not only contain no refutations, nor any trace of mockery or sarcasm, but on the contrary, are presented in the language of a teaching meant to be taken as in some sense true rather than as wholly misguided. B10, for example, says:

> You shall know the nature of the aether and all the signs in the aether
> and the destructive deeds of the shining sun's pure
> torch and whence they came to be,
> and you shall learn the wandering deeds of the round-faced moon
> and its nature, and you shall know also the surrounding heaven,
> from what it grew and how Necessity led and shackled it
> to hold the limits of the stars.

Passages like this read as expressions of a view that the goddess holds to be true at some level, rather than as an opinion with which she does not agree.[25] But if Parmenides recognizes the existence of changing things, does this not save him from absurdity only at the price of consistency? There is, however, a way of reading Parmenides that does not render the implications for our existence nonsensical, his behavior inconsistent with his beliefs, and the largest part of his text redundant. Let's look more closely at his argument against change.

3. Being, nonbeing and change

On the basis of his axiom that "it is or it is not" (B8.16) Parmenides concludes that either it always is or it never is: since nothing can come from what is not, "if [*per impossibile*] it came into being, it is not." Thus there is neither nonbeing nor becoming, but only being. But what is the referent of the implicit "it" that always is and never comes into being?[26] If the reference is to any given individual, then Parmenides would indeed be saying that all change is an illusion. But if it refers not to individuals but to reality as a whole, the argument is not incoherent – neither internally nor with our experience.[27] In that case we can see Parmenides as building on a tradition that goes back to Thales, according to which reality as a whole has a single unchanging character of which all individuals are local transformations,[28] like our own view that we are all temporary and partial arrangements of

[25] Cf. Reinhardt on B8.50: "Ich gestehe, daß es mir schwer fällt zu begreifen, wie man angesichts dieser Worte von Hypothese reden kann. Er redet ganz und gar nicht hypothetisch, sondern so apodiktisch wie nur möglich, was er kündet, is die volle Wahrheit" (1916, 25); also Verdenius:"Generally speaking, no one can read this part of Parmenides' work with unbiased mind without being struck by its sincere and apodeictical tone, which shows beyond doubt that the substance of this doctrine emanates from the writer's own conviction" (1942, 48).

[26] In the Greek, ἔστιν ἢ οὐκ ἔστιν ("is or is not"), the subject is only implied. Cf. Lagan 1982, 43.

[27] Cf. Robinson 1979, 54-60 esp. 58-59.

[28] It does not diminish Parmenides' contribution, as some have argued, to see him as heir to a previous tradition. What he makes of that tradition is original and important enough that it is unnecessary to deny the influence of others to secure his stature.

energy. On this view Parmenides is not embarking on the incoherent project of changing people's minds to recognize that there is no change, and bringing new writings into being to prove that there is no coming into being. It is not that nothing ever changes, but that the kinds of things that do change are not real in the way he is using the term.

Everything depends on what is meant by "real", or in Parmenides' terminology, "is" (ἔστιν).[29] What changes, perpetually becomes other than it was, and so it never simply is. Given Parmenides' stark alternatives between is and is-not, then, what is changing is-not. However, Parmenides softens this stark opposition by apparently speaking of a third way[30] – in addition to the reliable way of "it is" and the unviable way of "it is not", namely the Way of Appearance which is the locus of change. Appearances "are not" because they involve the coming to be and passing away that are characteristic of change. But their nonbeing is not the same as the radical nonbeing that Parmenides warns us against in the second way. That nonbeing, Parmenides repeatedly tells us, cannot be conceived nor put into words:

> this I point out to you to be a path completely unlearnable, for neither may you know [γνοίης] that which is not (for it is not to be accomplished) nor may you declare it [φράσαις]. (B2)

[29] I share the traditional view that "is" functions in Parmenides in the existential sense, rather than the fused existential and veridical sense defended by Kahn (1969) or the predicative sense defended by Mourelatos (1970, 47-61, 79; cf. Mourelatos 1979, esp. 8-10), and in a different way by Sanders 2002. For an extended defense of the existential interpretation against its rivals see Gallop 1979; cf. Granger 2010, 20-21. Additional discussion of ways of construing ἔστιν can be found in Tarán 1965, 32-40); and Cordero 2004, 44-57.

[30] Whether there is a third way is a matter of considerable dispute, and Cordero is certainly being hyperbolic when he says ruefully that"99 percent of works on Parmenides speak of a third way" (2004, 138). B2 speaks of the road of Being and the road of nonbeing as two different roads, and B6 is usually supposed to be referring to "the road of mortals" as a third way in addition to the other two, but that depends on accepting Diels' proposal of εἴργω ("I restrain [you]") for the missing verb in line 3:

> Χρὴ τὸ λέγειν τε νοεῖν τ' ἐὸν ἔμμεναι· ἔστι γὰρ εἶναι,
> μηδὲν δ' οὐκ ἔστιν· τά σ' ἐγὼ φράζεσθαι ἄνωγα.
> Πρώτης γάρ σ' ἀφ' ὁδοῦ ταύτης διζήσιος <εἴργω>,
> αὐτὰρ ἔπειτ' ἀπὸ τῆς, ἣν δὴ βροτοὶ εἰδότες οὐδέν
> πλάττονται, δίκρανοι·
> That which is there to be spoken and thought of must be. For it is possible for it to be,
> but it is not possible for nothing to be. I bid you consider this.
> For <I restrain> you from this first way of inquiry,
> but next from the way on which mortals, knowing nothing,
> two-headed, wander.

On this view three ways are spoken of: the Way of Being ("That which is there to be spoken and thought of must be. For it is possible for it to be"), the Way of Nonbeing ("it is not possible for nothing to be"), and the Way of Appearance ("the way on which mortals, knowing nothing, two-headed, wander"). And when the goddess restrains Parmenides from "this first way of inquiry" she is referring not to the first of the two ways she just mentioned (the Way of Being), but to the first of two to be avoided (the Way of Nonbeing). But if we accept a different proposal for the missing term, such as Cordero's ἄρξει ("you will begin") (2004, 105-124), B6 would not be speaking of three different roads. Cordero's book is the most extended argument in favor of there being only two roads (especially 125-49 but *passim*). Nehamas takes a similar line, but proposing ἄρξω instead of Cordero's ἄρξει (1981, 105).

> That which is there to be spoken [λέγειν] and thought [νοεῖν] of must be. (B6)
>
> it is not to be said [φατὸν] or thought [νοητόν] that it is not. (B8.8-9)
>
> [What is not is] unthinkable [ἀνόητον] and nameless [ἀνώνυμον]. (B8.17)

Appearances, by contrast, are never presented by Parmenides as unthinkable, ineffable, or unlearnable. The goddess says:

> There is need for you to learn all things –
> both the unshaken heart of persuasive Truth
> and the opinions of mortals, in which there is no true reliance.
> But nevertheless you will learn these too – that the things that appear
> must genuinely be, permeating all things completely.[31] [B1.30-32]

This is the task of the longest part of the book, Appearance, which demonstrates, however we interpret it, that unlike the Way of Nonbeing the Way of Appearance can both be conceived of and spoken about. Instead of being unutterable (B2), unsayable (B8.8), and nameless (B8.17), it is the realm of our "sounding ear and tongue" (B7). Rather than reducing to the Way of Nonbeing, the Way of Appearance stands somehow between the Ways of Being and Nonbeing. In that case we can take the words just quoted (B1.30-32) to say that Parmenides must learn the opinions of mortals *and also* learn that "the things that appear must be in an acceptable sense [δοκίμως] because they permeate all things completely."[32] There is good reason then to believe that for Parmenides change is not simply nonexistent.

If the Way of Nonbeing is distinguished by its inability to be verbalized or even conceived, what distinguishes the Way of Appearance is that although it *can* be conceived and expressed in words, it is apprehended not by reason but by sense perception:

> For in no way may this prevail, that things that are not, are.
> But you, bar your thought from this way of inquiry,
> and do not let habit born from much experience [πολύπειρον] compel you along this way
> to direct your sightless eye and sounding ear and tongue,
> but judge by reason [λόγωι] the heavily contested refutation spoken by me. [B7]

In other words, because in our experience the things that appear to our senses come into being, change, and are destroyed, we are in the habit of thinking that all existence is characterized by transience. We fail to recognize that there is another sense of reality, perceived by reason rather than the senses, for which this is demonstrably false.[33] On the usual view, to be (εἶναι) is to be an individual. But although individuals appear to sense perception they do not appear to reason, they cannot be defined but only described.[34] But if,

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[31] See above, n. 13.

[32] For other ways of construing this passage see Mourelatos 1970, 194-221, and Gallop 1984, 21 & 53.

[33] Also see Verdenius: 1942, 57-8; 1949, 131.

[34] The problem of universals in Aristotle arises because in his view a being (οὐσία) is an individual (τόδε τι) but individuals cannot be known rationally by definition (*Meta.* Z.15. 1039b27-1040a8), so the relation between what is (individuals) and what can be known (universals) becomes problematic.

as Hegel later put it, "the real is the rational and the rational the real", then individuals are no longer real in the precise sense of the word (knowable by reason), they have mere existence (*bloße Existenz*). It is clear from B7 that what Parmenides means by "to be" is what is there for reason, not what is there for the senses. But what is there for the senses is not the same as what is not there at all (nonbeing). When the goddess said in B2 that there are only two ways of inquiry, she added the words, "for thinking" (νοῆσαι), as she does again when she tells Parmenides to restrain his thought (νόημα) from this way of inquiry. This does not exclude the possibility that there exists something that appears to the senses but is not intelligible, not knowable by reason (νόος).[35]

This is how Parmenides was interpreted by Aristotle, who had the entire book before him:

> For, claiming that, besides the existent, nothing non-existent exists, [Parmenides] thinks that of necessity one thing exists, viz. the existent and nothing else (on this we have spoken more clearly in our work on nature [*Physics* 1.3]), *but being forced to follow the observed facts*, and supposing the existence of that which is one in definition, but more than one *according to our sensations*, *he now posits two causes and two principles*. [*Meta.* A.5.986b29-34, emphasis added]

That is, according to reason all things are one, but according to the senses there is multiplicity and opposition, so Parmenides developed a two-level ontology. Simplicius too, who like Aristotle had the whole book before him, and to whom we are indebted for preserving most of the text that remains, says:

> He calls this discourse 'appearance' [δοξαστόν] and 'deceitful', not as outright false, but because the sensible world has fallen from the intelligible reality into the domain of manifestation and appearing [φαινόμενον καὶ δοκοῦν]."[36]

But what of Plato's *Sophist*? Plato too had the whole text available to him, and does not the Eleatic visitor say it is necessary to refute Parmenides in order to accept the existence of a multiplicity of things that are different from one another,[37] and does he not go so far as to confess that he is a kind of parricide for having to overthrow the philosophy of his intellectual father Parmenides? And what about Parmenides' disciple, Zeno of Elea.[38] Did he not defend Parmenides by arguing that motion is impossible even in the sensible world?

In the case of Plato's *Sophist*, although the Eleatic visitor's remark is often recalled as a confession of parricide, in fact what he says is the opposite: "Do *not* suppose that I am becoming a kind of parricide," he tells Theaetetus (241d). He does speak of attacking (ἐπιτίθεσθαι) and even refuting (ἐλέγχειν) Parmenides' words (241d-242b), however the attack and refutation are directed not against Parmenides' ontology itself, but only against his statement (λόγος) quoted at 237a, "For in no way may this prevail, that things that are not, are" (B7.1). If Plato thought that this was not merely a semantic correction, as I believe it is, but a refutation of Parmenides' whole ontology, then the Eleatic visitor would indeed be

[35] For the meaning of νόος in Parmenides' day see Guthrie 1969, 17-19; also Verdenius 1942, 9-10.
[36] Diels-Kranz A34 from Simplicius' Commentary on Aristotle's *Physics* (*Comm. Arist.* Gr. IX, 39), Gallop translation (1984, 115), modified.
[37] See for example Cordero 2004, 133-4. This view is pervasive in the literature on the *Sophist*.
[38] Cordero questions whether Zeno was a disciple of Parmenides (2004, 182).

a parricide in the figurative sense used. The visitor's assurance that he is not a parricide, as well as the subsequent discussion, shows that it is only Parmenides' stark formulation, and not his ontology, that is under attack.[39]

As for Zeno's paradoxes, in the absence of their original context it is possible to interpret him to be arguing that all activity is impossible, but it seems unlikely that he would have been nonplussed by a pre-Socratic Samuel Johnson who walked across the room and said, "Thus I refute Zeno", or by someone who pointed out that Zeno himself is engaging in the activity of bringing new arguments into existence, attempting to change people's minds, and going about the ordinary activities of life. The usual reply is that he would say it is all an illusion, but what exactly would that mean and who exactly is deluded? It is less problematic to read him as denying not that change exists but that it is rational. Whatever we may think of their validity, the implication of his arguments is not that motion does not exist, but that it exists only for the senses and not for reason. When we superimpose the logically contradictory categories "is" and "is not" onto the sensible world of change, in which "is" and "is not" converge in "becoming", the lack of fit will always leave space for paradoxes.[40] So if we wish to understand the nature of reality in a logically coherent way we must look beyond the world of our senses and be guided by abstract rationality.

4. Space and time

Corresponding to the epistemological difference between truth and appearance, where truth is perceived by reason and appearance by the senses, there is an ontological difference according to the presence or absence of space and time. The senses tell us that reality is composed of innumerable individuals spatially and temporally separate from one another. Reason tells us that reality is an indivisible unity, and what is absent from our eyes may be present to our mind:

> But gaze upon things which although absent are securely present to the mind.
> For you will not cut off what is from clinging to what is,
> neither being scattered everywhere in every way in order nor being brought together. [B4]

In other words, although space exists for the senses it does not exist for reason.[41] Time exists for our changing thoughts as well as our senses, but still not for reason in which logical and mathematical truth, at least, is constant. The senses and our changing thoughts present reality as transient, coming into being, changing, and passing away. Reason, on the other hand, showed that reality must always have existed, is unchanging, and can never be destroyed. B8 combines the language of time and timelessness:

> On this way there are signs
> exceedingly many – that being ungenerated it is also imperishable,
> whole and of a single kind and unshaken and complete.
> Nor was it ever nor will it be, since it is now [νῦν], all together

[39] Also see Bormann 1979, 30-42, 38.

[40] Including the problem of universals in Aristotle (see above, n34) and the Buddhist paradox of *anicca*.

[41] Here ἀπεόντα (absent) and παρεόντα (present) can be interpreted temporally as well as spatially (see Tarán 1965, 46). Kant's arguments against the reality of space and time similarly appeal to their knowability only by the senses and not by the intellect. See for example *Prolegomena to Any Future Metaphysics,* section 13.

> one, continuous. [B8.2-6]

When we distinguish time into past, present, and future, we designate the present as "now", but that distinction is rejected here, because we would never say of the past "nor was it ever" or of the future "nor will it be." The now that is "all together one, continuous" collapses the distinction between the parts of time into a timeless present: since what-is as a unity never changes, past and future have no meaning for it; it is beyond time, as in B7 it was beyond space.[42]

The difference between Being and Appearance, then, is that appearances are the manifestations of Being to our senses in space and time. But space and time, whatever they are in themselves, are not intrinsic to Being which is simply "now" and indivisible. The Way of Truth is to use reason to see beyond the particularity of temporality and spatiality to the timeless unity of what is. This sense of timelessness is difficult for us to understand, it is "far from the beaten path of humans" (B1.27), but writers have spoken of it in all cultures and all ages, it is not limited to the "unsophisticated" beginnings of philosophy. The nineteenth century English poet and literary critic John Addington Symonds, for example, describes his own experience of

> a gradual but swiftly progressive obliteration of space, time, sensation, and the multitudinous factors of experience which seem to qualify what we are pleased to call our Self… At last nothing remained but a pure, absolute, abstract Self. The universe became without form and void of content. It served to impress upon my growing nature the phantasmal unreality of all the circumstances which contribute to a merely phenomenal consciousness.[43]

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[42] As Hoy points out, this timeless unity must be more than a fourth dimensional whole because there is an internal differentiation within the latter that is denied of the former (1994, 592-8). The question of timelessness in Parmenides is a matter of considerable controversy; it would mark the first reference to timelessness in western literature. See Tarán 1965, 175-188; Guthrie 1969, 26-30, 45, 49; Kahn 1969, 716; Mourelatos 1970, 105-11; Stokes 1971, 128-30; Manchester 1979; Gallop 1984, 13-14; Cordero 2004, 171. Tarán believes that the apparent reference to timelessness in line 5 – οὐδέ ποτ' ἦν οὐδ' ἔσται, ἐπεὶ νῦν ἔστιν ὁμοῦ πᾶν ("Nor was it ever nor will it be, since it is now, all together") – is incompatible with the words with which the sentence concludes in line 6, ἕν, συνεχές ("one, continuous") (177). But συνεχές literally means "holding together", and can be applied to what is timeless in the sense of "indivisible," as in B8.22 Parmenides says, "Nor is it divided, since it all is alike". Cf. Owen: "that συνεχές can have a temporal sense needs no arguing" (1975, 63). Tarán does not deny that Parmenides' doctrine *entails* atemporality, but only that Parmenides was aware that it did: "The denial of difference makes all process impossible; the logical connection between time and process would require, if Parmenides was aware of it, that he deny duration, too" (1965, 175, cf. Tarán 1979, 43-53). Others have argued that Parmenides' use of the term "now" is incompatible with timelessness because "now" is a temporal term. See Mourelatos 103-11; Stokes 1971, 129-30; Miller 1978, 27. But "now" has been used throughout history to refer to timeless immediacy as well as to present time.

[43] Brown 1895, 29-31, abridged. Cited by James in 1901-02, Lecture 16. Also see Verdenius 1949, 124&n46. In "Burnt Norton" T.S. Eliot similarly writes that we cannot sustain such an experience very long because "human kind /Cannot bear very much reality" (I.44-5). "I can only say, *there* we have been: but I cannot say where. /And I cannot say, how long, for that is to place it in time… /Time past and time future /Allow but a little consciousness. To be conscious is not to be in time" (II.22-39).

This testimony, among countless others, shows Parmenides to be far from alone in the view that only the timeless spaceless unity is fully real, and that in its light the temporal world of becoming dims to something less than real without however being nonexistent.

The Way of Appearance does not reduce to the Way of Nonbeing, which is simply the *reductio ad absurdum* of attempting to speak meaningfully about absolute nonexistence. The Way of Appearance is to be deceived by the senses (by "habit born from much experience") into thinking there is nothing more to reality than what appears in time and space, and that the transience characteristic of sensible reality is characteristic of reality absolutely. This is what the goddess refers to in B6 when she restrains Parmenides from the road of mortals "for whom both to be and not to be are judged the same and not the same" and in B7 when she tells him to restrain his thought from the road according to which "things that are not, are". At the end of B8 she explains the problem that underlies the deceptiveness of the Way of Appearance: "they made up their minds to name two forms, of which it is not right to name one – in this they have gone astray" (B8.51-54). This is the most ambiguous and disputed line in the poem.[44] Is the goddess referring to two specific forms that mortals name, or does she mean dualities generally? Does "of which it is not right to name one" mean it is not right to name even one of them, or that one of them may be named but not the other? And have mortals gone astray in making up their minds to name two forms, or in making up their minds that they ought not to name one of the forms? She proceeds to distinguish the two forms of day and night:

> and they distinguished things opposite in body, and established signs
> apart from one another – for one, the aetherial fire of flame,
> mild, very light, the same as itself in every direction,
> but not the same as the other; but that other one, it itself
> is opposite – dark night, a dense and heavy body. [B8.55-59]

Wherever we happen to be it is either night or day: one of this pair exists and the other does not. Later the first no longer exists and the other has come to be. Where mortals err is in believing that at any given time it is right to name only one of these two – either day exists and night does not, or night exists and day does not. This is how it necessarily appears within time, and the error of mortal thinking is not to realize that if night and day were Being rather than appearances, they could never cease to exist, and if they did not exist they could never come into existence. Night and day appear at one time or another, but time is only the medium of appearance, the medium in which timeless Being appears to mortals, to temporal beings. A similar point was made by Heraclitus:

> God is day and night, winter and summer, war and peace, satiety and hunger, but changes the way <fire,> when mingled with perfumes, is named according to the scent of each. [B67]

The perfumes are a metaphor for the moments of time: in the truest reality the opposing states that alternate in time are all present simultaneously and indistinguishably. Only when they are mixed with the moments of time, i.e. "the fitting times [ὥρας] which bring everything" (B100), do they separate out and alternate with each other. God in itself is

[44] Cf. Cornford 1939, 46; Hölscher 1968, 103-7; Miller 1978, 17-21; Gallop 1984, 10.

unchanging and timeless, but seen at particular times appears as one state or another.[45] The relationship between the unified timeless Being that is apprehended by reason and the spatio-temporal appearances apprehended by the bodily senses can be seen also in B16, which was discussed at the end of section 1, above.

If Being is beyond time and space, apprehensible only by reason, and appearances are spatio-temporal manifestations of Being, apprehensible only by our senses, what is the status of space and time themselves? They cannot be features of Being, since it is clear from B8 that what-is is without internal distinctions. Nor can they be separate principles (as for Plato the Receptacle is distinct from the formative principle of the Good) since B2 insists that anything apart from what-is is nothing. As a monist the one path open to Parmenides would be some form of self-differentiation, in which the first principle, although undifferentiated in its original nature, subsequently differentiates itself in a metaphysical analog of atomic decay or the dispersal of light, the result of which is a logical or ontological hierarchy rather than a temporal sequence. This is evidently Simplicius' interpretation when he says, "the sensible world has fallen from the intelligible reality into the domain of manifestation and appearing" (n38 above). But the fragments afford no clue to Parmenides' answer, or even whether he had considered the question.

5. Logic and mysticism

We began by noting the various views of Parmenides as a materialist, idealist, logician, and mystic. On the present interpretation he was no materialist. He might be considered an idealist on the strength of the words, "the full is thought" in B16, but he was not an idealist in the usual sense of believing that only individual minds are real. What is most distinctive about him is the way he combines logic with mysticism. Mysticism and logic are traditional antagonists, the one finding truth in what is unconceptualizable and undifferentiated, the other finding it in what is clear and distinct.[46] Mystics may of course try to render as clearly as possible experiences that they find to be ultimately wordless, but for Parmenides the connection was not merely instrumental – logic for the sake of communication – but intrinsic. What interested him was the convergence of logic and mystery in the realm of spaceless and timeless abstraction.[47] Unlike Aristotle, Parmenides' concern with logic was not in its power to extend our knowledge of the temporal world beyond what our senses tell us, but in its power to abstract from the temporal world altogether. The importance of logic to Parmenides is that when we concern ourselves with it not in order to milk the information latent in our sensory experiences, but to appreciate the significance of its absolute disjunction between "is" and "is not," we leave behind time, space, and becoming, in favor of the timelessness of Being.

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[45] Taking the perfumes to refer to moments in time is not open to Kahn's objection against interpreting the metaphor as fire and incense, namely that unlike the whole and its parts "the altar flame is of course distinct from the incense or spices that are thrown upon it" (1979, 280)..

[46] Thus Kingsley 2002 and Gemelli Marciano 2008 downplay the rational element in Parmenides' poem. For a reply to their arguments and a defense of the role of Parmenides' logic, see Granger 2010.

[47] For other defenses of Parmenides as taking a compatibilist view of the relation between logic and mysticism, see Bowra 1937; Verdenius 1949; Granger 2010, 35-36.

It is comparable to the interest of the Platonic dialectician in astronomy and music not for the sake of actual physical sounds and heavenly bodies, but only for the abstract rational principles that underlie them (*Republic* 529b-531c). Parmenides' procedure is a forerunner of the procedure that Socrates employs to raise us out of the Cave. Socrates explains that

> some sense perceptions don't call upon reason [νόησιν] to examine them because they are sufficiently evaluated by sense perception itself, while others summon reason in every way to examine them because sense perception produces no sound result.[48]

For example, Socrates says, if we look at three fingers of different sizes, sense perception does not need reason to tell it that they are fingers. But when we notice that the middle-sized finger is both big and small as we compare it to the smallest and largest ones, we need reason to determine how something can be both big and small in apparent self-contradiction. Since it is impossible for something to be opposite to itself, the fact that the finger is both big and small requires the rational faculty to distinguish its bigness and smallness as two, even though the sense of sight regarded the finger as one. And since the intellect and sense perception are thereby in opposition to each other, the visible and intelligible realms must also be two rather than one (524c).[49]

The logic of non-contradiction functions in a similar way in Parmenides' poem. In restraining Parmenides not only from the Way of Nonbeing but also from the Way of Appearance the goddess refers to it as,

> the way on which mortals, knowing nothing,
> two-headed, wander. For helplessness
> in their breasts guides their wandering mind. But they are carried on
> equally deaf and blind, amazed, hordes without judgment,
> for whom both to be and not to be are judged the same and
> not the same, and the path of all is backward-turning. [B6]

It is sometimes suggested that this criticism is directed only at Heraclitus and his fondness for paradox, but her language suggests that she is speaking of humanity generally. Why, however, would she describe us in these terms? We certainly do not believe that to be and not to be are the same and not the same. We believe that they are not the same. But just as for Plato in a world of multiplicity an object can possess contradictory attributes such as large and small depending on what it is compared with, for Parmenides in a world of becoming things are both the same and not the same as themselves at different times, and everything is backward-turning because it changes from what it was not to what it is, and then from what it is to what it was not. We see this most obviously in birth, life, and death, but also in any other change. In growth our present size is not what it was earlier, and will not be later what it is now. And in motion something is not where it was earlier, and will not be later where it is now. Mortals are as little aware of these paradoxes as they are of Socrates' paradox of finger sizes, but once we are motivated by what Plato calls wonder and

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[48] 523a-b. Translations from Plato are my own.

[49] In Book 4 Socrates pointed out that "the same thing will not be willing to do or undergo opposites in the same part of itself, in relation to the same thing, at the same time. So, if we ever find this happening in the soul, we'll know that we aren't dealing with one thing but with many" (436b). Here the same principle is applied not to the soul's motivations but to its cognitions.

what Parmenides calls spirit (θυμός, B1.1) we become dissatisfied with conceptual discrepancies and seek the distinctions that make our experience coherent.

For Parmenides as for Plato, simple logic tells us that if for sense perception "to be" and "not to be" are the same and not the same, while reason tells us that nothing can both be and not be, and things cannot be the same and not the same, then reason and the senses stand in contradiction to each other and must inhabit different realms.[50] Corresponding to Plato's later designation of these realms as the intelligible and the visible, Parmenides calls them the Way of Truth and the Way of Appearance. We can understand from this why Plato held Parmenides in such high esteem. It was Parmenides who first made the distinction that will become in Plato the difference between 1) Being, which is perceived by reason and is the object of knowledge but is not perceived by the senses, 2) becoming, which is perceived by the senses and is the object of opinion (δόχα) but is not perceived by reason, and 3) nonexistence, which is neither perceivable nor conceivable.[51] Again, Parmenides' view that appearances are the manifestations of eternal Being to our senses in space and time would have been highly regarded by a philosopher for whom time is the moving image of eternity (*Timaeus* 37d). Even the Demiurge who is responsible for the world of becoming in the *Timaeus*, has his counterpart in Parmenides:

> For the narrower [rings] were filled with unmixed fire.
> The ones next to them with night, but a due amount of fire is inserted among it,
> and in the middle of these[52] is the goddess who governs all things. [B12]

If the goddess who instructs Parmenides personifies truth and timeless Being, the goddess that she speaks of here personifies the governing principle of the temporal world-order, much like Plato's Demiurge. If Parmenides believed that the world of becoming was entirely illusory and nonexistent it does not seem likely that he would assign a deity to preside over it.

6. Existence and value

Why did Parmenides put his teaching into the mouth of a goddess instead of speaking in his own voice like his predecessors? Is the goddess simply a literary device with no further significance than to give to Parmenides' words an aura of authority, like an invocation of the muse, or is there a connection between the eternal being that the goddess speaks of and the immortal goddess herself? In fact the goddess, like Being, is portrayed not only as eternal but also as beyond time, since her abode is beyond the gates that separate night from day (B1.11-22).[53] And like Being she is beyond space as well as time, for the road that leads to her

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[50] Cf. Hölscher: "Erkenntnis findet statt, indem das Feurige in uns das Lichte ergreift, das Nächtlige in uns das Dunkle und Feste (nämlich je nach dem überwiegenden Bestandteil im einzelnen Organ)." "Alles ist Licht oder Nacht. Das Dünne, Leichte ist nicht Nichtsein, sondern Licht; das Unsichtbare ist nicht Nichtsein, sondern Nacht" (1968, 113&129). Previously Hölscher suggested taking Ταὐτὸν δ' ἐστὶ νοεῖν in B8.34 in a Platonic sense as meaning that only what is self-same is knowable: "'Das Selbige kann erkannt werden', nämlich weil es ein Selbiges und mit such selbst identische Bleibendes ist… Das μὴ ταὐτόν' ist unerkennbar" (1968, 101).

[51] *Republic* 5. Also see Verdenius 1942, 60; and Robinson 1979, esp. 58-59. For a different view see Cordero 2004, 31.

[52] In the absence of the full context of this passage, "in the middle of these" may mean either the middle of the rings or the middle of things as a whole, i.e. the universe. See Tarán 1965, 247-8.

[53] This is a difficult passage. In B1 Parmenides says:

goes through all cities (B1.2-3) and yet is "far from the beaten path of humans" (B1.27).[54] The road is an image of the reality that is dispersed yet immediately present, "things which although absent are securely present in thought" (B4). It is far from the beaten path of humans because the beaten path is the way of sense perception, not the way of thought. The goddess then, beyond time and space, is a personification of Being, and not just a vehicle of its description. She is a personification of the intellectual experience in which the characteristics of Being disclose themselves to Parmenides.

But why personify this experience, and why choose a divinity? Is anything added to the concept of Being by calling it divine? When Xenophanes said that "Homer and Hesiod have ascribed to the gods all deeds which among men are a reproach and a disgrace: thieving, adultery, and deceiving one another" (B11), he seems to be taking exception to the earlier view that divinity is compatible with immorality; and by the time of Heraclitus the divine was explicitly connected with wisdom, beauty, goodness, and justice (B32, B48, B102). An identification of Parmenides' conception of Being with the goddess has a significance that is more than literary if it is meant to suggest that Being is the source of value as well as existence. Existence alone has no moral significance, no connection with value. Parmenides conceives of Being and the goddess, however, in terms of value as well as existence. The keys to the doors that lead to the goddess' realm are controlled by Justice (Dike) (B1.14), and the goddess tells Parmenides that "it was not an evil [κακή] destiny that sent you forth to travel this road … but Right [Themis] and Justice" (B1.26-8). Dike and Themis reappear in the context of Being itself: "Justice [Dike] has permitted it neither to come to be nor to

8. the daughters of the Sun
9. were hastening to escort <me> after leaving the house of Night
10. for the light, having pushed back the veils from their heads with their hands.
11. There are the gates of the roads of Night and Day,
12. and a lintel and a stone threshold contain them.
13. High in the sky they are filled by huge doors
14. of which avenging Justice holds the keys that fit hem.
15. The maidens beguiled her with soft words
16. and skillfully persuaded her to push back the bar for them
17. quickly from the gates.

The translation (by McKirahan) accepts Diels' punctuation of lines 9-10, instead of alternatives on which the journey is from light to Night. At first it may seem that "leaving the house of Night for the light" means the road leads from the mortals' realm of Night to the goddess's realm of light (9-10). In that case the gates of the roads of Night and Day, referred to in line 11, could be understood to separate night from day, rather than separating the timeless realm of the goddess from the temporal world of night and day. But in line 9 the travelers have already left the house of Night and they do not arrive at the gates of the roads of Night and Day until two lines later. In that case the gates cannot be what separate night from day. Night and day must both be on our side of the gates, and the gates must lead to a realm beyond the alternation of the two. There are thus two boundaries: the door of the house of Night, which separates night from day; and the gates of the roads of Night and Day, which separate the timeless realm of the goddess from both sides of the duality of night and day. For further discussion of the interpretive problems in the proem see Owens 1979, 15-29; Granger 2008, 1-20, and 2010, 17n7; and Gemelli Marciano 2008, 21-48.

[54] The noun modified by παντ' ("all") is a matter of conjecture. "Cities" is the most common conjecture, but see Gallop 1984, 48n1 and Cordero 2004, 26-7. Since the path of Parmenides' journey is "far from the beaten path of humans," I agree with Tarán that "Parmenides did not intend his journey to be taken as a reality in any sense" – against those who interpret "through all cities" literally to mean he was an itinerant philosopher, or that it was an actually journey whose route may be discoverable (1965, 22-3, 30).

perish" (B8.13-14), and "mighty Necessity holds it in the bonds of a limit … since it is not right [*themis*] for what is to be incomplete" (B8.30-32).[55] In light of the moral qualities that complement the ontological qualities of Being, the connection that Parmenides draws between Being and the divine has more than a literary purpose, and his poem has more than an ontological purpose. Moreover, since the world of appearance in space and time, too, is presided over by a goddess (B12), it has its own kind of value just as it has its own kind of existence.

7. Concluding remark

There is no need to make allowances for Parmenides' early date in order to appreciate his greatness and the continuing relevance of his insights. Rather than taking only the first few stumbling steps in formulating and applying the basic principles of logic, he was clear sighted enough to provide the basis for a coherent account of the relationship between complete reality taken in abstraction from local spatio-temporal variations, and the more ambiguous reality manifested by the spatio-temporal variations in all their multiplicity. In what we have of his work virtually all the fundamental concerns of metaphysics are already recognized and adumbrated, if not fully delineated – the one and the many, being and becoming, appearance and reality, space and time, existence and value – although the richness of his thought is obscured by the terseness of his writing and the loss of most of the original text. It is an obscurity made all the more intractable if Parmenides' early date makes us too ready to attribute the absence of detailed explanations to an absence of sophistication and insight.

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[55] Cf. Bowra 1937, 107-8. McKirahan's "not incomplete" appears to be an erratum.

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3

The Nature of Metaphysics and Science: The Problem of the One and the Many in Thomas Aquinas

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1. Introduction

David Hume condemned both rationalist metaphysicians, such as Descartes and Leibniz, and empiricist metaphysicians, such as Locke and Berkeley. He argued against the rationalists that, while clear and distinct ideas supply a logical universality and necessity, relations of ideas themselves do not suffice to put the mind in contact with reality. Against Locke and Berkeley, he argued that on empirical grounds one could not justify the existence of substance and the reality of causal relations. As a result, neither rationalist nor empiricist metaphysics could meet the standard of necessity and universality as the conditions for science. Immanuel Kant considered Hume's objections and decided that, while the mind could contribute *a priori* necessity and universality to physical and mathematical sciences, its endeavor to apply such principles to metaphysics is epistemologically illegitimate.

Had Hume and Kant a greater familiarity with classical realist metaphysicians—such as Aristotle and Thomas Aquinas—they could have witnessed a model for metaphysics quite different from that of the rationalists and empiricists. Sadly, they did not intensively study realist metaphysicians on their own terms. To the extent that they were familiar with metaphysics before Descartes, they tended to read all metaphysicians—pre-modern and modern—through the rationalist or the empiricist lens. But such metaphysics is compromised by the belief that knowledge is about ideas. For empiricism too is no realism; instead it is a subjective idealism. Locke argues that knowledge is directly about ideas, not things. Descartes, too, must hold that the first object of consciousness is an idea in the mind. In contrast, the classical realism of Aristotle and Aquinas holds that the proper objects of knowledge are not ideas but actual things, which it is possible to know as they are *in themselves* (i.e., as they exist independently of our knowing them). Here we have a metaphysics different in kind from the modern variety.

The task of this article is to show that in classical metaphysics—especially in the work of St. Thomas Aquinas (1225-1274)—there is an account of realist knowledge which, escaping the skepticism of Hume and Kant, can explain metaphysics as a science. This is not science in name only. Instead it is the genuine article: knowledge of mind-independent realities consisting of necessity and universality. In order to justify this vision of metaphysics as a

science, Aquinas, following Aristotle, connects sense-realism with the problem of the one and the many.[1]

Broadly speaking, the problem of the one and the many, since ancient times, refers to a basic question of knowledge: how does our intelligence command a multiplicity? Of course, our intelligence accomplishes this by referring a multitude to a common principle. This principle shows that, in spite of the fact that things may be diverse in certain respects, they nonetheless are one. They are one because a single thing is predicable of each of them.

The ancient Greeks struggled over many centuries to solve the problem by bold alternatives. Such alternatives ranged from the Presocratics arguing that diverse things (a many) are reducible to a basic element (say, water) or set of elements (say, water, air, earth, and fire) to Socrates, Plato, and Aristotle arguing that diverse things (a many) ultimately are substances or relate to substances, whose formal principles or natures (unities) define them. What these alternative solutions have in common is an endeavor to achieve science: the demonstration that diverse things relate necessarily to a whole, a universal; in other words, the demonstration that one thing must be predicable of other things.

2. Aquinas and the Greeks

Aquinas' solution to the problem of the one and the many is significant, having far-reaching implications for our understanding of philosophy and science. In St. Thomas' writings one discovers not only a justification of metaphysics as a science, one discovers an account of the nature of science itself. He accomplishes this by showing how every science in particular applies analogically the principles that make metaphysics a science. In other words, Aquinas' account of the nature of science reveals that all other sciences adapt, in a partly similar and partly dissimilar way, the chief principles which ground metaphysical science.

A further consequence of Aquinas' achievement is to challenge the accepted view among historians of philosophy that the problem of the one and the many describes the philosophical activity of the ancient Greeks exclusively. If Aquinas' arguments are convincing, they show that all philosophy, and all science for that matter, not just ancient Greek philosophy or science, is really a working out of the problem of the one and the many. Whenever genuine philosophy or science takes place, the philosopher or scientist is predicating a one of a multitude.

It is a commonplace to say that Aquinas' philosophy depends significantly on the work of Aristotle. This commonplace, however, must not obscure that Aquinas had good reasons to break with the tendency of his time and prefer Aristotle over Plato. As a sense realist, Aquinas was committed to Aristotle's assertion that there is nothing in the intellect that is not first in the senses. Like Aristotle, Aquinas holds that the content-determining cause of information in the mind derives originally from our sense-awareness of actual physical things.[2] Given this view of knowledge, Aquinas cannot accept Platonism. While Plato begins

[1] I would have been unable to write this essay without relying on the work of Etienne Gilson, Armand Maurer, Charles Bonaventure Crowley, and Peter Redpath. These scholars are the true pathfinders toward an understanding of St. Thomas' understanding of science and metaphysics in light of the problem of the one and the many.

[2] St. Thomas Aquinas, *De Veritate*, q. 2, a. 3, arg. 19. See Aristotle, *De Anima*, Bk. III, 429b 31-430a 2.

philosophical investigation with examples and circumstances known by the senses, he transcends these examples by arguing that the intelligibilities (forms or natures) which our intellects grasp have no *real* foundation in physical things. Reality for Plato must transcend bodies. Physical things, since unreal, fall outside the metaphysician's purview, since metaphysics is the science of reality. Since physical things *as physical* can supply no permanent intelligibilities, no necessity or universality, no science at all, let alone metaphysics, can have physical things as its object.[3]

In contrast, Aristotle argues that necessity and universality can define not only metaphysics but also physics. And Physics for Aristotle differs from modern physics. The latter is a quantitative, measurable, statistical description of natural phenomena. For Aristotle physics is about substances: their causes, their intrinsic principles (matter and form), and especially their movement. This science is achievable for Aristotle because the physical world is genuinely knowable, even though it is known most strictly through science (demonstration of the necessary and the universal). Judgments about contingent things can be true. But such knowledge does not constitute science. Science is knowledge in a stricter sense of the word: demonstration in terms of causes so as to supply universal and necessary knowledge. The search for causes is the essential task of philosophy. Since science, for Aristotle, is knowledge of causes, science and philosophy mean the same thing. Hence, Aristotle would object to the modernist tendency to separate science from philosophy.

3. Wonder

Philosophy, Aristotle says, begins in wonder.[4] It culminates in the discovery of causes. Aristotle does not start with wonder to make philosophy more appealing to those with a poetic temperament. No, his stress on wonder is all too prosaic. Wonder, he says, provokes fear because we are ignorant of wonder's object. Ignorance makes us fearful because what we do not know can endanger us. If we can remedy our ignorance, we will allay our fears. This observation about emotion is why Aristotle begins his *Metaphysics* with the conviction that human beings have a *natural desire* to pursue philosophy.[5]

St. Thomas expands on Aristotle's discussion of wonder in his *Commentary on the Metaphysics of Aristotle*. Fear, St. Thomas declares, is an irascible appetite that provokes arduous activity as we hope to overcome our fear. Alternatively, we may either attain a good (*bonum arduum*) or escape an evil (*malum arduum*).[6] St. Thomas goes on to say that fear, at first, discourages philosophical inquiry because our limitations and reluctance to commit error dispose us to withdraw from examining what presents itself in experience. But eventually a rational person knows that the only way to overcome fear and ignorance is to find causes, so as to explain why experience is as it is.

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[3] Plotinus in *Ennead* VI, 1-3 most famously makes the case that Platonism can only be a science of the non-physical world. Since, as a Neoplatonist, he is sympathetic with Plato, he condemns Aristotle for imagining that a science of physical things is possible.
[4] Aristotle, *Metaphysics*, Bk. I, 1, 980a 1-982a 10-15.
[5] *Ibid*., Bk. I, 2, 982a 10-15.
[6] St. Thomas Aquinas, *Summa theologiae* I-II, q. 23, a. 1; q. 26, prologue.

Thus, there is a purpose to wonder: to end wonder by knowing a cause. In other words, wonder seeks its own elimination, its contrary, which is knowledge of a cause. For this reason, we do not wonder about what we already know. Nor are philosophers content to remain in a state of wonder.[7]

Speaking in general terms, we wonder *that* things are and *what* things are. In other words, wonder ultimately impels philosophy to its fundamental task: the analysis and understanding of beings. Since such analysis makes evident that there are principles all beings share, philosophy's most fundamental task is the study of being as being. In this effort to supply a comprehensive philosophy of being, Aristotle determines how to explain knowledge, the metaphysics of knowledge, if you will. In this context he develops an account of science itself that still has the ring of truth. As the heir to Aristotle's metaphysics, Aquinas deepens and refines the Stagirite's conception of science and metaphysics.

Knowledge terminates wonder. When knowledge is about causes science forms. It is important to recognize that, for Aristotle and St. Thomas, science is not a proposition or a set of propositions, a "body of knowledge," as it is sometimes called. Science is not an idea or a body of ideas in a system, as it is for many modern philosophers. Instead, for Aristotle and St. Thomas, philosophy or science is a *habit*. A habit is the perfection of a certain power or faculty to know or demonstrate skill in repeated ways. As a result, habit involves memory. By repetition of the operation of a faculty—senses, imagination, will, or intellect—habits form. Since philosophy on its most fundamental level is knowledge of beings, philosophy is the habituation of an intensive intellectual awareness of the principles of beings. This habitual awareness, this science of metaphysics, Aristotle and St. Thomas explain in terms of the one and the many.[8]

The above remarks require a clarification: strictly speaking, knowledge is not just the operation of a faculty, as though it were a discrete or disembodied power. Knowledge involves the entire knower. This is a crucial point concerning Aristotle's and St. Thomas' sense realism. Knowledge relies on the senses because the human person is an organic unity. The unitary knower exercises different faculties. But this is not to suggest that as the knower habituates one faculty, the other faculties are not involved. True, the nature of certain subject matter requires the focus, concentration, and habituation of a particular faculty. But this must not obscure that one and the same person always knows through the integrated action of his or her multiple powers. Hence, it is not just the intellect that knows metaphysics. Nor is it the case that when one hears it is only the ears that operate; it is the whole person who hears, exercising as an organic unity the power of the auditory. Etienne Gilson effectively stresses this point by saying that the human knower "senses with the intellect and intellectualizes with the senses." All ways of knowing are operating in diverse but integrated ways whenever the organic unity, the human knower, knows anything.[9]

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[7] St.. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, translated by John P. Rowan (Chicago, Illinois: Henry Regnery Company, 1961), BK I, 1, 3, n. 66.

[8] Aristotle argues that experience itself depends on memory, not just sensation, at *Metaphysics*, I, 1, 980a 27-980b 24.

[9] Etienne Gilson, *Thomist Realism and the Critique of Knowledge*, translated by Mark A. Wauck (San Francisco, California: Ignatius Press, 1986), pp. 171-215.

4. Being and unity

Aristotle's key metaphysical insight toward his understanding of science is that being and unity are really the same. Their difference is only conceptual. Everything that is is one. This convertibility of being and unity explains why Aristotle devotes so much attention to unity in the *Metaphysics*. Since metaphysics is the science of being, and since unity is convertible with being, metaphysics will examine as many kinds of unity as there are beings.[10] If one considers a whole, say, a bar of gold, it is one. Should one divide it, each of its parts is a unit, a one. Even aggregate entities, such as choirs or armies, are unities. How can one think of a being without thinking of it as one? Even Aristotle's criticism of Plato depends on the insight that being and unity are identical. His central criticism of Plato is that his theory of Forms puts the unity of things outside their natures. Unity is required to give intelligibility to things (whereby things become a one), and yet Plato places their unity outside them.[11]

This criticism of Plato carries over into Aristotle's discussion of the requirements of demonstration in the *Posterior Analytics*. Demonstrative science, Aristotle declares, involves awareness of the way things are and why. To provide an explanation that is genuinely scientific, a philosopher must show that there is something, "a one," common to a plurality of things. This unity, or universal, becomes a middle term that, without equivocation, is predicable of many. When there is a one predicable of many beings demonstration is possible. As Aristotle puts it, demonstration requires that one thing exist "in many and about many."[12]

By reflecting on the connection between unity and being, Aristotle identifies the nature of science: knowledge of principles which relate to a subject matter in a necessary and universal way. In his *Commentary on the Metaphysics of Aristotle*, St. Thomas comments extensively on Aristotle's account of philosophy or science. If science is to study reality, it must study substance, that which primarily exists. Substance is the way that something exists as a separate and determinate unity. Everything that exists is either a substance or something inhering in a substance. Accordingly, science studies substance and its intrinsic principles and relationships. Another way to express this is that in science we examine a substance as a principle, a subject (or "subject-matter"), which is predicable of multiple relationships essential to it. Considering science in this way, Aristotle and Aquinas call the subject of any science "a genus," a unity predicable of a plurality of things. Demonstration consists in making evident the necessary principles united to the genus in question.[13]

Aquinas points out that this genus must be *proximate*, not remote. In order for science to occur the intellect must be able to judge how *per se*, or necessary, effects or intrinsic principles flow from the nature of the subject, or genus. However, a remote genus does not provide such a basis. It is not clear how a remote genus is relevant to these effects. Instead, it is incidental to

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[10] Aristotle, *Metaphysics*, Bk. IV, 2, 1003b 22-34; Bk. X, 1, 1052a 15-1053b 8; 2, 1053b 23-24.
[11] *Ibid.*, X, 2, 1053b 9-23.
[12] Aristotle, *Posterior Analytics*, Bk. 1, 11, 77a 5-9. St. Thomas Aquinas, *Commentary on the Posterior Analytics of Aristotle*, translated by F. R. Lacher, O.P., based on the Leonine text (Albany, New York: Magi Books, Inc., 1970), Bk. I, 1, 19.
[13] Aristotle, *Posterior Analytics*, Bk. I, 27, 87a 37-87b 4; 11, 77a 5-9. See also *Metaphysics*, Bk. 5, 24, 1023a 26-32, and 26, 1024a 29-1024b 4.

them. Hence a remote subject lacks necessity and cannot ground science.[14] For example, "Hippocrates the physician," not "Hippocrates the man," or "Hippocrates the writer," is the *per se*, proximate subject, and cause of healing (which is his necessary accident).

The expression "necessary accident" seems oxymoronic, but it is a permissible distinction to explain Aristotle's view of science. "Necessary" or *per se* accidents are those traits that intrinsically and actually flow from a substance. They are principles necessarily relating to a subject because of that subject's nature. The connection between a substance and its necessary accidents make science possible because the subject is a unity that belongs demonstratively to a multiplicity of principles. Science takes place when the intellect demonstrates a relationship between a subject and its *per se*, or proper, accidents. These *per se*, or necessary, accidents are not to be confused with accidents as merely *incidental* features of a thing.[15] The Aristotelian tradition distinguishes these two kinds of accidents, calling the former "properties," and the latter merely "accidents." For example, having 180 degrees is a *property* of a triangle; having red or blue sides is accidental (or incidental), irrelevant to the science of triangularity.

Accidents cannot be objects of science. No science can study accidents as accidents. To attempt to justify an accident by relating it to another accident would lead to an infinite regress, since accidents lack necessity. An accident cannot be a one, or a universal principle, to integrate a multiplicity into a science. [16]

To illustrate the difference between *per se* and incidental accidents, consider the design and building of an outdoor amphitheater, an example that an ancient Greek, like Aristotle, would appreciate. The finished structure could involve an infinite number of accidents. Some people might like the vista, its surroundings, its acoustics, its illumination by a full moon, etc.; others may not. Regardless, the designer's or architect's art concerns only those accidents, those essential properties, that the subject of amphitheater construction causally determines, such as its intrinsic three-dimensional magnitude and shape.

Accordingly, science consists in identifying a subject, a proximate genus, about which one can make demonstrations because that subject relates necessarily to its *per se* attributes. Some additional examples should clarify how these principles go together to form the basis of scientific demonstration. Take the case of geometry. The subject of wonder for the geometrician is the surface body. This is the substance body that is the proximate, and principal, subject of all plane figures. This genus, or principle, is the proper subject of all plane figures, which are its essential and necessary, or *per se*, accidents. By reasoning quantitatively about a surface body, the geometrician is able to intuit and infer all the properties that are attributable to the surface body. The science of Euclidean geometry exists because of the geometrician's speculative reflections on the surface body.[17]

Similarly, the doctor of medicine studies the healthy human body. The proximate principle of health is not the substantial, or surface body, but the biological human body. The human

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[14] *Ibid*., Bk. I, 11, 75a 18-37. See St. Thomas Aquinas, *Commentary on the Posterior Analytics of Aristotle*, Bk. I, 1, 14.

[15] Aristotle, *Posterior Analytics*, Bk. II, 2, 90b 14-16.

[16] Aristotle, *Metaphysics*, Bk., IV, 4, 1006a 32-1007b 17; Bk. VI, 1, 1026b 1-25; Bk. XI, 8, 1064b 30-1065b 4.

[17] St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, Bk. V, 1, 22, n. 1121; nn. 1125-1127; Aristotle, *Metaphysics*, Bk. V, 28, 1024b 10-13.

body as a living, sentient substance is the substance body, the subject matter, basis, of the science of medicine. The task of medical science is to determine how this subject body relates to a diversity of issues that concern it. These issues are from one perspective diverse, but from another perspective they are similar (have unity) because they *essentially* belong to the subject. Since unity-in-diversity is analogical judgment, Aristotle says that a science explains how principles relate to the subject-matter analogically, that is to say, in ways that are similar (because grounded in the subject) but in ways that are dissimilar (because they constitute distinct relations with the subject). Hence, Aristotle supplies his famous examples about the science of medicine, saying that "health" can be analogously predicable (1) of the thriving whole human organism, or (2) of urine as a sign of health, or (3) of diet and exercise as causes of health. These differences are all relevant to medical science as integrally related to the substance body, the healthy human organism.[18]

5. Opposites

Aquinas reveals that something else emerges when one thinks of the relationship of a substance body to its intrinsic principles in an analogical way. Since the subject body is a genus, it must involve opposites. A genus contains extreme differences, or contraries. Just as medical science studies health, it must also, correspondingly, as an extreme within the science's genus, study disease. Consequently, Aquinas argues, an important dimension of the examination of any science is to study its principles and terms of opposition (contraries, relations, and differences). So, for example, the economist in studying the economic body, studies both wealth and its opposite, poverty. Likewise, the ethicist studies the moral body, the free human subject, who is the principle of moral actions, involving virtue but also its opposite, vice. The law student studies the legal and the illegal; the political scientist, war and peace; the grammarian, disagreement and agreement; and so on.[19]

In addition, consider the following examples and their opposites that pertain to modern empirical science. The meteorologist studies "the meteorological substance-body," trying to describe, quantify, and predict the conditions of stable versus unstable weather. Likewise, the chemist studies "the chemical body," determining how to predict the behaviors of stable versus unstable elements and compounds. Similarly, the botanist studies "the plant body," trying to describe and measure the conditions that relate to plant vitality and death.

Curiously, on this matter of opposites, Aristotle and Aquinas argue that we actually derive our original concept of unity by first experiencing plurality. We become aware of unity as we negate its opposite. Aristotle and Aquinas embrace this conviction because of their sense realism. They insist that all of our knowledge, even our knowledge of unity, causes, substances, and principles, originates in the senses.[20] Our first primitive perceptions are of composite things. These appear to the senses as multiple and confused. And yet, they have some unity about them. Unity, Aquinas says, is order or lack of division.[21] We negate the divisiveness or plurality of composite things present in our experience. Thereby, we progressively unify the multiplicity of the sensorily experienced world. By the process of

[18] Aristotle, *Metaphysics*, IV, 2, 1003a 33-1003b 4.
[19] St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, Bk. IV, 2, 3, nn. 564-569.
[20] Aristotle, *Physics*, Bk. I, 1, 184a 17-21.
[21] St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, Bk. IV, 1, 2, n. 553.

cognitively integrating this information we arrive at the knowledge of the principle of unity as such. In return, unity spawns plurality, because as a genus, unity contains contrary opposites. Hence, unity in its relationship with plurality is fundamental for Aristotle: (1) plurality precedes unity; unity is the negation of plurality; (2) unity relates intrinsically to extremes within itself as a genus.[22]

6. Science and genera

If science is about being and being is unity, then science is about unity. With this in mind Aquinas explains that it is important to think of the subjects of science as genera. "A genus is a kind of whole, one which, for philosophy, or science, primarily refers to the immediate, proximate, first, or proper subject of different *per se* accidents, or unities, within the genus."[23] And as I indicated above, recognizing the subject of science as a genus also enables science to take into account opposites. Aquinas, however, realizes that this sort of language about genera is hazardous. One might confuse this sense of *philosophical* genera (unities of actual things) with *logical* genera (unities of ideas). Aquinas makes a special effort to address this difference:

> This sense of genus is not the one that signifies the essence of a species, as animal is the genus of man, but the one that is the proper subject in the species of different accidents. For surface is the subject of all plane figures. And it bears some likeness to a genus, because the proper subject is given in the definition of an accident just as a genus is given in the definition of its species. Hence the proper subject of an accident is predicated like a genus.[24]

Aquinas here is saying that there is a risk in confusing philosophy with logic in these cases because, when the philosopher predicates a genus, the philosopher does so in a way that resembles logical predication. When a logician predicates a genus, it is included in its species' definition. So, for example, animal is included in the definition of human being. Likewise, when a philosopher predicates a genus of its "species" (a necessary accident connected to its genus-subject), the philosophical genus too is included in its species definition. For example, a surface body is included in all plane figures. However, the difference is that the logician is merely predicating a concept, a generic abstraction, of the species (another abstraction), whereas the philosopher is predicating things, necessary accidents and relationships, that actually exist.

In his *Commentary on the de Trinitate of Boethius*, St. Thomas says that "principles can be called common [=universal] in two ways: by [logical] predication, as when I say form is common to all forms because it is predicated of all; second, by causality, as we say that the sun, which is numerically one is the principle of all things subject to generation."[25] Hence, according to St. Thomas and Aristotle, philosophical universals are not logical universals, principles comprehending a many by forming an *idea* of sameness. Philosophical universals

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[22] Ibid., Bk. IV, 1, 3, nn. 564-566.

[23] Peter Redpath, "Virtue as Intensive Quantity in Aristotle," *Contemporary Philosophy*, March-April, 2001, p. 5.

[24] St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, Bk. V, 1, 22, n. 1125.

[25] Armand Maurer, editor. *Commentary on the de Trinitate of Boethius*, q. 5, a. 4, reply. *The Division and Methods of the Sciences* (Toronto, Canada: The Pontifical Institute of Medieval Studies, 1963), pp. 42-43.

are causal universals. They establish a universal relationship between a particular cause and the many effects of which it is the universal cause.[26]

Armand A. Maurer remarks on this difference between logical and philosophical predication by considering an example important to metaphysics:

> From the point of view of the logician, material and immaterial things can be brought under the same genus (for example, substance), because he considers them only as concepts in the mind. From the point of view of the natural philosopher or metaphysician they do not come under the same genus because these philosophers consider the natures of things as they actually exist in reality, and in actual existence the substance of material things is not the same as that of immaterial things. Hence from a logical point of view, the genus of substance is predicated univocally of all substances; but from the point of view of the natural philosopher and the metaphysician it is predicated analogically.[27]

In reality, while material things and immaterial things are indeed substances, they differ so fundamentally in their mode of existence that we cannot speak of them as substance in the same sense. Metaphysics, in its endeavor to be precise about the way things are, must take these differences into account. Logic, however, which focuses merely on conceptual sameness, can prescind from such differences.

7. Substance, quantity, and quality

It is the business of metaphysics to investigate the intrinsic principles of beings. For Aristotle and Aquinas, this means that metaphysics is principally about the study of substances, because that which exists is either a substance or something inhering in a substance. Since we do not know substances directly, we must say that science studies substances through their intrinsic effects or aspects. The fact that some things exist because they inhere in substance makes science possible. Accordingly, Aristotle says that there are as many sciences as there are parts of substance.[28]

It is at this juncture that Aristotle identifies the two most basic attributes through which we know substance—quantity and quality—and judges that, since substance is known by these principles, quantity and quality are necessary conditions for science.[29] For one thing, quantity and quality actually inhere in a substance and remain with it as long as it exists. Secondly, all other accidents relate to substance by relating to its quantity and quality. Quantity and quality account for how in a variety of ways a substance can be actually and intrinsically a unity. Through quantity and quality we discern the *per se* relationships that a substance has.

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[26] Impressive work in a modern idiom on the causal efficacy of substances for science and on the deficiencies of Hume's account of causality has been done by Rom Harre and E. H. Madden, *Causal Powers: A Theory of Natural Necessity* (Totowa, New Jersey, Rowman & Littlefield Publishers, Inc., 1975).
[27] *Ibid*., q. 6, a. 3, c., footnote 15.
[28] Aristotle, *Metaphysics*, Bk. XII, 1, 1069a 30-1069b 3. St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, Bk. IV, 1, 2, n. 563.
[29] *Ibid*., Bk. V, 1, 15, n. 982. Aristotle, *Metaphysics*, Bk. X, 1, 1053a 24-27.

These intrinsic accidents emanate out of the intrinsic, constitutive principles of substance: matter and form. The centrality of quantity and quality is the reason that they immediately follow substance on the table of categories.[30]

Aquinas takes pains to show that, truth be known, quantity is the most basic of the intrinsic accidents. Arguably, quality is a kind of quantity. How so? To answer, Aquinas distinguishes two kinds of quantity: dimensive or bulk quantity (*molis*) and virtual or intensive quantity (*virtutis*).[31] While many students of Aristotle are familiar with the distinction between continuous and discrete quantity, they are less familiar with the more basic distinction between dimensive quantity and virtual quantity. Dimensive quantity is the effect of the matter of a natural substance producing its spatial extension. Continuous and discrete quantity are types of dimensive quantity. Continuous quantity, leaving a surface body undivided, yields the science of geometry. Discrete quantity, counting the divisible parts of a body, yields arithmetic.

Virtual quantity is an effect of the form of a natural substance, not its matter. Whereas dimensive spatiality comes about extensively, virtual quantity, otherwise known as *quality*, comes about intensively. Aquinas distinguishes these two types of quantity as follows: "Quantity is twofold. One is bulk (*molis*) quantity or dimensive (*dimensiva*) quantity, which is the only kind of quantity in bodily things. . . . The other is virtual (*virtutis*) quantity, which occurs according to the perfection of some nature or form." Quality admits of degrees. Such perfections have a quantitative measurability about them. However, their quantitative nature is not reducible to bodily extension. Their measurability lies in their intensity—the way they admit degrees, or more or less.[32] Such qualitative descriptions, Aquinas adds, are not reducible to dimensive matter and, thus, indicate a kind of "spiritual greatness just as heat is called great because of its intensity and perfection."[33]

Forms and qualities are measurable because they manifest certain kinds of magnitude and limits. But their magnitude and limit is not the same as measurable parts outside of parts

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[30] Many modern empirical scientists and social scientists, working out of a paradigm according to which spatially extended matter alone exists (at least for purposes of scientific explanation) attempt to reduce all scientific explanation to dimensive quantity. This reduction is even evident in psychology. See the important work of E. C. Boring, *Physical Dimensions of Consciousness* (New York: The Century Company, 1933). Also consult the more recent work of Austen Clark, *Sensory Qualities* (Oxford, United Kingdom: Oxford University Press, 1996).

[31] St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, Bk. V, 18, n. 1037. See also *Summa theologiae,* I, q. 42, a. 1, ad 1; also I-II, q. 52, a. 1, respondeo. For an extensive treatment of the notion of virtual quantity in Aristotle and Aquinas, see Charles Bonaventure Crowley, *Aristotelian-Thomistic Philosophy of Measure and the International System of Units (SI*), Peter A. Redpath, editor (Lanham, Maryland: University Press of America, 1996), pp. 25-47; 249-260.

[32] As an example of virtual quantity in modern physics consider this observation of Charles B. Crowley: "The quality 'energy' is a *quantitas virtutis* first found in the science of mechanics and thermodynamics, where it signified the capacity (i.e., the potency) to do "work" (another *quantitas virtutis*). The English term "energy" comes from the Greek *energeia*, originally meaning *interior actio*." *Ibid*., p. 136. Crowley observes earlier that Newton realized that the mechanical principle of mass, too, involves intensive quantity, since it contains density, which, according to Newton, is not measurable by extensive quantity alone. *Ibid*., p. 86.

[33] St. Thomas Aquinas, *Summa theologiae*, I, q. 42, a. 1, ad 1.

within a spatial continuum. Instead the quantitative aspect of forms and qualities lies in their greater or less intrinsic perfection, completeness, or intensity of what they are.[34]

Once one recognizes the primacy of substance, quantity, and quality in Aristotle's philosophy, it is no mystery why he divides speculative philosophy into three sciences: physics, mathematics, and metaphysics. His rationale follows upon his judgment that science is about substance. Substance is the principle grounding the essential conditions to relate a many to a one. In other words, science can exist only by means of unity. But something is one because it is. To exist is to be a substance or an attribute of a substance. If science is to be grounded in reality, it must have substance as its object. In short, unity is being, being is substance, and science is about substance.

8. The three speculative sciences

In light of this rationale, Aristotle and St. Thomas repeatedly assert that "there are as many parts of philosophy as there are parts of substance."[35] We know substance through its dimensive and virtual quantitative parts. We analyze, accordingly, the parts of substance as (1) substance itself, (2) substance as quantified, and (3) substance as qualified. Since these are the three ways in which the human intellect can examine substance speculatively, three speculative scientific subjects exist.

A speculative science is one in which the intellect aims to know for its own sake. Aquinas, following Aristotle, tells us that speculative science comes about under two conditions: (1) because of real, mind-independent *per se* elements of the object, elements which involve necessary relationships, and (2) because of the action of the human intellect which can focus on aspects of those elements for the single purpose of knowing them for their own sake. In other words, in speculation our intellects think about something from a distinctive point of view (formal object) so as to discern the necessary principles and relationships which define it, but only insofar as it interests the intellect's habit of speculation, i.e., knowledge pursued as an end in itself, not pursued practically (for doing something), or pursued productively (for making something). Clearly, then, the constitution of a science is determined partly by the mind-independent elements of something and the activity of the intellect through which the intellect seeks its own perfection (different ways of knowing; in the case of speculative knowing, knowing for its own sake).

In sum, the differentiation of the speculative sciences derives partly "from the side of the power of the intellect" and partly "from the side of the habit of science that perfects the intellect." So what aspects of substance are the *per se* proximate principles that activate our intellects (like color activates the eyes and sound the ears) so as to constitute the three speculative sciences?

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[34] Charles B. Crowley speaks analogously to Archimedes' discovery as involving intensive quantity in empirical science: "He weighed the amount of that displaced water, and thus he measured its *quantitas virtutis*, or intensity of the matter, i.e., he now had measured the number or the plurality of parts of matter as they are contained under their dimensions." Charles B. Crowley, *Aristotelian-Thomistic Philosophy of Measure and the International System of Units (SI)*, p. 93.

[35] Aristotle, *Metaphysics*, Bk. IV, 2, 1004a 2-3.

Physics studies a qualified body; mathematics, a quantified body. Physics and mathematics study accidents that essentially inhere in a substantial body, accidents that necessarily relate to that body. Such accidents flow by necessity from the form and matter of the substance. These accidents are signs evident to the sense-knower of the intrinsic, necessary, universal relationships within that bodily substance constituted of form and matter. These accidents indicate how the form relates to the substance's matter and how together matter and form determine the substance's activity.

The human intellect, St. Thomas explains, is both an active and a passive power. Both kinds of intellectual powers (the active and the receptive) are necessary in the constitution of speculative science. On the one hand, part of the formal object (the subject under examination from a precise point of view) is determined by information from what is known being received in the intellect. In other words, the intellect receives content as a passive power. On the other hand, part of the formal object is generated by the intellect's ability to dematerialize its object, so that it can consider information at a precise degree of abstraction. Because intellectual awareness is not bound by the constraints of matter—that is to say, because it can perform acts of abstraction whereby it separates in thought the way things exist from their material condition—the intellect can, by finessing degrees of abstraction, discriminate ways of speculative knowing, precisely detailing how physics differs from mathematics and how physics and mathematics differ from metaphysics.

Knowledge requires dematerialization because it involves identity of knower and known. If knowing really takes place, it is the union of two things in a living operation: the union of the knowing being and the thing known. Immateriality is necessary for this union to occur, otherwise a physical change occurs in the reception of the object. St. Thomas would argue this follows because of the old adage that "whatever is received into a receiver is received according to the capacity of the receiver." If the reception of the object changes either the knower or the object received, then knowledge is reduced to mere representationalism or guesswork. The skeptic may be content with representationalism, but, as I argue at the close of this chapter (see note 35), the realist is under no obligation to embrace skepticism, especially in light of the fact that the philosopher can provide a coherent account of dematerialization. In my judgment, it is a modernist prejudice to discount dematerialization, a prejudice largely based on lionizing the problem of skepticism.

The formal object (the distinguishing point of view) of physics—that aspect of physics according to which the intellect discriminates it from other sciences—is substance abstracted from its individuality and contingency but not from its qualities and motion.[36] In his classic, *The Degrees of Knowledge* (subtitled "Distinguish To Unite"), Jacques Maritain expresses this kind of abstraction neatly:

> The mind can consider objects abstracted from and purified of, matter but only to the extent that matter is the basis of diversity amongst individuals within a species, i.e., insofar as matter is the principle of individuation. In this way, the object remains; and remains to the very extent that it has been presented to the intellect, impregnated with all the notes coming from matter, and abstracts only from the contingent and strictly individual peculiarities, which science overlooks. The mind thus considers bodies in their

[36] Motion for Aristotle and Aquinas does not signify merely locomotion, but any kind of transition from potency to act insofar as it remains in potency. Today, use of the term "motion" tends to be restricted to locomotion.

> mobile and sensible reality, bodies garbed in their empirically ascertainable qualities and properties. Such an object can neither exist without matter and the qualities bound up with it, nor can it be conceived without matter. It is this great realm that the ancients called *Physica*, knowledge of sensible nature, the first degree of abstraction.[37]

An even more intensive degree of abstraction, takes the intellect altogether away from the conditions of quality and movement. At this "second degree of abstraction," the intellect considers a physical substance only from the point of view of its quantitative, not qualitative, nature. Of course, no physical substance can, in fact, exist without motion or quality, but the intellect is able to think of it as separate from sensible matter. Mathematics considers quantified material being, the surface body, as its proximate subject. The power of this "second degree" of abstraction not only separates dimensive quantity from sensible matter but also can separate quantity from its imaginary matter, the extension, of geometrical things. In this act of abstraction one cognizes the essence, say, of lines and circles, the very principles on which geometrical objects are constructed.[38] Mathematics isolates within bodies—a property that remains when everything sensible is left aside—quantity, number or the extended taken in itself. This is an object of thought which cannot exist without sensible matter, but which can be conceived without it. For nothing sensible. enters into the definition of the ellipse or of square root. This is the great field of *Mathematica*, knowledge of Quantity as such."[39]

Finally, it is only metaphysics that treats of that which both can exist separately from matter and is without motion.[40]

> Finally, the mind can consider objects abstracted from, and purified of, all matter. In this case it considers in things only the very being with which they are saturated, being as such and its laws. These are objects of thought which not only can be conceived without matter, but which can even exist without it, whether they never exist in matter, as in the case of God and pure spirits, or whether they exist in material as well as in immaterial things, for example, substance, quality, act and potency, beauty, goodness, etc. This is the wide domain of *Metaphysica*, knowledge of that which is beyond sensible nature, or of being as being.[41]

Aristotle and St. Thomas coordinate these degrees of abstraction with certain principles of unity grounded in substance, quantity, and quality, so as to demonstrate that distinguishing the three speculative sciences is a further extension of solving the problem of the one and

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[37]Jacques Maritain, *The Degrees of Knowledge: Distinguish To Unite*, translated by Gerald B. Phelan (New York: Charles Scribner's Sons, 1959), p. 35.

[38] See W. D. Ross, *Aristotle* (London, U. K.: Methuen and Company, Ltd.), p. 158.

[39] Jacques Maritain, *The Degrees of Knowledge*, p. 35.

[40] Aquinas is a metaphysician but certainly no Platonist. Nonetheless, he holds that the human intellect has grounds to infer from experiential evidences that non-physical substances exist. This inference is possible because it moves from effect to cause. So, for example, because of the nature of motion or contingency in the universe, the intellect can infer that the insufficiency of such motion or contingency requires a cause that exists without matter. Such inferences are purely *a posteriori*; that is to say, they must be grounded in experience. To deny that such inferences are possible is odd since modern science depends on physical inferences from effect to cause. The denial of the possibility of metaphysical inference from effect to cause is usually based on Humean or Kantian assumptions. Hence, to adjudicate the issue ultimately, the debate with Hume and Kant understandably has to be engaged

[41] *Ibid*., p. 36.

the many. When St. Thomas speaks of "the parts of substance," he correspondingly speaks of "the parts of unity." The substantial, qualitative, and quantitative necessitate certain distinct kinds of unities to demonstrate how their intrinsic principles and necessary accidents relate to their differing subject matters. To illumine further Aristotle's discrimination of the speculative sciences and to reinforce his conviction that science concerns a single subject, taken as a genus because it is predicable of multiple properties, one must remember that there are as many species of unity as there are species of being. "Just as we can analogously predicate being of all genera, since being and unity are convertible notions, Aristotle thinks we can analogously predicate unity of all the different genera."[42] Aquinas analyzes Aristotle's position in these terms:

> since being and unity signify the same thing . . . there must be as many species of being as there are species of unity, and they must correspond to each other. For just as the parts of being are substance, quantity, and quality, and so on, in a similar way the parts of unity are sameness, equality, and likeness. For things are the same when they are one in substance, equal when they are one in quantity, and like when they are one in quality. And the other parts of unity could be taken from the other parts of being, if they were given names. And just as it is the office of one science [first] philosophy to consider all the parts of being, in a similar way it is the office of this same science to consider all the parts of unity, i.e., sameness, likeness, and so forth.[43]

This is a significant passage because it expresses how there is a measure of unity appropriate for each of the speculative sciences: sameness (in the case of substance), equality (in the case of quantity),[44] and similarity (in the case of quality). As an example pertaining to substance, we might judge that the man, Socrates, is the same as the husband of Xanthippe. Equality, for example, is the measure for determining that two right angles have 180 degrees as does any triangle. As an example pertaining to quality, we can say that Newton and Einstein both have mathematical habits.

Correspondingly, since, as I observed earlier, every science must also take into account its opposites, difference, inequality, and dissimilarity are important for these sciences. Difference, inequality, and dissimilarity are measures of plurality in a science. This triad—similarity/dissimilarity, equality/inequality, and sameness/difference—express the principles of unity, plurality, and opposition in science.[45] They are the chief principles of *per se* accidents and opposition that belong to substances. These principles make it possible for substances to be objects of scientific habits and specific subjects of study.[46]

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[42] Peter A. Redpath, "Post-Postmodern Science and Religion: A Critique," *International Journal on World Peace*, Vol. 18, No. 1, March, 2001, p. 71.

[43] St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, Bk. IV, 1, 2, n. 56.

[44] Aristotle and Aquinas would salute Bertrand Russell's definition of "equality" as an apt transfer and application of their view of quantity to modern mathematical expression: "There are, in fact, two ways of defining equality. Two terms may be said to be equal when their ratio is unity, or when their difference is zero." (Bertrand Russell, *The Principles of Mathematics* [New York: Norton, 1943], p. 342.)

[45] For example, a gold bar and a silver bar are not the same substances, but they can be equal in weight; and yet, they could be dissimilar in quality, say, in shape. Then again, they have generic similarity in that they are both metals.

[46] Euclid says that mathematics itself is based on the principle of equality: "a whole is equal to the sum of its parts." Because modern empirical science focuses on the quantitative, the equal and the unequal

9. Measure

We have seen that Aristotle's and St. Thomas' philosophy of proximate material substance depends on their philosophy of unity. Beings that belong to the same genus share a subject matter which constitutes a unit measure whereby we know them as one. It turns out that, just as sameness, equality, and similarity, are properties of unity, so is measure a property of unity.[47] In fact, Aristotle asserts that unity is the measure of all things. Aquinas explains that Aristotle says this by reflecting on the nature of plurality. Plurality is division or divisiveness. Unity, however, stops division. "That which is undivided brings division to an end, is that beyond which no further division exists."[48] When we divide a substance into its component parts, division comes to a stop. That is to say, each of those parts is a one, just as the whole substance is a one. Aristotle concludes that "the one is the measure of all things, because we come to know the elements in the substance by dividing the things either in respect of quantity or in respect of kind."[49]

Since the activity of the knower is involved in measuring, Aristotle says that in a way, or analogously, knowledge and perception measure things. Since knowledge cannot occur if an object is completely pluralized, our knowing powers must recognize that what is known is a one. Since measure is a property of unity, knowledge is a measure. To speak more precisely, Aristotle says that knowledge and perception are actually "measured rather than measure." He is careful to make this point because he does not want to compromise his sense- realism. The intellect's content comes from the object, whose unity the knower comes to know; the knower does not invent or construct the unity. Once he distinguishes in this way measure and the measured, Aristotle can expose the vapidity of Protagoras' famous dictum: thinkers like Protagoras, Aristotle declares, "say nothing . . . while they appear to say something remarkable, when they say 'man is the measure of all things'."[50]

One of the striking features of Aristotle's account of unity is that, while he concedes that our idea of measure derives from the genus of quantity, he recognizes that we must not confuse quantitative unity with metaphysical unity. In fact, Aristotle criticized Plato for failing to make this distinction. Plato mistook the opposite of plurality to be number: unity as discrete quantity. Unity, Aristotle insists, cannot be reduced to number because unity is convertible with being, which includes more than mere quantity.

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are central principles in empirical scientific measurement. Consider Archimedes' principles of mechanics—e.g., equal weights at equal distances are in equilibrium; or Avogadro's hypothesis in chemistry: Equal volumes of gases contain an equal number of molecules, provided there are the same conditions of temperature and pressure. Galileo's principle of uniform motion and acceleration in mechanics also comes to mind: the distances traversed by the moving particle during an interval of equal time, are themselves equal.

[47] Another instance of the demand for measure is in Einstein's relativistic physics, where he posits the speed of light, on account of its continuity, regularity, and swiftness, as the mathematical physical measure f time itself.

[48] Peter A. Redpath. "Post-Postmodern Science and Religion: A Critique," p. 77. St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, Bk. X, 1, 2, n. 1951.

[49] Aristotle, *Metaphysics*, Bk. X, 1, 1053a 24-27.

[50] *Ibid*., Bk. X, 1, 1053a 32-1053b 3.

Accordingly, we must not confuse the genesis of our knowledge of measure (being derived from the genus of quantity) with the nature of measure itself. While it is true that measure enables us to originally know something's quantity, we learn to transfer the principle of measure to other genera. As a means to knowing quantity measure is a unit, a number, or a limit. This last, limit, with its implications involving intensive quantity, reveals how the knower can extend measure to include other genera. For one way in which something makes evident its limit is not just dimensively but also qualitatively (virtually) or by virtue of its form, what it is essentially.[51] Because the form of something is both its formal and its final cause, St. Thomas, in a remarkable passage, expresses the teleological implications of measure:

> Each thing is perfect when no part of the natural magnitude which belongs to it according to the form of its proper ability is missing. Moreover, just as each natural being has a definite measure of natural magnitude in continuous quantity, as is stated in Book II of *The Soul*, so too each thing has a definite amount of its own natural ability. For example, a horse has by nature a definite dimensive quantity, within certain limits; for there is both a maximum quantity and minimum quantity beyond which no horse can go in size.[52]

As a complex of matter and form, measure enables us to judge and predict something's limits, both in regard to its nature and in its purpose or function as a natural substance. This is further evidence that a philosophy of the natural world becomes impoverished if it reduces quantity to dimensive quantity only. [53]

10. Conclusion

Science examines substance as a proximate genus which grounds *per se*, or necessary, accidents. Hereby, substance provides universality (as a genus) and necessity (by its essential relationships to its properties or *per se* accidents). Science, then, is a one necessarily relating to many. Moreover, science and philosophy do not differ, since philosophy explains the problem of the one and the many so that science can occur. So, properly speaking, genuine science is the same as the philosophical search for causes. As Peter A. Redpath and Charles Crowley have argued, whenever science occurs, it transposes analogously the metaphysical principles of substance and its *per se* relationships to diverse subjects. Accordingly, the problem of the one and many was not just a peculiarity of ancient Greek philosophy. Instead, it is a problem

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[51] Charles B. Crowley, O.P. says the following about how measure makes modern empirical science possible, both in regard to dimensive and virtual quantity: "Whenever something is measured, by that very fact of being measured, it becomes quantified, or a quantum, and is called a 'quantity.' Then, once something has been quantified, the mathematical scientist can treat it as a quantum, and can use the principles of quantity and measure to formulate statements of the quantitiatve proportions involved. This allows him to use mathematics, which is the science of quantity, and its proportions, to 'explain,' i.e., to formulate measuring propositions as principles, from which quantitative conclusions can be drawn." (Charles Bonaventure Crowley, O.P, *Aristotelian-Thomistic Philosophy of Measure and the International System of Units*, edited with a prescript by Peter A. Redpath (Lanham, Maryland: University of America Press, Inc., 1996), p. 42.

[52] St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, Bk. V, 18, n. 1037.

[53] For further examples of and for a profound, intensive, and groundbreaking application of Aristotle's and St. Thomas' philosophy of the one and the many to contemporary physical science of measurement, see Charles Bonaventure Crowley, O.P.,*Aristotelian-Thomistic Philosophy of Measure and the International System of Units*.

descriptive of the entire history of philosophy or science. Central to this discussion is Armand Maurer's key distinction between logical and philosophical universals. A substance as proximate genus which relates to *per se* accidents is not to be confused with mere logical predication of an idea of a substance. A philosophical genus is not existentially neutral as are ideas of mere logic. Philosophical genera are about real things, not ideas.

An important corollary to this account of science follows. Because science examines a substance as a proximate genus for diverse *per se* accidents it follows that there is not one univocal science. Because there are as many sciences as there are substances serving as proximate genera, there is a diversity of sciences. Sciences differ analogically as they apply the principles of substance understood in metaphysics diversely. Again, as Aristotle said, "there are as many sciences as there are parts of substance." This point is crucial because it shows that Aristotle's and St. Thomas' view of science rejects outright any attempt after the fashion of Descartes to reduce science to one univocal system. Moreover, it rejects the modernist belief that "science" in the proper sense reduces to mathematical physics—the univocity of measurement in the physical sciences. Mathematical physics is just one science among a diversity of other possible sciences, including metaphysics. Sciences are diverse because substances as proximate genera and their relationships are diverse. So sciences are analogically similar because they all study substances as proximate genera, and yet they are different because reality consists of diverse substances or philosophical genera.

My discussion should have made evident that, in spite of its apparent detail, I have only scratched the surface of Aquinas' philosophy of the one and the many as a response to the philosophy of Aristotle. In spite of its brevity, my comments should indicate that philosophy anywhere and always must involve the problem of the one and the many. If philosophy is a search for causes or substances that divulge an order of *per se* accidents relating to them, then philosophy is an investigation of unity in plurality. If modern and contemporary philosophers have given up believing that philosophy can search for real causes and substances, then, one may doubt, based on St. Thomas' standards, whether they are really philosophers at all. If the problem of the one and the many becomes only a way of cohering ideas in a nominalistic system, then philosophy has ceased to be philosophy and has become a kind of systematic logic. At any rate, studying Aristotle's and Aquinas' account of the problem of the one and the many, an account that escapes modern skepticism and rests on sense realism, provides modern and contemporary philosophers a contrasting alternative. And, at the very least, it shows that, given their alternative example, a living philosopher is under no obligation to reduce philosophy to modernist nominalism, skepticism and anti-realism. Philosophy or science can be grounded in realism.[54]

[54]Aristotle and Aquinas, who were familiar with ancient and medieval versions of skepticism, would see no reason to measure philosophy's success by answering the problem of skepticism. Skepticism is counter-intuitive. The skeptic's own position never really convicts him. This is so for many reasons, but two especially stand out: (1) skepticism is not something someone can *really* believe; skepticism militates against the skeptic's ability to live a practical life, and (2) skepticism presupposes what it denies, because the skeptic's worry about error presupposes a distinction between error and truth that he must first derive by relying on experience. As a result, the philosopher is, at least, under no obligation to acquit philosophy before the skeptic as judge.
There is an additional reason that Aristotle and Aquinas would reject skepticism. Taking skepticism seriously would compromise the role of abstraction in knowledge. For them, there can be

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communication between substances. In other words, the knower can grasp something about the natures of things. Once belief in abstraction is compromised, philosophy takes a turn prescribed by William of Ockham, who says that universals have an unknown origin (*natura occulte operator in universalibus*). Once Renaissance intellectuals go down Ockham's path, what passes as "philosophy" becomes nominalism. "Philosophy" becomes systematic logic, as thinkers strive to build systems of propositions—systems of "clear and distinct" ideas.

Aristotle and Aquinas stand stubbornly by their sense realism so as to escape the nominalist's fate. For them philosophy is not confused with systematic logic. Instead, philosophy is *aporetic* (from the Greek, *aporia*, meaning perplexity) Philosophy is an attempt to overcome difficulties (*aporiai*) provoked by wonder. Accordingly, philosophy is serially *aporetic*: the philosopher seeks to resolve one *aporia* after another without trying to situate *a priori* that resolution in a system. These solutions will be coherent, but not for the sake of building a system.

4

Metaphysics Between Reductionism and a Non-Reductionist Ontology

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1. Introduction

Philosophy and all the academic disciplines are sensitive to the aim of *sound reasoning* – except for the dialectical tradition which sanctions contradictions and antinomies (Heraclitus, Nicolas of Cusa, Hegel, Marx, Vaihinger, Simmel, Rex, and Dahrendorf). A brief overview is presented of conflicting theoretical stances within the various academic disciplines *before* an assessment is given of the positive and negative meaning of 'reductionism' and the implications of a non-reductionist ontology. These implications are explained by distinguishing between different fundamental irreducible *modes of being*, such as the numerical, spatial, kinematic, physical, biotic, sensitive, logical-analytical, cultural-historical, lingual, social, economic, aesthetic, jural, moral and certitudinal aspects of reality. When these original *modal functions* are not acknowledged theoretical thought entangles itself in insurmountable *antinomies*. Every single academic discipline therefore has to employ such basic (and irreducible) concepts. Precisely because these concepts are *basic* they cannot be *defined*. Various disciplines acknowledge this state of affairs by explicitly introducing "primitive terms." Furthermore, when it is attempted to reduce what is irreducible the antinomy involved at once expresses itself as a logical contradiction. We shall argue that an antinomy as such is inter-modal (such as when Zeno attempts to reduce motion to static positions in space), while a contradiction is intra-modal (for example when a triangle and a circle is confused). A clear example of the irony of an *ismic ortientation* will be discussend in sub-paragraph 10 when the impasse of historicism is discussed.

Against the background of historical lines of development the multiple terms employed in this context are mentioned and eventually positioned within the context of the normativity holding for logical thinking. It is argued that the logical contrary between *logical* and *illogical* serves as the foundation of other normative contraries, such as *polite – impolite*, *legal – illegal* and *moral – immoral*.

It will be shown that through the discovery of irrational numbers the initial Pythagorean conviction that everything *is* number reverted to a geometrical perspective that generated a static metaphysics of being which challenged the ideas of *plurality* and *motion*. This development uncovered the well-known problem of *primitive terms* in scientific discourse as an alternative for those metaphysical attempts aimed at *reducing* whatever there is to one single *mode of explanation*. Zeno's paradoxes are used to demonstrate an alternative

understanding of the difference between the *potential* and the *actual infinite* as well as the nature of (theoretical) *antinomies*. It is argued that genuine antinomies are *inter-modal* in nature (such as is found in the attempt to reduce movement to static positions in space) and therefore differ from a *logical contradiction* (such as a 'square circle' which merely confuses two figures within one modal aspect). Although every antinomy does entail logical contradictions, the latter do not necessarily presuppose an antinomy. The implication is that logic itself has an *ontic* foundation – as is seen from the nature of the *principle of sufficient reason* (ground) and the *principle of the excluded antinomy* – and therefore only acquires meaning on the basis of a non-reductionist ontology. When the method of *immanent critique* unveils genuine antinomies, the way is opened for meaningful intellectual interaction between different philosophical stances. In distinguishing between contradiction and antinomy philosophers are actually challenged to contemplate the implications of a non-reductionist ontology as an alternative to all metaphysical attempts to over-emphasize one or another aspect of empirical reality.[1]

2. Setting the stage: Unity and diversity

Our human experience of reality is embedded in an awareness of *unity and diversity*. For that reason we have to discern, that is, we have to *identify* and *distinguish*. Whereas it is quite natural and meaningful to articulate differences between *distinct* (kinds of) entities in our everyday life, it is equally natural that we are (analytically) sensitive to a *confusion* of what is distinct. It is a standard practice amongst philosophers and logicians to designate this kind of confusion by using the terms *contradiction* and *antinomy* – which are normally taken to be *synonymous*.

Concurrent with the rise of philosophy and some of the disciplines in ancient Greece (such as mathematics, astronomy and the medical sciences) an awareness of the *logical-analytical* capacities of human beings surfaced. Early Greek philosophy also witnessed the emergence of *dialectical* conceptions in which it was attempted to accommodate (and sanction) *contradictions*. A later disciple of Heraclitus said:

> For all things are alike in that they differ, all harmonize with one another in that they conflict with one another, all converse in that they do not converse, all are rational in being irrational; individual things are by nature contrary, because they mutually agree. For rational world-order [*nomos*] and nature [*physis*], by means of which we accomplish all things, do not agree in that they agree.[2]

In the course of the intellectual tradition of the West academic disciplines more and more acquired the status of independent special sciences, since they also increasingly adhered to principles for logical reasoning. Yet a first glance at the history of the various disciplines

[1] I want to thank Dr. Darrell Patrick Rowbottom, University of Durham, England, for many valuable comments and suggestions that are incorporated in the final version of this article. The same applies to Prof. Hubertus Bargenda (a mathematician from the University of the Free State). The underlying perspective of this contribution draws upon my work *Philosophy*: *Discipline of Disciplines* (2009) as well as Strauss 2006.

[2] These words, expressed by a later disciple of Heraclitus, were erroneously ascribed to Hippocrates' writing, *Peri diatès*, I, xi, 6.

shows that within each of them alternative, often conflicting orientations developed – a state of affairs that cannot be explained on purely *logical* grounds. This predicament rather suggests that theoretical (i.e., scientific) thought cannot escape from considerations *exceeding* the boundaries of logicality.[3]

In order to substantiate this suggestion, a distinction will be introduced between an antinomy and a contradiction. It may turn out that this distinction is closely connected to the above-mentioned issue of unity and diversity. The problem of the one and the many, alongside others, such as the relationship between universality and individuality, constancy and dynamics, the finite and the infinite, what is necessary and contingent and what is considered to be knowable and unknowable, co-determined the development of philosophy and the disciplines.

From the history of these disciplines we learn that the *foundational* problems within the (natural and social) sciences are indeed *philosophical* in nature. This explains the mentioned *historical fact* that in their development all the academic disciplines reflect divergent philosophical schools of thought and it urges us to ask how this situation ought to be assessed in terms of the requirements for logical thinking and sound reasoning. The following (incomplete) overview may help to portray the background picture of our subsequent discussion of the distinction between contradiction and antinomy. This succinct overview merely provides a *glimpse* and not a detailed exposition – for that would require more than an article on each mentioned discipline. The *rationale* for providing this glimpse is to allude to the widespread reality of opposing *ismic* positions – with a view to the fact that such positions mostly entail *antinomies* since they are normally *reductionist* (the connection between *reductionism* and *antinomies* will be explained below). The brief overview below first mentions the name of prominent trends (schools of thought) within various academic disciplines and then mention key scholars who adhered to this theoretical stance within these special sciences.

- Mathematics: Axiomatic *formalism* (Hilbert), *logicism* (Russell, Frege) and *intuitionism* (Brouwer, Heyting, Troelstra, Dummett) in modern mathematics;[4]

[3] I do not intend to view the relationship between "purely logical" and what exceeds the logical aspect in terms of the distinction between statements within an object language and statements belonging to a meta-language (utens/docens). The original distinction – probably going back to the 13th century – continued an old question regarding *logic* as a scientific part of philosophy or merely as an *instrument* of philosophy. The *dialectica utens* was viewed as treating arguments within all disciplines, whereas the *dialectica docens* was seen as a special science (*scientia specialis*) focused upon the dialectical syllogism or with the secondary intentions connected to dialectical conclusions.

[4] Salmon merely refers to "intuitionistic philosophers of mathematics" – without acknowledging the truly *mathematical character* of this trend in 20th century mathematics (see Salmon, 2001:23 – he refers to Körner's work *The Philosophy of Mathematics*, 1968). By contrast, Stegmüller remarks: "The special character of intuitionistic mathematics is expressed in a series of theorems that contradict the classical results. For instance, while in classical mathematics only a small part of the real functions are uniformly continuous, in intuitionistic mathematics the principle holds that any function that is definable at all is uniformly continuous" (1970:331). Beth also highlights this point: "It is clear that intuitionistic mathematics is not merely that part of classical mathematics which would remain if one removed certain methods not acceptable to the intuitionists. On the contrary, intuitionistic mathematics replaces those methods by other ones that lead to results which find no counterpart in classical mathematics" (1965:89).

- Physics: Classical determinism (Einstein, Schrödinger, Bohm and the school of De Broglie) and the mechanistic main tendency of classical physics (last representative Heinrich Hertz)[5] versus the Kopenhagen interpretation of quantum mechanics (Bohr and Heisenberg); the contemporary ideal to develop "a theory of everything" (Hawking and super string theory: Greene).
- Biology: Mechanistic orientation (Eisenstein), physicalistic approach (neo-Darwinism), neo-vitalism (Driesch, Sinnott, Rainer-Schubert Soldern, Haas, Heitler), holism (Adolf Meyer-Abich), emergence evolutionism (Lloyd-Morgan, Woltereck, Bavinck, Polanyi) and pan-psychism (Teilhard de Chardin, Bernard Rensch);
- Psychology: The initial atomistic association psychology (Herbart), the stimulus-response approach, Gestalt-psychology [the Leipzig school (Krüger and Volkelt) and the Berlin school (Koffka and Köhler)], depth psychology (Freud, Adler, Jung), the logo-therapy of Frankl, phenomenological psychology, contemporary system theoretical approaches (under the influence of von Bertalanffy).
- The science of history: Compare the conflict between *linear* and *cyclical* conceptions of history, the Enlightenment ideal of linear accumulative growth, the recurrence of the Greek conviction that history is *eternally recurrent* in the thought of Vico, Herder, Hegel, Goethe, Daniliwski, Nietzsche, Spengler and to a certain degree also Toynbee;
- Linguistics: Two lines of thought dominated the 19th century – Rousseau, Herder, Romanticism, von Humboldt and the rationalistic trend running from Bopp, Schleicher, and 'Jung-Grammatici' to Paul (with his historicistic conception of language-in-development). Cassirer, by contrast, developed his neo-Kantian theory of language (in which *language* is a thought-form imprinted upon reality), Bühler pursued the stimulus of behaviorism in his theory of signs, at the beginning of the 20th century Wundt dominated the scene, De Saussure contributed to the development of a *structuralist* understanding (followed by Geckeler, Coseriu and others), Reichling explored elements of Gestalt-psychology in his emphasis on the *word* as the core unit of language, Chomsky revived the doctrine of the *a priori* within the context of his transformative generative grammar, more recently the manifestation of systems theory within general and applied linguistics;
- Sociology: The initial organicistic orientation (Comte, Spencer) was continually opposed by mechanistic and physicalistic approaches (cf. L.F. Ward – late 19th century – and in the second half of the 20th century W.R. Catton), the dialectical heritage of Hegel permeated Georg Simmel's formalistic sociology with its individualistic neo-Kantian focus (Park and Burgess explored this direction in the USA), Max Weber developed the sociological and economic implications of the neo-Kantian Baden school of thought, Talcott Parsons made the systems model (based upon von Bertalanffy's generalization of the second main law of thermodynamics) fruitful for sociological thinking, opposed by conflict sociology (Dahrendorf, C. Wright Mills and Rex and by the Frankfurt school of neo-Marxism), a systems theoretical approach was recently revived by J.C. Alexander, A. Giddens developed his structuration theory – and during the past two decades J. Habermas elaborated his theory of communicative actions;

[5] Mario Bunge says: "It is now generally understood that mechanics is only a part of physics, whence it is impossible to reduce everything to mechanics, even to quantum mechanics." Although he holds that the physicalism of the Vienna Circle and the Encyclopedia of Unified Science is dead, "the sharp decline of physicalism has not been the end of reductionism" (see his "The Power and Limits of Reduction" in Agazzi, 1991:33).

- Economics: The classical school of Adam Smith, the neoclassical approach (from Cournot and Dupuit to Menger, Jevons, Walras and Pareto), the marginalism of Marshall, Keynes's 'General Theory,' alternative approaches to competition (Chamberlin and Robinson);
- The science of law: The historicistic orientation of von Savigny – followed by the Romanist (von Jhering) and Germanistic (von Gierke) schools, neo-Hegelianism (Binder), neo-Kantianism (Stammler, Radbruch, Kelsen), the revival of natural law theories after the second world war, and legal positivism (which seems to remain alive amongst legal scholars);
- Theology: Dialectical theology (Barth, Gogarten, Brunner) in its dependence upon Kierkegaard and Jaspers, Bultmann (dependent on Heidegger), theology of hope (Moltmann – dependent upon the neo-Marxism of Ernst Bloch), the historicistic design of Pannenberg (dependent upon Dilthey and Troeltsch), the 'atheistic' theology of Altizer and Cox (influenced by neo-positivism), existentialist-hermeneutical trends (Fuchs, Ebeling, Steiger), theology of liberation (influenced by neo-Marxism).

What is particularly striking regarding these (philosophically founded) schools of thought within the disciplines is that many of them are entangled in what should be labeled *reductionism* in a pejorative sense.[6] Surely there are also positive and largely unrelated connotations attached to the term *reduction* in different special sciences. For example, mathematicians may speak about the construction of numbers from sets and then designate it as "reduction". Separating chemical compounds into their simpler constituents is also known as "reduction", and so on.

By designating more problematic situations the term reductionism emerged by the middle of the 20th century. In 1953 Quine used it in his discussion of "The Verification Theory and Reductionism" (see Quine, 1953:37 ff.) and in the early seventies the work "Beyond Reductionism" appeared (see Smythies & Koestler, 1972). Smith considers Polanyi to be "perhaps the severest and most comprehensive critic of reductionism" because he "was a major scientist of this century and was drawn into philosophical debate primarily because of the threat to scientific freedom, political democracy, and to humane values that he saw in reductionism". To this he adds the remark: "His works *The Contempt of Freedom, The Logic of Liberty, Science Faith and Society, Personal Knowledge,* and *The Tacit Dimension* have as a common theme the criticism of reductionism in all its scientific, cultural and moral forms."[7]

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[6] Popper states: "As a philosophy, reductionism is a failure" (Popper, 1974:269). And Goodfield remarks: "Reductionist methodology may have been extremely successful, but the history of science abounds with examples where forms of explanation, successful in one field, have turned out to be disastrous when imported into another" (Goodfield, 1974:86). A *positive* appreciation of reductionism is, for example, found in the thought of Dawkins and Dennett (see Dennet, 1995:80 ff.).

[7] See Smith, G.L., 1994. *On Reductionism*. Sewanee, Tennessee – available on the WEB at: http://smith2.sewanee.edu/texts/Ecology/OnReductionism.html (accessed on 22-01-2005). Putnam holds that scientism and relativism are *reductionist* theories (Putnam, 1982:126). In respect of 'phenomenalism' he remarks: "the idea that the statements of science are translatable one by one into statements about what experiences we will have if we perform certain actions has now been given up as an unacceptable kind of reductionism" (Putnam, 1982:187).

Our approach in what follows will be to investigate the limits of logical discernment (identification and distinguishing) in order to account for the real antinomies arising from the attempt to reduce what is truly *irreducible*. This approach is similar to the strategy defended by the physicist Henry Margenau (in following some ideas of Mario Bunge). He takes this to be "the strategy consisting of reducing whatever can be reduced without however ignoring emergence or persisting in reducing the irreducible" (cf. Margenau, 1982:187, 196-197). Once we have assessed the systematic distinction between antinomy and contradiction its implication for understanding the nature of the various "ismic" orientations within the disciplines will briefly be highlighted.

3. Brief historical contours

Since both academics and non-academics enjoy the fun of wrestling with "logical" problems we proceed by mentioning the liar-paradox attributed by Diels and Kranz to Epimenides (5th Century B.C.) – where it is asserted that one of the Cretans, their own prophet, said all Cretans are liars. In the account of Titus 1:12-13 it is reported that the Apostle Paul holds that this testimony is true. How can such a statement, made by a liar, be true without being false at the same time?[8]

The mere statement of this contradiction shows that ancient Greek thought already wrestled with the above-mentioned basic logical ability of humans to *identify* and to *distinguish*.[9] The school of Parmenides postulated the primordial nature of *being* and even *identified* it with *thought*.[10] But in Plato's dialogue *Parmenides* one finds a *negative* argument concerning the *mutuality* (relatedness) of *identification* and *distinguishing*, ultimately also highlighting the limits of concept formation, for conceiving the *One* (and the *Many*) in an *absolute* sense, escapes the grip of logical concept formation.[11] In the *Sophist* it is consequently acknowledged that trying to know what *being* and *non-being* in themselves are present thought with an *aporia*, i.e., an unresolved problem.[12] Yet, whenever *being* is thought *non-being* is thought as well.[13] In other words, *identification* refers to what is *distinct* from it.

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[8] In this formulation an escape route is given by observing that normally a liar is a person who *sometimes* tells a lie, but not *always*.

[9] Derrida applies the mutuality of identity and difference to language: "The identity of a language can only affirm itself as identity to itself by opening itself to the hospitality of a difference from itself or of a difference with itself" (Derrida, 1993:10).

[10] Diels-Kranz I, 231; Parmenides, B. Fr. 3: "For thinking and being are the same."

[11] The final conclusion to the four paths of the dialectical argument regarding the *One* and the *Many* reads: "Therefore, if the One is, it is everything and nothing, in relation to itself and to the many" (Parmenides 160b1-3).

[12] Logic eventually used the term "aporia" in connection with the theoretical truth of a statement where there are grounds *for* and *against* it. In Latin *aporia* turned into *dubitation* and *question* (see Waldenfels, 1971:448).

[13] Spivak explains Derrida's view of deconstruction in similar terms: "Deconstruction, as it emerged in Derrida's early writings, examined how texts of philosophy, when they established definitions as starting points, did not attend to the fact that all such gestures involved setting each defined item off from all that it was not" (Spivak, 1999:426).

Whereas Plato therefore already had a clear understanding of the meaning of the logical principles of *identity* and *contradiction*,[14] Aristotle, in addition, already understood the meaning of the principle of the *excluded middle* (see *Metaph.* 1057a).

During the middle ages, alongside the continuation of Aristotle's predicate logic, a notable dialectical tradition, proceeding from Heraclitus and the dialectical logic of Plato, remained in force. This so-called *via negativa* of neo-Platonism (Pseudo-Dionysius, Plotinus) eventually brought Nicholas of Cusa to his notion of the coincidence of opposites (*coincidentia oppositorum*). Nicholas of Cusa explored the so-called *actual infinite* in terms of which he claimed that God, as the actual infinite, is at once the largest and the smallest (*De Docta Ignorantia*, I,5), i.e. the *coincidentia oppositorum* (see *De Docta Ignorantia*, I,22). A remarkable analysis eventually came from Georg Cantor, the founder of modern set theory and the theory of transfinite numbers, who demonstrated something similar about the smallest transfinite ordinal number *omega* (ω), because this number is both even and uneven and at the same time neither even nor uneven.

Perhaps the most significant elaboration of the dialectical tradition on the one hand is found in the thought of Hegel, Marx and those sociologists of the 20th century who are known as *conflict theorists* (Simmel, Rex and Dahrendorf), and in the philosophy of "As If" of Vaihinger on the other. The significance of the latter is linked to its relevance for various academic disciplines (such as mathematics, physics, linguistics, economics, and the science of law – to name some of them). Vaihinger claims that the use of *inherently antinomic* constructions (designated as *fictions*) may serve human (scientific) thought in surprisingly efficient ways. For example, he characterizes mathematical constructs such as *negative numbers*, *fractions*, *irrational* and *imaginary numbers* as "fictional constructs" (that are *not* hypotheses) with a "great value for the advancement of science and the generalization of its results in spite of the crass contradictions which they contain" (Vaihinger, 1949:57). In general Vaihinger aims at providing an explanation of "the riddle that by means of such illogical, indeed senseless concepts, correct results are obtained" (Vaihinger, 1949:240). His answer is given in what he terms to be "the general law of fictions," i.e., in the "correction of the errors that have been committed" or in a procedure called "the *method of antithetic error*" (Vaihinger, 1949:109). However, since this method holds that thought "progresses by means of antithetic operations," and since including under one concept antithetic operations creates fictions viewed as merely the symbol of "such antithetic operations and antithetic errors" (see Vaihinger, 1949:119-120), it is clear that his "*method of antithetic error*" simply duplicates the initial problematic construction of internally antinomic or illogical fictions – as if two logical errors in practice will generate what is right. The coherence of what is irreducible within reality requires an alternative approach, namely that what we have called a non-*reductionist ontology*.

At this point the above-mentioned problem of unity and diversity comes to mind again – not only with respect to the various ismic positions within the disciplines, but also regarding the opposing and oftentimes contradicting philosophical schools of thought – including the

[14] The following phrase highlights both principles: "No objection of that sort, then, will disconcert us or make us believe that the same thing can ever act or be acted upon in two opposite ways, or be two opposite things, at the same time, in respect of the same part of itself, and in relation to the same object" (*Politeia*, Book IV, Ch.XIII, 436 – translation by Cornford 1966:130).

dialectical tradition that affirms contradictions. But what is meant when different terms are employed alongside the term 'contradiction'? This question calls for a clarification of the terminological problem regarding multiple terms and for an investigation of the question whether or not there is more at stake than purely *logical* distinctions. We therefore proceed first of all by looking at the multiple terms that are employed in this context.

4. Multiple terms

Both in scholarly and within everyday contexts we hear about *contradictions*, *antinomies*, *paradoxes*, *riddles*, *dilemmas* and even *puzzles*. Particularly since Immanuel Kant explained apparently stringent proofs, in the *Transcendental Dialectics* (second Book, second Chapter) of his *Critique of Pure Reason* (CPR), for a set of four *theses* and *antitheses*, under the category of *antinomies*, the latter term became common knowledge in subsequent philosophical literature and reflection.

The different terms used in this context are seen in the following arbitrarily selected references. In 1849 a posthumously published book from the German philosopher-mathematician, Bernard Bolzano, appeared with the title: *Pardoxien des Unendlichen* (*Paradoxes of the Infinite*). Russell speaks about contradiction, paradox and antinomy (Russell, 1956:144, 190 ff.). E. Teensma published a book with the title: *The Paradoxes* (1969), while E.P. Northrop wrote a work on *Riddles in Mathematics* (1944 – Penguin version 1964). In a work with the title "Dilemmas" Gilbert Ryle discusses Achilles and the tortoise as an example (Ryle, 1953:50-69). Sometimes the word "puzzles" is used – Martin Gardner employed it in a (Pelican) book on *Mathematical Puzzles and Diversions* (1968). Recently Michael Clark published another work: *Paradoxes from A to Z* (2002).

By and large the legacy of classical and modern logic as well as philosophy in general did not develop a *systematic analysis* of the *differences* between these diverse designations. In general *contradictions*, *antinomies* and *paradoxes* are used interchangeably. For example, when Fraenkel et al discuss the known contradictions and paradoxes they are called *antinomies*.[15]

We commence by considering the nature of *normative contraries* in order to highlight the *normativity* of *logicality*.

5. Normative contraries

The scope of the logical principles of identity and (non-)contradiction applies to the human ability to *conceive* and to *argue*. Copi states a generally accepted conviction when he says that the "principle of contradiction asserts that *no statement can be both true and false*" (Copi, 1994:372).

The classical example of an *illogical concept* stems from Immanuel Kant and concerns a "square circle" (see Kant 1783:341; § 52b). Establishing that this concept is *illogical* entails that a *normative standard* has been applied and that the said concept does not *conform* to the requirement of *ought to be* inherent in this normative standard. It is contradictory not to distinguish between a square and a circle, or, to put it differently, confusing two *spatial*

[15] He distinguishes between logical antinomies (those of Russell, Cantor and Burali-Forty) and semantic antinomies (those of Richard, Grelling and The Liar – 1973:5-12).

figures violates the demands for *identifying* and *distinguishing* properly: a square is a square (logically correct *identification*) and a square is not a non-square (such as a circle – logically correct *distinguishing*).

Thinking in a logically antinormative way, i.e., thinking *illogically*, remains bound to the structure of *logicality* and does not turn into something *a-logical* (non-logical), such as the economic, the moral or the jural. These (non-logical) facets of our experience are said to be *a-logical* – but they are not *illogical*. In fact they also have room for contraries *similar* (or analogous) to the contrary between logical and illogical, namely *economic* and *uneconomic*, *moral* and *immoral* and *legal* and *illegal*. Although the history of humankind tells the story of different assessments of what may count as economically, morally or legally proper behaviour, one can hardly deny the normativity inherent in these dimensions as it is manifested in the mentioned contraries. The logical contrary actually lies at the *foundation* of all these other instances of normative contraries – the latter *analogically reflect* within their own domains the meaning of logical analysis (identification and distinguishing).

Yet the phenomenon of contradictions does not tell the full story. Let us return to the confusion of spatial figures present in the illogical concept of a *square circle* and compare it with something more drastic, namely the attempt to explain whatever there is purely in *spatial terms*. This happened in Greek philosophy after the discovery of *irrational numbers* – an event that led to the *geometrization* of Greek mathematics (after its initial Pythagorean *arithmetization*). This alteration within mathematics inspired the development of a speculative metaphysics in which material entities were exclusively characterized in terms of their *spatiality*. The result was that the Greeks did not contemplate an *empty space*. According to their mature understanding space does not exist, only *place*. Place is a property exclusively attributed to a concrete body. In the absence of a body, there is no subject for the predicate *place*. From this it naturally follows that an "empty place" is the place of nothing – in other words, it is no place at all! But what then do we have to say about the *movement* of a material body? Will it be possible to assert that motion is a "change of place"? Surely, given the identification of a *body* with its *place*, motion would then be an impossibility – at least when a body is supposed to be the subject of motion – for a *change of place* will amount to a change of "essence"! In terms of such a metaphysics of space the introduction (or: "definition") of motion yields to the *contradiction* that a body can move if and only if it cannot move – which actually approximates the arguments of Zeno against multiplicity and movement alluded to above.

The attempt to explain whatever there is exclusively in *spatial terms*, is nothing but pursuing the aim of *reducing* everything to space (similar to the Pythagorean assertion "everything is number"). But, as we have noted, the first "victim" of such a spatially oriented reductionism is found in the function of *motion* (the school of Parmenides). In order to acquire a better handle on this problem we first have to pay attention to the underlying problem of the "coherence of irreducibles" – which is just a different formulation of the basic philosophical problem of *unity* and *diversity*. Russell refers to Hegel in respect of the difference between a continuous magnitude (wholeness) and a discrete magnitude – as "*different*" instances of the "class-concept" and then proceeds by saying that he "strongly" holds "that this opposition of identity and diversity in a collection constitutes a fundamental problem of Logic – perhaps even *the* fundamental problem of philosophy" (Russell, 1956:346).

6. Uniqueness and coherence

The claim that a *reduction* is unwarranted implicitly presupposes the conviction that there exist "*irreducibles*" (and: *primitives*).[16] Typical (reductionsistic) **all**-claims, such as the mentioned Pythagorean conviction that *everything is number*, the statement that *everything is physical* (materialism) or that *everything is interpretation* (postmodernism), challenge the idea of *uniqueness* and *irreducibility*.[17] All-claims like these are mainly *monistic* in nature – in the sense that they want to find *one* single, all-encompassing perspective or principle of explanation capable of accounting for the entire diversity manifest in our experience of the universe.[18] An argument in favour of the acknowledgement of irreducibility – as one side of the coin (with the mutual coherence of what is unique as the other side) – ought to show that an unwarranted *reductionism* gets entangled in unsolved problems (normally referred to as contradictions, paradoxes or antinomies).[19]

Ernst Cassirer, the philosopher from the neo-Kantian Marburg school (perhaps best known for his *Philosophy of Symbolic Forms*), is also quite explicit in this regard when he claims that a critical analysis of knowledge, in order to side-step a *regressus in infinitum*, has to accept certain *basic functions* which are not capable of being "deduced" and which are not in need of a deduction (Cassirer, 1957:73).

Every single academic discipline has to employ such basic (and irreducible) concepts. Precisely because these concepts are *basic* they cannot be *defined*. Various disciplines acknowledge this state of affairs by explicitly introducing "primitive terms."

For example, in Zermelo-Fraenkel set theory first order predicate calculus is assumed and on that basis it introduces as an *undefined term* the specific set-theoretical primitive binary predicate ε which is called the *membership relation* (Fraenkel et al., 1973:23).[20] Bertrand Russell states: "The relation of whole and part is, it would seem, an indefinable and ultimate relation" (Russell, 1956:138). For the sake of an economy of primitive terms even the term

[16] Salmon refers to "primitive terms" in "pure mathematics" (Salmon, 2001:32).

[17] P. Hoyningen-Huene writes about irreducibility in the context of *complementarity*: "But this property is just *identical with the epistemological non-reducibility* of these features. In other words: in order to establish that in a certain situation complementarity prevails, it has to be shown that the features involved are irreducible to each other" (see his *Theory of Antireductionist Arguments: The Bohr Case Study*, in: Agazzi, 1991:67). Weingartner refers to *primitive terms*: "Term (concept, idea) *t is* scientifically analyzable iff it is reducible to primitive terms. t is reducible to primitive terms iff t is itself a primitive term or it can be traced back to primitive terms by a chain of definitions" (see his article on *Reductionism and Reduction in Logic and in Mathematics*, in: Agazzi, 1991:124).

[18] With reference to Einstein's thirty year search for a unified field theory, Brian Greene, a specialist in the theory of super strings, believes that physicists will find a framework fitting their insights into a "seamless whole," a "single theory that, in principle, is capable of describing all phenomena" (Greene, 2003:viii). He introduces Super String theory as the "Unified Theory of Everything" (Greene, 2003:15; see also pp.364-370, 385-386).

[19] Compare, for example, the remark of Weingartner regarding the failure of logicism: "Logicism is an example of reduction which was as a whole unsuccessful" (Weingartner, 1991:130).

[20] This approach follows a general pattern: an axiomatic theory (axiomatic theories of logic excluded) "is constructed by adding to a certain basic discipline – usually some system of logic (with or without a set theory) but sometimes also a system of arithmetic – new terms and axioms, the specific undefined terms and axioms under consideration" (Fraenkel et al., 1973:18).

identity need not to be taken as primitive, since in the approach to axiomatic set theory explained by Lemmon it could be defined by the use of the axiom of extensionality (see Lemmon, 1968:124). In general linguistics the term "meaning" is primitive; in kinematics the term constancy ("invariance" – normally associated with a *uniform movement*) is primitive; in the discipline of law the term "retribution" is primitive. When Russell discusses the mathematical meaning of constants and variables he says that "constancy of form must be taken as a primitive idea" (Russell, 1956:89) – and so on.

The upshot of this is that the acquisition of *concepts* and the formulation of *definitions* ultimately rest upon *primitive terms* – they are not defined and they cannot be defined.

The question *how does one know these indefinable* (*primitive*) *terms*? is an *epistemological issue* which is rooted in *philosophical assumptions* about the world in which we live and therefore it involves *ontological commitments*.[21] However, since a discussion of this issue exceeds our present context, we return to the *space metaphysics* of the school of Parmenides.

7. Zeno's paradoxes – A different understanding of antinomies

In the school of Parmenides Zeno argued against *multiplicity* and *movement* by assuming an absolutely static *being*. The well-known reasoning regarding the *flying arrow*, *Achilles and the tortoise* as well as what is known as the *dichotomy paradox* is reported by Aristotle in his *Physics* (239 b 5 ff.). Aristotle's own approach proceeds from the assumption that "it is impossible for anything continuous to be composed of indivisible parts" (*Phys*. 232 a 23 ff.) and that "everything continuous is divisible into an infinite number of parts" (*Phys*. 238 a 22). The basis of the first paradox is found in *divisibility* and that of the third in the successive addition of two distinct series of *diminishing magnitudes* both converging to the same limit – but given the different points of departure the first one is *nested* within the second one. It looks as if the Aristotelian account of paradoxes one and three collapsed movement *ab initio* into an issue of *spatial divisibility* and the addition of *diminishing magnitudes* (therefore both cases are related to what modern mathematics calls the *density* of spatial continuity), whereas the account of the paradox of the *flying arrow* seems to *allow* for movement to begin with and then "freezes" it into distinct "moments" of time – as if something moving from "moment" to "moment" has a *definitive place* in space.[22]

It may be worthwhile to mention the fourth *Fragment* of Zeno known to us, for it explicitly starts by *granting* the reality of movement and then it proceeds with an argument launched from the perspective of the static nature of space in order to rule out the possibility of movement: "That which moves neither moves in the space it occupies, nor in the space it does not occupy" (Diels-Kranz B Fr.4). This certainly explains why Grünbaum distinguishes between the "paradoxes of *extension*" and the "paradoxes of *motion*" (Grünbaum, 1967:3) –

[21] Contemporary formal ontologies intersect with certain basic ideas of a non-reductionist ontology but unfortunately did not develop a theory inter-modal coherences between the various modal aspects of reality, causing this trend also to by-pass the importance of *modal universality*. However these issues cannot be treated in this context.

[22] If "being at one place" means "being at rest," and if this is "every moment" the case with the "flying arrow," then the arrow is actually only "at rest" – i.e., it is not moving at all. Of course, modern kinematics holds that "rest" is a (relative) state of motion. But without reference to some or other system one cannot speak about the motion of a specific kinematical subject (see Stafleu, 1980:81, 83-84).

but he explicitly distances himself from the authenticity of the historical sources by restricting himself to the legacy of Zeno in "the present-day philosophy of science" (Grünbaum, 1967:4).[23]

Unfortunately, in his encompassing treatment of Zeno's paradoxes, Grünbaum does not anywhere in his analysis pay attention to the problem of *uniqueness* and *irreducibility* (with the accompanying problem of *primitive terms* and *indefinability*). Yet this does not mean that in his mode of argumentation there is not an *implicit* acceptance of the uniqueness of the core meaning of motion. In his work on space and time, for example, he discusses Einstein's "principle of the constancy of the speed of light" (Grünbaum, 1974:376) and points out that it concerns an upper limit that is only realized in a vacuum (Grünbaum, 1974:377). Einstein's theory of relativity proceeds from the hypothesis that one singular light signal has a constant velocity (in respect of all possible moving systems) without necessarily claiming that such a signal actually exists. Stafleu remarks: "The empirically established fact that the velocity of light satisfies the hypothesis is comparatively irrelevant" (Stafleu, 1980:89).

The postulate concerning the *constancy* of the velocity of light explores an insight already advanced by Galileo and his predecessors in the meaning of *inertia*. Galileo reversed the Aristotelian view that whatever moves requires a *causing force* in order to continue its movement. He did that with the aid of a thought-experiment concerning a body that is in motion on a plane which is extended into the infinite – and from this experiment he derives the law of inertia. The question is whether or not the meaning of uniform motion is *primitive* and *unique* in the sense that it ought to be distinguished both from the static meaning of *space* and the dynamic meaning of *physical energy-operation* (*causes* and *effects*)? Since physics always deals with *dynamic forces* operative in the interplay of energy transformation, and since a (constant) *uniform motion* can indeed be envisaged without making an appeal to a *cause* (causal *force*), it is clear that something unique and irreducible is here at stake. It entails that in a *functional* sense movement is something *original*. Whatever moves will continue its (uniform) motion endlessly. Motion is not in need of a cause – only a *change* of motion needs a cause. Both *acceleration* and *deceleration* require an energy-input (i.e., a physical cause).

Although modern physics was dominated by a mechanistic inclination until the end of the 19th century, it eventually realized that a purely *kinematical* explanation of physical phenomena is untenable. A consistent mechanistic approach, such as that still found in the posthumously published work by Heinrich Hertz (the German physicist who did experimental work about electromagnetic waves more than a hundred years ago) on "The Principles of Mechanics developed in a New Context," demonstrates the dilemma of reductionism, for his aim to restrict physics to *number*, *space* and *movement* only (re-presented by the concepts *mass*, *space* and *time*), led him to reject the (physical) concept *force*. He claimed that the concept of force is something *inherently antinomic* (cf. Katscher, 1970:329).

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[23] This position closely imitates a similar disclaimer found in Russell's treatment: "Not being a Greek scholar, I pretend to no first-hand authority as to what Zeno really did say or mean. The form of his four arguments which I shall employ is derived from the interesting article of M. Noël, 'Le mouvemont et les arguments de Zénon d'Elée,' *Revue de Métaphisique et de Morale*, Vol.I, pp.107-125. These arguments are in any case well worthy of consideration, and as they are, to me, merely a text for discussion, their historical correctness is of little importance" (Russell, 1956:348, note).

But as soon as the dynamic physical sense of *force* is acknowledged, as it has been done by 20th century physics, what Hertz deemed to be an antinomy turns out to require an acknowledgement of another unique and irreducible *functional mode*[24] of reality (in addition to number, space and movement), namely the *physical*.[25]

8. The inter-modal meaning of an "antinomy"

But the kinematic function of uniform motion also differs from the functional modes of number and space. The above-mentioned B Fragment 4 of Zeno actually demonstrates that the unique and irreducible meaning of uniform flow (motion) cannot be captured purely in spatial terms, except in an *antinomic* way. In order to explain what this means we first have to alter the meaning of the term "antinomy." The most obvious way to accomplish this is to allude to its literal sense, which is intended to designate a *clash of laws*: *anti* = against, and *nomos* = law. The attempt to explain movement in terms of space results in a (theoretical) conflict between *kinematic laws of motion* and *spatial laws*.

Such a conflict or clash between distinct functional (modal) laws indeed demonstrates the nature of a *theoretical antinomy*. After all, in the actual world these two modes of being are unique *and* are mutually cohering.[26] Yet the attempt to *reduce* one unique mode to another one invariably results in genuine (theoretical) *antinomies*.

> In this sense antinomies therefore concern an *inter-modal* confusion, i.e., a lack of distinguishing properly between *different* modes, functions or aspects of reality.

Furthermore, an *antinomy* always entails a *logical contradiction*, whereas a contradiction does not *necessarily* presuppose an antinomy. The above-mentioned illogical concept of a "square circle" exemplifies an instance where two *spatial* figures are not properly identified and distinguished. In other words, a *contradiction* such as this one has an *intra-modal* character since its confusion relates to givens *within* the modal-functional boundaries of one aspect or function only.

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[24] The aspects of reality are not brought to sight by asking questions about the concrete *what* of entities and processes, for these aspects represent the *way* (*manner*) in which such entities and processes *function* – i.e., they relate to the *how* of concrete entities and processes. From Latin we have inherited expressions such as *modus operandi* and *modus vivendi* in which the *how* is represented by the term 'modus'. An aspect is therefore to be seen as a specific (unique) *mode* which, in a general sense, is a *modus quo*, a *mode of being*. As an equivalent for referring to *facets*, *aspects* or *functions*, one can therefore also speak about *modalities* or *modal aspects* or *modal functions*. Already in 1910 Cassirer highlighted the importance of this distinction between *entity* ('substance') and *function* (see Cassirer, 1953). When entities and processes are resolved into functions we meet *functionalism*; and when modal functions are treated as entities they are *reified*. An in-depth analysis of the decisive role of functionalism in the development of the modern natural sciences is found in an important work of Rombach (see Rombach, 1965-66).

[25] It is therefore understandable that Janich distinguishes between *phoronomic* and *dynamic* statements (Janich, 1975:68-69). Also Einstein highlights the difference between the mechanical point of view (where all processes are reversible) and thermodynamics (the most general physical discipline where courses of events are irreversible) (Einstein, 1959:42-43).

[26] The "path" of a movement highlights the undeniable interconnection between motion and space. The serial order of events reveals a connection with the numerical meaning of succession. We shall briefly return to this perspective below.

Within the dialectical tradition of Marxism this difference between an (inter-modal) antinomy and an (intra-modal) contradiction surfaced strikingly. In following the dialectical-materialistic conception of Engels the Marxist physicist Hörz talks about a "dialectical *Widerspruch* (antinomy)." One can say that a moving body (i.e., a body involved in a change of place) at the same time is and is not at a specific place. According to him this is the "dialectical antinomy (*Widerspruch*)" of *change of place*. But a formulation precluding every *logical contradiction* runs as follows: "as the result of movement a body finds itself at a specific place and with regard to the movement itself the body does not find itself at a specific place" (Hörz, 1967:58). Hörz's designation of this situation as the "dialectical antinomy (*Widerspruch*)" of change of place is also found in the thought of Hegel:

> When we speak about movement as such, we say: a body is at a specific place and then moves to a different place. While it is moving, it is no longer at the first place, but also not yet at the second. When it is at any one of the two it is at rest. When it is said that it is between both, this is not said for between both there is also a place and therefore the same problem occurs. But movement means: to be at this place and at the same time not be there; this is the continuity of space and time and this is it that makes possible motion (Hegel, 1833:337 ff.).[27]

Hegel and Hörz distinguish the aspect of movement (when a body does *not find itself at a specific place*) and the spatial aspect (the position of a body, when *it has a definite place*). In other words, they are actually making an appeal to *two different aspects* in order to side-step the accusation of a *logical contradiction* but at once they appreciate the (inter-modal) distinction that they make as a "dialectical Widerspruch."

9. Different aspects involved in Zeno's 'paradoxes'

In the case of Zeno's arguments different *modal aspects* are at stake. The theoretical attempt to reduce the meaning of movement to that of space is *antinomic* – but this antinomy shows itself in an implied *logical contradiction*: For example, as we have seen, in his fourth Fragment Zeno grants movement to begin with, but then concludes that movement is impossible. Something therefore can move if and only if it cannot move. This logical *contradiction* is the outcome of his *antinomic* attempt to reduce the original (primitive and indefinable meaning of) motion to *static spatial extension*. In other words, since an antinomy results from an attempt to reduce what is irreducible, it is always *inter-modal* in nature and *simultaneously* it expresses itself (intra-modally) within the logical mode as a logical *contradiction*.[28]

Of course this perspective does not eliminate a meaningful analysis of the numerical and spatial *aspects* of a (concretely) moving body (compare many of the arguments found in Grünbaum, 1967). Material (physical) entities and processes display various functional

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[27] "Wenn wir von der Bewegung überhaupt sprechen, so sagen wir: Der Körper ist an einem Orte, und dann geht er an einen anderen Ort. Indem er sich bewegt, ist er nicht mehr am ersten, aber auch noch nicht am zweiten; ist er an einem von beiden, so ruht er. Sagt man, er sey zwischen beiden, so ist dieß nicht gesagt; denn zwischen beiden ist er auch an einem Orte, es ist also diesselbe Schwierigkeit hier vorhanden. Bewegen heist aber: an diesem Orte seyn, und zugliech nicht; dies ist die Kontinuität des Raums und der Zeit, und diese ist es, welche die Bewegung erst möglich macht."

[28] Stafleu is correct in suggesting that one can interpret Zeno's arguments "against" motion as a demonstration that motion cannot be explained by *numerical* and *spatial relations* (see Stafleu, 1987:61).

properties without being *exhausted* in their concrete many-sided existence by any single one of these modes of being (which are at once *modes of explanation*).

The solution of Zeno's problem of Achilles and the tortoise is certainly *not* given by the view that Zeno understood the metaphor of the "moving observer" in a *literal* way, as it is claimed by Lakoff and Johnson (see Lakoff and Johnson, 1999:157-158), since what is ultimately shown by this 'antinomy' is that it is impossible to *define* uniform motion (exhaustively or exclusively) in *spatial terms*.

The acknowledgement of *irreducible* modes (functions or aspects) of reality is intimately connected with the idea of the *identity* of an entity which has a concrete and many-sided functioning within each one of these aspects without ever totally being *absorbed* by any one of them. Consider the four most basic functions of an atom. Besides the arithmetic function which an atom has (think about the *atomic number*), it also clearly has a spatial function since it is characterized by a particular *spatial configuration* – the *nucleus* of an atom with *peripheral* electron systems. According to wave mechanics, we find quantified wave movements around the nucleus of the atom – the *kinematic* function of the atom. Already in 1911, in Rutherford's atomic theory, the hypothesis was posed that atoms consist of a positively charged nucleus and negatively charged particles which move around it (a view which was inspired by the nature of a planetary system). In the following year (1912), Niels Bohr set up a new theory which contained two important ideas: (i) the electrons move only in a limited number of discrete orbits around the nucleus and (ii) when an electron moves from an orbit with a high energy content to one with a low energy content, electromagnetic radiation occurs. Therefore an atom is a micro-totality is qualified by its physical function of energy-operation.

The (relative) motion of a material entity concerns the *ontic* functioning of such an entity within the *kinematical aspect of reality*. But the motion of a physical entity pre-supposes the *spatial* function of physical entities – just think about the *path* of movement – as well as the *numerical* function – normally evinced when the *measure* of motion acquires a numerical specification (designated by establishing its *speed*).[29] Although Salmon is correct in stating that Zeno, "[I]n his attempt to demonstrate the impossibility of plurality, motion, and change" points at "problems lying at the very heart of our concepts of space, time, motion, continuity, and infinity" (2001:5), none of the selections contained in the work edited by him on *Zeno's Paradoxes* enters into a discussion of the mutual *ireducibility* of these functions of reality (namely the numerical, spatial, kinematical and the physical). Neither does any one of them

[29] The notion of 'speed' in phoronomy is similar to the notion of 'magnitude' in metric spaces. The classical 'definition' of a *line* as the *shortest distance* between two points is mistaken. Hilbert rather speaks about the straight line as the shortest *connection* between two points (Hilbert, 1970:302 – problem 4 of his classical 23 mathematical problems presented at the International Congress held in Paris in 1900). In this work *Grundlagen der Geometrie* (1899), Hilbert abstracts from the contents of his axioms and proceeds upon the basis of three undefined terms: "point," "lies on," and "line." Within the functional structure of (a metrical) space *distance* (i.e., one dimensional extension) is the (numerical) *measure* of the extension of a line, the continuous extension of the line itself is *primitive*, just as specifying the *speed* of a moving body requires a *measure* of movement while movement itself remains a primitive. In both cases we may speak of the fact that the quantitative meaning of number is *analogically* reflected within the aspects of space and movement. Physics designates the numerical analogy within the function of energy-operation with the term *mass*.

consider the *scope* and *limitations* of *different* modes of explanation in respect of the *uniqueness* (primitive meaning) of *motion*. However, it does sometimes happen that an author highlights different aspects of an event. For example, when Max Black summarizes his argument by saying: "But Achilles is not called upon to do the logically impossible; the illusion that he must do so is created by our failure to hold separate the finite number of real things that the runner has to accomplish and the infinite series of numbers by which we describe what he actually does" (Black, in Salmon, 2001:80), then he actually distinguishes between different aspects through which we can approach such an event – namely the numerical and the physical.

Dividing Zeno's arguments into (i) the paradox of plurality and (ii) the paradoxes of motion, may seem to juxtapose two *disconnected* areas of reflection, but, as Salmon correctly remarks, they are not unrelated (Salmon, 2001:vi). He is also justified to hold at the same time that (i) is more basic than (ii). He writes: "we shall see that the paradox of plurality is logically more basic than the paradoxes of motion" (Salmon, 2001:7). However, we may want to expand his qualifier "logically" to read "*onto*-logically" – because numerical considerations in an ontic sense are *foundational* to an understanding of the meaning of *space* and *motion*.[30]

Even in respect of (ii) most philosophers and mathematicians focus on the problem of an *infinity* of points or intervals that ought to be passed / traversed in a finite time. A constantly recurring consideration concerns the "logical impossibility" to "complete" an endless (infinite) series. The "mathematical solution" of this problem is apparently found in the observation that, in terms of an arithmetical perspective (mode of explanation), that the successive partial sums of the series $1 + 1/2 + 1/2^2 + 1/2^3 + \ldots$ $1 - 1/2^n$ ($n = 1, 2, 3, \ldots$) do not grow beyond all limits but converge towards 1 (see Weyl, 1966:61). But Weyl immediately adds the remark that if the stretch of length 1 really consists of infinitely many partial stretches of length 1/2, 1/4, 1/8, … as *separated* wholes, then it would contradict the essence of infinity as the "Unvollendbaren" (what *cannot be completed*) that Achilles finally had to pass through (Weyl, 1966:61).[31] In other words, as soon as the idea of a *completed totality* is combined with the infinite – for instance in speaking about an *infinite whole* or an *infinite totality* – then the true nature of *infinity* is contradicted (in this case in the claim that Achilles in the end completely passed through that which cannot be completed).

Interestingly Max Black argues from an understanding of infinity as "uncompleted" when he says that what is meant "by the assertion that the sum of the infinite series 100 + 10 + 1 + 1/10 + 1/100 + is 111 1/9" and that this "does not mean, as the naive might suppose, that mathematicians have succeeded in adding together an infinite number of terms" (Black, in Salmon, 2001:70). Black and Wisdom both criticize the "mathematical solution" (see Wisdom

[30] In passing it should be mentioned that prominent 20th century mathematicians, such as Gödel and Bernays, argued for the ontic status of the numerical aspect of reality (see Wang, 1988:304 and Bernays, 1976:45, 122).

[31] "Die Unmöglichkeit, das Kontinuum als ein starres Sein zu fassen, kann nicht prägnanter formuliert werden als durch das bekannte Paradoxon des Zenon von dem Wettlauf zwischen Achilleus und der Schildkröte. Der Hinweis darauf, daß die sukzessiven Partialsummen der Reihe $1/2 + 1/2^2 + 1/2^3 + \ldots$, $1 - 1/2^n$ ($n = 1, 2, 3, \ldots$) nicht über alle Grenzen wachsen, sondern gegen 1 konvergieren, durch den man heute das Paradoxon zu erledigen meint, ist gewiß eine wichtige, zur Sache gehörige und aufklärende Bemerkung. Wenn aber die Strecke von der Länge 1 wirklich aus unendlich vielen Teilstrecken von der Länge 1/2, 1/4, 1/8, … als 'abgehackten' Ganzen besteht, so widerstreitet es dem Wesen des Unendlichen, des 'Unvollendbaren', daß Achilleus sie alle schließlich durchlaufen hat."

in Salmon, 2001:83). Wisdom concludes: "The idea that the limit of an infinite series is attainable is a mistake. If a physical action is interpreted by means of an infinite series, then the completion of the action is self-contradictory" (Wisdom in Salmon, 2001:87).[32]

Owen points out that one "beneficial result" of Zeno's "arguments (on this familiar account)," was "to compel mathematicians to distinguish arithmetic from geometry" (Owen in Salmon, 2001:139). But Owen questions the idea of an *infinite divisibility* by posing the question whether or not such a division ever could be (could have been) *completed*?[33]

Likewise, the arguments found in Ryle's *Dilemmas* are based on the same assumption of the "uncompleted infinite," although in addition he does introduce into his discussion the *whole-parts relation* (with reference to the classical slogan that the "the whole is more than the sum of its parts"). He says that the question "how many parts have been cut off from an object?" must be distinguished from the question "in how many parts did you divide it?" (Ryle, 1977:61). The first point proceeds from a notion of wholeness containing all its (finite) parts, whereas the second point reverts to the perspective and explores an on-going process of *division*.

This distinction actually imitates B Fragment 3 of Zeno in which he argues as follows (in the translation of Guthrie): "if there is a plurality, it must contain both a finite and an infinite number of components: finite, because they must be neither more nor less than they are; infinite, because if they are separate at all, then however close together they are, there will always be others between them, and yet others between those, *ad infinitum*" (Guthrie, 1980:90-91). Therefore assuming a plurality leads to the contradictory conclusion that it contains "a finite and an infinite number of components." But given the fact that Parmenides and his school, as an effect of the discovery of irrational numbers, switched from an *arithmetical* mode of explanation to a *spatial* one, we may look at the *spatial* whole-parts relation in order to understand what is here at stake.[34] If the plurality of the first argument refers to a perspective from the parts to the whole, then the number of these parts must be limited while at once they constitute the world as a whole (the universe). By contrast, if the argument proceeds from the whole to the parts, the *infinite divisibility* operative in this move entails that "there will always be others between them" and so on indefinitely. Fränkel explicitly employs the whole-parts relation to explain the meaning of B Fragment 3 of Zeno (see Fränkel, 1968:430).[35] Perhaps Zeno's B Fragment 3 could be seen as the first 'two-directional' discussion of the spatial whole-parts relation.[36]

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[32] The standard mathematical formulation of the nature of a limit does not hold "that the limit of an infinite series is attainable" (see note 36 below).

[33] "For suppose we ask whether such a division could be (theoretically, at least) continued indefinitely: whether any division can be followed by a sub-division, and so on, through an infinite number of steps. Let us say, to begin with, (A) that it does have an infinite number of steps. Then could such a division nevertheless ever be (or ever have been) completed?" (Owen, in Salmon, 2001:142).

[34] Whatever is continuously extended is a coherent whole in the sense that all its parts are connected – therefore the terms *coherence* and *connectedness* are mere synonyms for the terms *wholeness*, *totality* and *continuity*. A whole (or totality) contains all its parts. Paul Bernays affirms that 'wholeness', i.e., the *totality-character* of spatial continuity, will resist a "perfect arithmetization of the continuum" (see Bernays, 1976:74).

[35] Guthrie has a positive appreciation of this article of Fränkel. He refers to an English translation of it: *Zeno of Elea's Attacks on Plurality* (see Guthrie, 1980:88 ff., 512).

[36] In response to the phrase "If they are just as many as they are, they will be finite in number" Russell states: "This phrase is not very clear, but it is plain that it assumes the impossibility of definite infinite

10. Confusing the nature of infinity

The mere fact that so many scholars involved in discussing Zeno's paradoxes argue in terms of the 'uncompleted' nature of infinity demonstrates that they probably do not have a clear understanding of the difference between what traditionally is called the *potential infinite* and the *actual infinite*. Even when a competent scholar like Russell – who certainly has a sound understanding of the difference between these two kinds of infinity – sets out to present a historical presentation of the problem of infinity (see Salmon, 2001:45-68), one does not encounter an exploration of these two kinds of infinity.

Before Gregor of Rimini lectured on the *Sentences* at Paris in 1344, the objections to the actual infinite formulated by Fitzralph resulted in a rejection of both the potential and the actual infinite. In his argumentation he speaks about the *simultaneous infinite* (*simultanes infinitum*). In their discussion of the problem of infinity (during the 14th century) Henry of Harclay and others contemplated the difference between what was labeled the *infinitum successivum* and *infinitum simultaneum* (cf. Maier, 1964:77-79). These designations make and appeal to our most basic intuitions of number (succession) and space (at once). Therefore, it is recommendable rather to distinguish between the *successive infinite* and the *at once infinite* than between the potential infinite and the actual infinite.

The successive infinite brings to expression the most basic meaning of infinity – in the literal sense of without an end.[37] It is determined by the primitive quantitative meaning of succession: one, another one, and so on indefinitely. The reason why the phrase actual infinity ought to be replaced by the expression *the at once infinite* is found in the interconnection between number and space. The awareness of *simultaneity* (*at once*) is the correlate of any spatially extended figure (subject) for if the different *parts* of a spatial figure (as a whole) are not given *at once* the spatial figure itself is not given. Any understanding of infinity in terms of the idea of *infinite wholes* or *infinite totalities* is therefore dependent upon 'borrowing' a crucial element of space. In fact it seems to be impossible to develop *set theory* without "borrowing" key-elements from our basic intuition of space, in particular the mentioned spatial order of *at once* and its correlate: *wholeness* or *totality*. Hao Wang mentions that Gödel speaks about sets as being 'quasi-spatial' and then says: "I am not sure whether he would say the same thing about numbers" (Wang, 1988:202).

There is no *constructive transition* between the successive infinite and the at once infinite (see Wolff, 1971). But a full-blown treatment of the real numbers, transcending the approximative approach found in intuitionistic mathematics based upon the *denseness* of the rational numbers, does require the employment of the at once infinite. Even though it seems as if the limit concept can be formulated merely in terms of the "endlessness" of the successive infinite, the requirement of the numerical nature of an arbitrary limit is dependent upon the use of the real numbers while an account of the real numbers, in turn, requires the use of the at once infinite. It is not possible to define (irrational) real numbers with the aid of converging sequences of rational numbers, because the classical definition of a *limit* (stemming from Cantor and Heine) presupposes that whatever functions as a

numbers" (Russell, in Salmon, 2001:47). Clearly Russell did not explore a "two-directional" use of the spatial whole-parts relation suggested above.

[37] Russell holds that an *endless series* neither has a beginning nor an end (Russell, 1956:297).

limit in advance already must be a *number* – explaining why it cannot be 'created' through a 'convergence process.' In 1883 Cantor expressly rejected this circle in the definition of irrational real numbers (going mainly back to Cauchy in 1921 – see Cantor, 1962:187). The eventual description of a limit still found in textbooks today was only given in 1872 by E. Heine, who was a student of Karl Weierstrass.[38] In 1887 Cantor pointed out that the core of the ideas in Heine's article was borrowed from him (Cantor, 1962:385).

What is important to realize is that as soon as the *successive infinite meaning* of the numerical order of succession is deepened through the spatial order of *at once*, the meaning of successive infinity is enriched through its connection with the meaning of *simultaneity*. Any *successive* sequence of numbers could then, under the guidance of this deepened hypothesis, be viewed *as if* its elements are given *all at once*. The deepened and disclosed meaning of the infinite (under the guidance of an insight into the *spatial* meaning of *simultaneity*) encountered here, justifies our choice to designate it as the *at once infinite*. Under the guidance of this hypothesis the initial successive infinite sequences of natural numbers, integers and rational numbers could be viewed as actual infinities, i.e., as *infinite totalities given at once*.[39]

Both Salmon and Grünbaum are sufficiently acquainted with (Cantor's) Set Theory (see the Appendix in Salmon, 2001:251-268; and Grünbaum, 1967)[40] and they are justified in employing set theory in an understanding of the numerical side of physical movement (even though they do not realize that set theory is not a purely numerical theory but a *spatially deepened* arithmetical theory).[41]

Similar to those who argue against the "completed" infinite by applying the standard of the successive infinite, already Immanuel Kant thought that he can bring his first antinomy[42] to a 'solution' by taking recourse merely to 'endlessness' (i.e., the *successive infinite*). In his remarks about the first thesis of the second antinomy[43] Kant states that space is not a

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[38] In general a number l is called the limit of the sequence (x_n), when for an arbitrary $0 < \varepsilon$ a natural number n_0 exists such that $|x_n - l| < \varepsilon$ for all $n \geq n_0$. (See Heine, 1872:178,182).

[39] Lorenzen, although rejecting the at once infinite in his constructive logic and mathematics, does provide a lucid description of the classical theory of real numbers in its dependence upon the use of the *at once infinite*: "One imagines much rather the real numbers as all at once actually present – even every real number is thus represented as an infinite decimal fraction, as if the infinitely many figures (Ziffern) existed all at once (alle auf einmal existierten)" (Lorenzen, 1972:163).

[40] That they did not discern the *circularity* present in Cantor's attempt to develop a supposedly purely arithmetical understanding of a continuum of points cannot be analyzed in the present context.

[41] Grünbaum's sympathetic quotation from Weyl (in Salmon, 2001:175) raises the suspicion that he is not aware of the fact that Weyl, in rejecting the at once infinite, also rejects the Cantorean view employed by him in his attempt to develop a "consistent conception of the extended linear continuum as an aggregate of unextended elements" (see Grünbaum, 1952). Just compare the following words of Weyl: "In agreement with intuition Brouwer sees the essence of the continuum not in the relation of the element to the set, but in that of the part to the whole" (Weyl, 1966:74).

[42] "The world has a beginning in time, and is limited also with regard to space" versus "The world has no beginning and no limits in space, but is infinite, in respect both to time and space" (cf. Kant, 1787:454).

[43] The two sides of this second 'antinomy' corresponds to the "two-directional" nature of the spatial whole-parts relation referred to above – Zeno B Fragment 3 and Ryle (in connection with the antithesis Kant raises the issue of *infinite divisibility*): "Every compound substance in the world consists of simple parts, and nothing exists anywhere but the simple, or what is composed of it" versus "No compound thing in the world consists of simple parts, and there exists nowhere in the world anything simple" (Kant, 1787:462 ff., 467).

compositum (in reaction to atomistic views of space), since in determining its parts space is a *totum*.[44] He therefore does have an eye for the totality character of spatial continuity.

Clearly those who attempt to liberate themselves from the impasse in Zeno's arguments by pointing at the 'impossibility' of the 'completion' of endlessness (including the untenability of "infinity machines"),[45] have to account for the difference between the potential and actual infinite (the successive and the at once infinite). The assumption in Zeno's bisection paradox seems to be that it is *logically absurd* to argue that *all* of an infinite number of tasks have been (can be) completed (in a finite time). Many authors did not come to terms with the endlessness of the successive infinite since they constantly alluded to a "last element." Likewise it is self-contradictory to speak of *an infinite division* of a continuum if this entails a "last division" – though it is meaningful to speak about infinite *divisibility*.[46] Yet, when the distinction between the successive and the at once infinite is applied, a deepened arithmetical perspective does allow for the acknowledgement of an infinite totality where any given succession can be viewed as being *given at once*, as an infinite whole. The fact that the at once infinite is irreducible to the successive infinite makes it meaningless to argue against the former by using the latter as *yardstick*.

But all these considerations still side-step the basic fact that most of the treated positions enter into a combat that takes place on the wrong battlefield! The real issue is not whether it is possible to develop a sound mathematical (or: set theoretical) analysis of the meaning of the successive infinite or of the at once infinite and then apply it to the numerical and spatial side of an actual physical movement. The issue is whether or not spatial continuity could be *arithmetized* fully[47] and whether or not it is the task of a mathematical theory of number (or space) to explain the core meaning of *motion* in the sense of *defining* it in quantitative terms or in terms of the static meaning of space.

The employment of the *at once infinite* in the mathematics of Weierstrass, in fact misguided him to an understanding devoid of phoronomic and physical connotations, i.e., stripped of the idea of *constancy* and *change*. Boyer remarks:

> In making the basis of the calculus more rigorously formal, Weierstrass also attacked the appeal to intuition of continuous motion which is implied in Cauchy's expression that a variable *approaches* a limit. Previous writers generally had defined a variable as a quantity or magnitude which is not constant; but since the time of Weierstrass it has been recognized that the ideas of variable and limit are not essentially phoronomic, but involve purely static considerations. Weierstrass interpreted a variable x as simply a letter designating any one of a collection of numerical values. A continuous variable was likewise defined in terms of static considerations: If for any value x_0 of the set and for any sequence of positive numbers d_1, d_2, ..., d_n' however small, there

[44] "We ought not to call space a *compositum*, but a *totum*, because in it its parts are possible only in the whole, and not the whole by its parts" (Kant, 1787:467).
[45] This idea was initiated by Weyl (see Weyl, 1966:61). See also Salmon, 2001:26 ff. and Thomson (in Salmon, 2001:89 ff.) and Benecerraf (in Salmon, 2001:103 ff.).
[46] Grünbaum distinguishes between *infinite divisibility* and an actual infinite *dividedness* (Grünbaum, 1952:300).
[47] This problem is related to Zeno's paradoxes of plurality.

> are in the intervals $x_0 - d_i$, $x_0 + d_i$ others of the set, this is called continuous (Boyer, 1959:286).[48]

This position even caused Russell to settle for the idea that Zeno's arrow is truly at rest at every moment of its flight!

> After two thousand years of continual refutation, these sophisms were reinstated, and made the foundation of a mathematical renaissance, by a German professor, who probably never dreamed of any connection between himself and Zeno. Weierstrass, by strictly banishing all infinitesimals,[49] has at last shown that we live in an unchanging world, and that the arrow, at every moment of its flight, is truly at rest (Russell, 1956:347).

The alternative approach advanced in this article holds that only when the *uniqueness* and *mutual coherence* of number, space and movement are observed is it possible to avoid the threat of antinomies inherent in Zeno's arguments against plurality and motion.

The spatial metaphysics of Parmenides, for that matter, inspired Zeno to defend a view of *unitary wholeness* that *excludes* plurality. In other words, Zeno wants to *deny* the 'part'-element of the spatial whole-parts relationship while at the same time holding on to the 'wholeness' which entails it.[50] His position is that reality is both *one* and *indivisible*. Yet, in order to *argue* for his position, he explored the whole-parts relation in his argument that is aimed at the *denial* of plurality! The reason why Zeno considers plurality to be self-contradictory is that plurality requires a *number* of (indivisible) units and because it also implies that reality is *divisible* (see Guthrie, 1980:88). But divisibility threatens the wholeness of a *unit*, since anything divisible has to be a magnitude which must be infinitely divisible. The supposed *indivisibility* of a *unit* clashes with its *infinite divisibility*. "Hence, since plurality is a plurality of units, there can be no plurality either" (Guthrie, 1980:89).

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[48] However, in the course of their development during the 20th century both logic and mathematics realized that it is impossible to side-step the idea of *constants* and *variables* – thus showing that an analysis even of the meaning of number cannot be separated from the interconnections between various *modes of explanation*.

[49] Of course the new introduction of *infinitesimals* in the non-standard analysis of Abraham Robinson outdates this remark of Russell. Robinson developed his new theory on the basis of a fertile use of Cantor's theory of *actually infinite sets* (transfinite cardinalities). A number *a* is called *infinitesimal* (or *infinitely small*) if its absolute value is less than *m* for all positive numbers *m* in □□(□ being the set of real numbers). According to this definition 0 is *infinitesimal*. The fact that the infinitesimal is merely the correlate of Cantor's transfinite numbers, is apparent in that *r* (*not equal to* 0) is infinitesimal if and only if *r to the power of minus 1* (r^{-1}) is infinite (cf. Robinson, 1966:55ff).

[50] This is a quasi-Wittgensteinean position. Whereas Wittgenstein had to throw away the ladder after climbing up it (*Tractatus*, 6.54), Zeno started on top with wholeness and then discarded the ladder of infinite divisibility supporting it. The reverse took place in intuitionistic mathematics, which started with the original spatial whole-parts relation but then distorted it by accentuating the part-element (with its implied infinite divisibility) at the cost of the whole-element (with its givenness all at once). The intuitionistic theory of the real numbers and the continuum followed a similar kind of Wittgensteinean approach – it used the "spatial ladder of wholeness" but immediately afterwards discarded it while holding on to the infinite divisibility implied by it.

Therefore, by denying the *foundational meaning* of multiplicity, Zeno not only distorts the meaning of *number* (plurality) but also misrepresents the meaning of *space*. The infinite divisibility of a spatial whole analogically reflects the original and primitive numerical meaning of the successive infinite. Through spatial continuity the endlessness of the numerical infinite is "turned inwards." But divorced from its connections with number the meaning of space collapses.[51] The original numerical meaning of the unitary *one* is non-original within space, for within space the magnitude of an extended spatial figure (as a whole) provides a different context for unity – a unity (totality) that is *infinitely divisible*. The speculative (metaphysical) notion of a *unitary whole* excluding plurality robs both number and space of their meaning and mutual connections.[52]

From this subsection it is clear that the issues involved – regarding the uniqueness and mutual coherence of number, space and motion – transcend the confines of logic as such, although they certainly also cohere with the meaning of logical analysis. This consideration prompts us to look at the self-insufficiency of logic.

11. The limitations of logic

As long as one merely considers the logical principles of identity and non-contradiction (whether or not amended by the principle of the excluded middle), no *material* criterion of truth is available, for in terms of these principles one can at most affirm that two contradictory statements cannot both be true at the same time and within the same context.[53] What refers thought irrevocably *beyond* logic is first of all the *principium rationis sufficientis* (also known as *principium rationis determinantis* and *principium reddendae rationis*) – in English formulated as the "principle of sufficient reason." Since one can at most affirm that two contradictory statements cannot both be true at the same time and within the same context" it is clear that logic alone cannot resolve the contradiction. What is needed is to ask for *non-logical* (extra-logical) grounds, that is to say, a reference to states of affairs "in reality" ("outside" logic) is required.

This principle, originally formulated by Leibniz, was subjected to an extensive investigation by A. Schopenhauer in 1813. He called it the principle of *sufficient ground* of knowledge (*principium rationis sufficientis cognoscendi*) (Schopenhauer, 1974:156).

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[51] Mathematical dimension theory explores the notion of dimension as an order of extension – captured by the natural numbers 0, 1, 2, 3, … – thus analogically reflecting the foundational meaning of number. In metrical spaces magnitude (such as length – one-dimensional extension; surface – two dimensional extension; and volume – three dimensional extension) in a correlated way analogically reflects the foundational meaning of number. Exploring the suggestions of Poincaré, Brouwer in 1913 introduced a precise (topologically invariant) definition of *dimension*, which was independently recreated and improved in 1922 by Menger and Urysohn. Menger's formulation (still adopted by Hurewicz and Wallman) simply reads: "a) the empty set has dimension -1, b) the dimension of a space is the least integer n for which every point has arbitrarily small neighborhoods whose boundaries have dimension less than n" (Hurewicz, 1959:4, cf. 24; cf. also Alexandroff, 1956:165, 167 note 12 regarding the *intuitive meaning* of dimension as it is present in the principle of invariance of Brouwer).

[52] Just recall our earlier remarks about *speed* and the length of a line where it was argued that within the domains of space, movement and the physical we can discern numerical analogies.

[53] This was already clearly understood by Kant (see Kant, 1787:84-85).

The general legacy of Leibniz is captured in the phrase: *there is nothing without a sufficient ground* (*nihil est sine ratione sufficiente*). Of course already Plato affirmed that assertions require a foundation (*Timaeus* 28a), whereas Aristotle distinguished four causes: *material*, *formal*, *effective* and *final* ones.

In his *Monadology* Leibniz formulates his view as follows:

> … and the second the *principle of sufficient reason,* by virtue of which we observe that there can be found no fact that is true or existent, or any true proposition, without there being a sufficient reason for its being so and not otherwise, although we cannot know these reasons in most cases (Leibniz, 1976:646 – see Sections 44 and 196).

Ultimately the combined perspective of the principle of sufficient reason and the ontic requirement to avoid antinomies by acknowledging what is unique and irreducible opens up the plea for a *non-reductionist ontology*. In terms of this remark one can view each and every *monistic ism* as an argument against the position defended in this article.[54] Our conjecture is that the untenability of such a truly monistic orientation is shown by the antinomies that it entails. An interesting feature of an antinomic position is that it always reaches the opposite for what it aims for.

In addition to what has been said about the antinomies entailed in the space metaphysics of the school of Parmenides, we briefly consider another example by looking at the intentions of *historicism*. Under the heading: *Change and Permanence: On the Possibility of Understanding History* Hans Jonas examines the impasse of historicism. He argues that radical historical skepticism is self-defeating (Jonas, 1974:241). The problem is that *change* can only be detected on the basis of an *enduring* or *persistent* element, of something *constant*.[55] For example, if *law* is intrinsically *historical* it is supposed to have 'happened' somewhere in the past – which is not at all the case, for jurisprudence knows much about *legal history*. If the jural itself *was* history, it could not have *had* a history. The *irony* of radical historicism is therefore that the opposite of what is aimed for is achieved – if everything *is* history, there is nothing left that can *have* a history. Jonas refers to the said element of *constancy* as something *transhistoric* in his assessment that runs parallel with the irony just mentioned: "Actually, there is no paradox in this. For history itself no less than historiography is possible only in conjunction with a transhistoric element. To deny the transhistorical is to deny the historical as well" (Jonas, 1974:242).

Every scientific methodology (and epistemology) is founded in an ontology. This insight is captured in the title of an article of Neemann: "Das Primat der Ontologie vor dem der Metholodologie" ("The Primacy of Ontology before that of Methodology" – see Neemann, 1986). The idea of a non-reductionist ontology carries it to its ultimate epistemological consequences by making a plea to side-step the logical contradictions entailed in underlying antinomies.

12. The foundational role of the *principium exclusae antinomiae*

If the *principium rationis sufficientis* refers thinking beyond the limits of pure logicality, the logical principle of non-contradiction is further enriched by an underlying ontical principle,

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[54] Monistic isms are for example arithmeticism, holism, physicalism, vitalism, psychologism, logicism, historicism, and so on.

[55] The term 'constancy' is preferable to 'permanence'.

namely the principle forbidding inter-modal reductions which invariably result in *antinomies*. This principle is *ontical* in nature and should be called the ontical principle of the *excluded antinomy* (*principium exclusae antinomiae*).[56]

The perennial philosophical problem of explaining the coherence of what is unique and irreducible (the "coherence of irreducibles") therefore opens the way to an acknowledgment of the foundational position of the *principium exclusae antinomiae* in respect of the logical principle of *non-contradiction* – and at once it explains why the distinction between *antinomy* and *contradiction* is not a purely *logical* distinction. The *principium exclusae antinomiae* not only depicts the *limits* of logic but at once also underscores the significance of a commitment to transcend the one-sidedness of reductionnsitic isms within philosophy and the various disciplines. For this reason we understand our argument as being supportive of a non-reductionistic ontology. Laying bare theoretical antinomies in an 'ismic' stance serves as a strengthened form of immanent criticism – no thinker can turn away when it has been shown that her position is internally antinomic. In fact, once an antinomy has been articulated, the challenge is reverted, for then an alternative must be presented not subject to the same immanent criticism. If it is successful, i.e., if the alternative view put forward does not harbour a similar antinomy, then progress has been made in the critical intellectual encounter.

13. Concluding remark

The logical principle of sufficient reason refers us to those (extra-logical) grounds on the basis of which a valid argument can be pursued. However, if something truly basic (primitive) and indefinable becomes the victim of an attempt to reduce what actually is *irreducible*, theoretical thought gets entangled in genuine antinomies. Since the latter bring to light an attempt to reduce different functional modes of reality to each other (such as the Eleatic attempt to reduce motion to space), antinomies demonstrate that they are *inter-modal* in nature – thus differing from the *intra-modal reference* of a mere logical contradiction – such as the confusion of two *spatial* figures in the (illogical) concept of a "square circle." In order to explain some of the intricacies of this distinction between contradiction and antinomy – a distinction that exceeds the confines of pure logic – we had to take into account related problems, such as the meaning of unity and diversity, the problem of reductionism and the issue regarding the urge of monistic isms to find one all-embracing mode of explanation. In the final analysis it turned out that the need to distinguish between contradiction and antinomy amounts to a plea for the acknowledgement of a non-reductionist ontology. The aim of such an ontology is to avoid the dead alleys accompanying all instances of a metaphysical reductionism because the latter always terminate in the antinomic position of one or another monistic orientation.

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[56] See Dooyeweerd, 1997-II:36 ff.

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5

Whiteheadian Structured Societies as Open-Ended Systems and Open-Ended Systems as Whiteheadian Structured Societies[1]

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1. Introduction

In this essay I explore the notion of an open-ended system, that is, a thought-system which is sufficiently flexible in its mode of operation so as readily to adjust to whatever changes might be simultaneously taking place in a given physical environment or cultural context. The system, in other words, must be intrinsically "self-organizing," "self-unifying" or "self-referential" so as progressively to take into account significant changes in the empirical data under analysis. It cannot, as a result, have as its structural components unchanging principles of Being which apply the same way in every conceivable situation, but rather principles of Becoming or heuristic structures which presuppose an evolutionary or process-oriented understanding of physical reality. It is, for example, in my judgment questionable whether Aristotelian-Thomistic metaphysics with its assumption of the ontological priority of actuality over potentiality is well suited to the explanation of "emergence" in the natural and social sciences. For emergence in the strict sense of the word implies that the emergent reality is more than and to some extent other than its antecedent cause(s).[2] Yet, according to Aristotelian-Thomistic metaphysics, an effect is ontologically dependent upon its antecedent cause(s) for both its existence and its essence or mode of operation.[3] But some metaphysical systems like the process-oriented philosophy of Alfred North Whitehead were conceived with evolution and emergence as already given or a necessary starting-point. Whitehead's key metaphysical categories, namely, "actual entity" and "society," for example, are specifically designed to account for both significant discontinuity from moment to moment and an ongoing continuity of structure and mode of operation in the empirical data under investigation. No metaphysical scheme, to be sure, can expect to survive unchanged over extended periods of time with the same measure of success in every possible new situation. But some thought- systems have a built-in principle of creativity so as better to account for the new and unexpected in the empirical data under analysis.

In any event, this essay will consist in my defense of two interrelated theses. The first is that Whiteheadian structured societies are best understood as open-ended systems akin to those currently being proposed by individuals working in the natural and social sciences. The second is that an open-ended system is best understood in terms of an ongoing interplay of subjectivity and objectivity such as I propose for a Whiteheadian structured society. In

establishing my first thesis I will make reference to the work of the natural scientist Stuart Kauffman in his book *At Home in the Universe* and to the proposal of the evolutionary psychologist David Sloan Wilson in his book *Darwin's Cathedral.* With respect to my second thesis, I contend that the late Niklas Luhmann's theory of social systems with its exclusive emphasis on objectivity to the virtual exclusion of any reference to subjectivity within the workings of his system is upon closer examination curiously inconsistent, at least in its language. The net result of my presentation should be a better understanding of what I mean both by open-ended systems in the natural and social sciences and by Whiteheadian structured societies as equivalently open-ended systems in their normal mode of operation.

2. Stuart Kauffman and self-organizing systems

To begin with Stuart Kauffman's notion of self-organizing systems in Nature, I note first of all that he is a biochemist and founder of the Santa Fe Institute in Santa Fe, New Mexico. In the preface to his book *At Home in the Universe*, he challenges the claim that natural selection is the sole mechanism for biological evolution: "Another source – self-organization – is the root source of order. The order of the biological world, I have come to believe, is not merely tinkered, but arises naturally and spontaneously because of these principles of self-organization – laws of complexity that we are just beginning to uncover and understand."[4] Natural selection, in other words, comes into play only after a certain level of self-organization within the organism has already taken place. At that point, the Darwinian principles of natural selection, namely, phenotypic variation, heritability, and fitness consequences,[5] determine which such novel experiments in self-organization will survive and prosper and which for various reasons (both genetic and environmental) will inevitably fail. Thus only a combination of self-organization and natural selection ultimately explains first the emergence of life from non-life and then the amazing diversity of biological species that have appeared on this planet in the last four billion years.

Kauffman concedes that there is as yet no commonly agreed-upon conceptual framework for conjoining the principle of natural selection with principles of self-organization within Nature.[6] But in *At Home in the Universe* and in a more technically oriented book *Investigations*,[7] he proposes a hypothesis for the way in which self-organization and higher orders of complexity appear not only in the life-world but perhaps even in economic and political systems. Here I simply summarize Kauffman's hypothesis and indicate how it seems to correspond to the way in which Whiteheadian societies originate and continue to evolve in complexity and scope, above all, if they are conceived as ongoing structured fields of activity for their constituent actual entities. If such a comparison be seen as at least plausible, then the conceptual formula for the self-organization of Nature which Kauffman claims is still lacking in the life-sciences might well be at hand in this revised understanding of Whitehead's metaphysics.

Early in his book Kauffman claims: "life is a natural property of complex chemical systems, that when the number of different kinds of molecules in a chemical soup passes a certain threshold, a self-sustaining network of reactions – an autocatalytic metabolism – will suddenly appear."[8] Kauffman, to be sure, bases this conclusion not on direct observation of empirical data, but on a careful study of the results of computer models (Boolean networks) which project the possible outcomes of such molecular interactions.[9] His intention here is, of course, to speed up analysis of what might be a much longer process of trial and error in

Nature on its own. In any event, I now compare Kauffman's comments on complex chemical systems with Whitehead's generic description of a society:

> A nexus [of actual entities] enjoys 'social order' [is a society] where (i) there is a common element of form illustrated in the definiteness of each of its included actual entities, and (ii) this common element of form arises in each member of the nexus by reason of the conditions imposed upon it by its prehension of some other members of the nexus, and (iii) these prehensions impose that condition of reproduction by reason of their inclusion of positive feelings of that common form.[10]

For Whitehead, accordingly, each actual entity is a unique self-constituting subject of experience with its own individual pattern of existence and activity. Yet all the actual entities within the society still have an analogous self-constitution by reason of their common "prehension" [feeling-level grasp] of the pattern proper to the self-constitution of their immediate predecessors in the same society. This common element of form carried over from one set of constituent actual entities to another constitutes their group-identity as a society.

Hence, both self-organizing chemical systems for Kauffman and societies for Whitehead are socially organized realities emergent out of the dynamic interplay of their component parts or members. Where Kauffman and Whitehead differ is in their respective understanding of the objective reality of these systems. In his book *Investigations* Kauffman frequently uses the term "autonomous agents" to describe such self-organizing systems.[11] Whitehead, however, thinks of societies as genetically related groupings of individual subjects of experience with an analogous self-constitution; but, for that same reason, a group has no agency proper to itself as a specifically corporate reality.[12] Kauffman, on the contrary, believes that systems have a corporate reality proper to themselves so that they can exercise agency in their own right. I propose a compromise position. Whiteheadian societies are structured fields of activity for their constituent actual entities from moment to moment. In this sense, akin to Kauffman's notion of systems, they are more than simply aggregates of their components but rather enduring objective realities in their own right. Yet I agree with Whitehead that, while societies or systems are objective realities, they are not autonomous agents in the sense of exercising an agency in independence of their constituent parts or members. The agency of societies or systems is derivative from the combined agencies of their various constituents (e.g., actual entities) working in unison. For example, as a functioning human being I am a byproduct or result of all the individual agencies at work in my body and mind from moment to moment but only because all these individual agencies are organized into a single collective agency so as to give me a sense of being more or less in charge of my own life. Thus I am not a mind using the body for its own purposes, nor am I a body using the mind for its purposes. I am a unitary reality, both mind and body at the same time, exercising agency only in virtue of the collective activity of mind and body working together.

Yet, even if this compromise position between Whiteheadian societies and Kauffman"s self-organizing systems is acceptable, of what practical value is it for understanding the transit from non-life to life? I maintain that with this somewhat revised understanding of a Whiteheadian society, Whiteheadian structured societies, namely, societies composed of sub-societies of actual entities, illustrate from a philosophical perspective how an

autocatalytic metabolism works to produce life from non-life, a living cell from a chemical soup of such molecules. My presupposition here is that Whiteheadian structured societies are organized hierarchically with less complex societies serving as necessary infrastructure for the existence and activity of more complex societies. For example, a Whiteheadian structured society is composed of sub-societies which may or may not involve still other sub-societies of actual entities. The ultimate constituents of a Whiteheadian structured society are thus actual entities, self-constituting subjects of experience, organized into sub-societies. As Ervin Laszlo comments, the same hierarchical ordering is to be found in a systems explanation of the physical world.[13] A living cell is composed of molecules which are themselves made up of atoms with subatomic particles as their components. Then, if one further pursues this correlation between Whiteheadian structured societies and Kauffman's self-organizing systems, a chemical soup of molecules as described by Kauffman is equivalently a set of actual entities or self-constituting subjects of experience that are already grouped into various sub-societies or sub-systems within the soup.

An autocatalytic metabolism takes place when a single such sub-society or sub-system takes on a new mode of operation or in Whiteheadian terms a new "common element of form"[14] in virtue of the way in which its component actual entities are together responding to a change in their external environment. This one sub-society or sub-system will then be different in its mode of operation from the other sub-societies/sub-systems within the soup. If this one sub-society/sub-system with its new common element of form is positively prehended by the actual entities here and now constituent of the other sub-societies/sub-systems so that they in turn incorporate this new pattern of existence and activity into their own individual self-constitution, then all the sub-societies/sub-systems will have changed their previous common element of form and thus will be able to change over time the common element of form for the structured society as a whole. The structured society as a whole will have become a higher-order reality, in this case, a living cell. What starts out as a change in mode of operation or common element of form for just one sub-society/sub-system eventually spreads to the mode of operation of all the other sub-societies or sub – systems within the soup and a living cell results.[15]

All this happens, of course, only because the ultimate constituents of all these sub-societies/ sub-systems are not material atoms governed by strictly mechanistic laws but rather "spiritual atoms," momentary subjects of experience with an inbuilt spontaneity on a purely feeling-level to influence and be influenced by one another and by their common external environment. At the same time, this smooth transit from non-life to life does not always happen. More often than not, the response of the actual entities in all the other sub-societies/sub-systems to the new mode of operation within the one sub-society/sub-system will be negative so that these other sub-societies/sub-systems within the chemical soup equivalently reject this innovation in mode of operation within their midst. As Kauffman comments in terms of his own understanding of an autocatalytic metabolism, "life evolves toward a regime that is poised between order and chaos."[16] It is never certain whether life will prevail over non-life and, if it does prevail, what precise form or structure it will take. But, if it happens, it will have happened in virtue of a principle of self-organization operative within the component sub-societies/sub-systems and not in virtue of some outside agency with an externally imposed plan of operation (as in the case of machines and other humanly contrived tools).

Finally, given that structured societies are Whitehead's generic term not only for inanimate compounds but also for organisms (plants, animals, human beings), even for supra-organic realities like human communities and natural environments, Whitehead as well as Kauffman seems to believe that the same basic laws of self-organization are operative everywhere in the cosmic process. Kauffman, for example, compares the explosion of new species at the beginning of the Cambrian era on earth to the rapid spread of new technologies in the economic sphere and then comments: "I am not an expert on technological evolution; indeed, I am also not an expert on the Cambrian explosion. But the parallels are striking, and it seems worthwhile to consider seriously the possibility that the patterns of branching radiation in biological and technological evolution are governed by similar general laws."[17] For Whitehead, what happens within structured societies on the organic and supra-organic level of existence and activity is only a more complex version of what happens at the inorganic level of atoms and molecules. In every instance, novelty arises within a structured society when a change in the common element of form or particular mode of operation of a single sub-society is extended to all the other sub-societies within the structured society and the new common element of form for the structured society as a whole is sustained and deepened over time.

One should not, of course, over-estimate the similarities between Kauffman's and Whitehead's world view. Kauffman limits his investigation of the laws of self-organization of Nature to interactions at the molecular level whereas Whitehead proposes that actual entities, momentary self-constituting subjects of experience which are dynamically linked together in a society with a common element of form are also the agents of change and evolution at the subatomic and atomic levels of Nature. My point in this first part of my essay, however, is simply to make clear that the notion of a structured society within Whitehead's metaphysics supports Stuart Kauffman's more empirically based hypothesis of self-organizing systems at the molecular level of existence and activity within Nature, and that Kauffman's theory gives some indirect empirical evidence for Whitehead's evolutionary metaphysics, the dynamic relation between actual entities and the societies within which they originate and to which they contribute in terms of a common element of form.

3. David Sloan Wilson and unifying systems in the social sciences

Turning now to David Sloan Wilson's use of systems theory in his well known book *Darwin's Cathedral*, I first note how he sees his own work in the context of contemporary evolutionary psychology. He admits that most of his colleagues in the social sciences deal with groups as collections of basically self-centered individuals, but he himself thinks otherwise: "What is the nature of human society? Is it a collection of self-seeking individuals, or can it be regarded as an organism in its own right?"[18] Wilson believes that at least some groups of human beings include a significant minority or even a majority of individuals who act unselfishly toward one another. Furthermore, such groups of relatively unselfish human beings tend to survive and prosper in a highly competitive world because they have a clear sense of the common good which defines them as a group. Wilson cites Charles Darwin to that effect: "It must not be forgotten that although a high standard of morality gives but a slight or no advantage to each individual man and his children over the other men of the same tribe, yet that an increase in the number of well-endowed men and

advancement in the standard of morality will certainly give an immense advantage to one tribe over another."[19] Sloan Wilson's point here, in thus citing Darwin on the advantages of altruistic behavior among members of a human group for their continued well-being, is to show the importance of morality and by implication of religion as the guardian of moral values for group survival and prosperity in competition with other groups of human beings. Along the way, however, he talks about human groups as "adaptive units" and "unifying systems," thereby implying that groups have an objective identity over and above the particular identity of the different members of the group. It is this admittedly secondary issue in Sloan Wilson's overall project that I wish to address. For, Sloan Wilson's notion of unifying systems likewise bears in my judgment a strong resemblance to Whiteheadian structured societies (above all, if a Whiteheadian society be understood as an enduring structured field of activity for its constituent actual entities rather than simply as an aggregate of such actual entities) and Whiteheadian structured societies, in turn, confirm from a strictly metaphysical perspective Sloan Wilson's more empirically oriented understanding of how unifying systems within human society work.

For example, in Sloan Wilson"s judgment a group can be defined as this group rather than another because they all share a single trait, regularly participate in a common activity:

> My bowling group is the people with whom I bowl, my study group is the people with whom I study, my platoon is the group of people with whom I fight, my nation is the group of people who share the same laws, my church is the group of people with whom I worship. All of these groups are defined in terms of the individuals who interact with respect to a given activity. There is an infinite variety of groups, but only when we consider an infinite variety of activities. For any particular activity, there is a single appropriate grouping.[20]

As Wilson sees it, the evolution of a group (as opposed to the evolution of individuals within the group) can only be assessed in terms of this single trait or activity and how it was possessed or exercised amid various external changes over an extended period of time. Compare this understanding of how a group is defined with Whitehead's definition of a society:

> The common element of form is simply a complex eternal object [pattern or structure] exemplified in each member of the nexus [society]. But the social order of the nexus is not the mere fact of this common form exhibited by all its members. The reproduction of the common form throughout the nexus is due to the genetic relations of the members of the nexus among each other, and to the additional fact that genetic relations include feelings of the common form. Thus the defining characteristic is inherited throughout the nexus, each member deriving it from those other members of the nexus which are antecedent to its own concrescence [self-constitution].[21]

In more common sense language, what Whitehead is claiming is that the constituent actual entities of the society feel their affinity with one another in terms of an intuitive grasp [prehension] of a common trait which all of them recognize as specific to themselves as this society rather than some other society. That trait may evolve or change character with the passage of time as new actual entities arise and currently existing members cease to exist. But the society still has a "defining characteristic" or common trait which clearly marks it out as this society rather than another.

Thus Whitehead's concept of a society seems to correspond to Wilson's claim that every group should be defined by the possession of a common trait or specific pattern of existence and activity. Furthermore, if, as Whitehead proposes, actual entities are "the final real things of which the world is made up,"[22] and if actual entities instinctively aggregate into societies at all levels of existence and activity within Nature, then unifying systems, as Wilson proposes, are operative everywhere that human beings find things that endure. All organisms and possibly even inanimate things are in the end groupings of components that work together in harmonious fashion. As Wilson comments, upon closer inspection organisms turn out to be social entities, an organized set of individual components or members, all of whom contribute in their own way to a higher-order unity and value.[23] Hence, Whitehead's notion of society provides a philosophical explanation for the way in which Wilson's unifying systems come into existence and survive over time. Like the human beings within a unifying system for Wilson, all the actual entities in a given society somehow recognize the single trait that marks them out as this society rather than another. They are not a society simply because of spatial proximity to one another or because they all exist at the same time in cosmic history. They constitute a society because consciously or more often unconsciously they "feel" an affinity for one another and "want" to sustain it.

I put "feel" and "want" in parentheses to indicate that actual entities for Whitehead do not necessarily possess self-consciousness or exercise intentionality toward one another. But they are still at every level of existence and activity within Nature subjects of experience in dynamic interrelation. For, there is really no other way to claim that components of Whiteheadian societies "feel" an attraction to or dislike for one another. Wilson, to be sure, does not make that further metaphysical claim since his focus is on unifying systems within human society. But, insofar as he wishes to extend the notion of unifying systems or adaptive units to non-human groups of organisms and possibly even to molecules in the transit from non-life to life,[24] he is equivalently postulating the existence of some limited form of subjectivity or spontaneity at all the different levels of existence and activity within Nature. In any case, Sloan Wilson is clearly opposed to a purely reductionist approach to group survival and reproduction in which random genetic mutations or inherited cultural norms unilaterally determine human group behavior. "Confront a human group with a novel problem, even one that never existed in the so-called ancestral environment, and its members may well come up with a workable solution. The solution might be based on trial and error or on rational thought. Confront many human groups with the same novel problem and they will come up with different solutions, some much better than others. If the groups are isolated from each other, they may never converge on the best solution; evolution is not such a deterministic process."[25] For Sloan Wilson, then, cultural evolution is "genuinely open-ended in its outcome."[26]

There are parallels here with Whitehead's claim that "creativity" is at work among actual entities at all levels of existence and activity within Nature. As he sees it, creativity empowers actual entities as self-constituting subjects of experience to make themselves to be what they are in virtue of their individual appropriation of the common element of form proper to the society of which they are the latest members. This evidently rules out any form of strict determinism within Whiteheadian societies. At the same time, the self-constitution of any given actual entity is not simply a matter of chance. The actual entities within a

society must in some measure conform to the pattern of co-existence and activity which their predecessor actual entities in the same society already established by their dynamic interrelation. Yet, as Whitehead also insists, each actual entity has an individual self-identity; it is never fully identical with its contemporaries within the society.[27] So Wilson's presupposition of a trial-and-error approach to the origin and growth of unifying systems certainly makes sense in light of the way that creativity works within Whitehead's metaphysical scheme.

There is, of course, a major point of difference between Whitehead and Sloan Wilson on the issue of the objective reality of a society, on the one hand, and a unifying system on the other hand. If actual entities are really different from one another even within the same society and, above all if, as we have already noted, societies do not exercise agency except in and through their constituent actual entities, then Whiteheadian societies and Sloan Wilson's unifying systems seem to be at best superficially the same. Much like Stuart Kauffman with his notion of self-organizing systems, Wilson claims that unifying systems are higher-order ontological realities existing in their own right and exercising some measure of control over their component parts or members. An affinity between Whiteheadian societies and Wilson's unifying systems, however, can be still asserted if one also accepts my modification of Whitehead's notion of society as a structured field of activity for its constituent actual entities. For, in that case, Whiteheadian societies do have an objective reality over and above the interplay of their constituent actual entities from moment to moment. Furthermore, the society does exercise a collective agency which is indeed derivative from the individual agencies of all its constituent actual entities, yet which still allows the society to exercise the equivalent of an agency in its own right. This is especially the case with Whiteheadian structured societies in which there exists a privileged "nexus" within the structured society which is "regnant" over all the other sub-societies, but only in the interests of the structured society as a whole.

That is, for Whitehead structured societies are composed not only of subordinate societies but of subordinate "nexuses" as well.[28] Sub-societies enjoy a certain independence of the structured society within which they here and now exist since they are societies in their own right; they sustain a common element of form or defining characteristic even apart from participation in the structured society. An example of a sub-society would be a molecule within a cell; it would still be a molecule of a certain type even apart from participation in the life of the cell. But a nexus, especially an "entirely living nexus" which shows a high degree of originality in the succession of its constituent actual entities cannot for that same reason sustain a defining characteristic or common element of form apart from the support of the sub-societies of non-living actual entities within the structured society as a whole.[29] What Whitehead evidently has in mind here with an "entirely living nexus" of actual entities is what Aristotle called the "soul" or the life-principle of the body but with one key difference. For Aristotle, the soul was an immaterial reality, an intelligible form or essence, which is the actuality of the body as a material entity.[30] For Whitehead, the entirely living nexus within a structured society is different only in degree of originality, not in kind, from the other sub–societies within the structured society. All actual entities, after all, have a psychic as well as a physical reality.[31] The only difference between them is whether and to what degree the psychic dimension or the physical dimension has priority over its counterpart.

In either case, however, the entirely living nexus and all the non-living sub-societies within a structured society together constitute a unified collective activity for the maintenance of the structured society as a whole so that it can exercise an agency proper to itself as a specifically corporate reality. Put once more in common sense language, as a human being I exercise an agency derivative from all the individual agencies at work in my mind and body at every moment. I am not an immaterial soul imprisoned for the moment in a material body. Nor am I a body with a mind as a tool for its own purposes. I am a unified soul/body reality in virtue of all the agencies, both physical and mental, at work within me at every moment. So understood, a Whiteheadian structured society seems to correspond nicely with David Sloan Wilson's notion of a unifying system or adaptive unit in *Darwin's Cathedral*. Likewise, the notion of Whiteheadian structured societies seems to confirm Sloan Wilson's further claim that groups of organisms often function like higher-order individual organisms[32] and that individual organisms have themselves evolved from "social groups of past ages which have become so functionally integrated that we see the whole more than the parts"[33]

4. Niklas Luhmann and self-referential systems

In the final part of this essay I offer a critique of the late Niklas Luhmann's understanding of social systems as purely objective, that is, as devoid of subjectivity in their internal workings. I argue on the contrary that, if subjectivity and objectivity intrinsically condition one another within a Whiteheadian structured society, and if there is a structural affinity between a Whiteheadian structured society and what Luhmann calls a "self-referential system, then *pace* Luhmann subjectivity in some form or another must be present in these self-referential systems which he regards as the basic paradigm for social systems. In 1984 Luhmann published a comprehensive outline of his systems theory in *Soziale Systeme* (*Social Systems*). As Eva Knodt comments in the Foreword to the English translation:

> Luhmann lays out a theoretical groundwork which subsequently provides a frame for a description of modern society as a complex system of communications that has differentiated itself horizontally into a network of interconnected social subsystems. Each of these systems reproduces itself recursively on the basis of its own, system-specific operations. Each of them observes itself and its environment, but whatever they observe is marked by their unique perspective, by the selectivity of the particular distinctions they use for their observations. There is no longer an Archimedian point from which this network could be connected in an all-embracing vision.[34]

Thus metaphysics precisely as such an all-embracing vision of reality plays no role in Luhmann's analysis of the operations of systems. Likewise, for him human subjectivity and any other forms of subjectivity or spontaneity within Nature are reduced to being no more than the *sine qua non* conditions for the operation of an objective system.[35]

Yet within Luhmann's systems theory interdependence among separate systems seems to be taken for granted. Each system, to be sure, operates according to its own internal rules and thus is not directly affected in its operation by the existence and activity of other systems in its environment.. But Luhmann also allows for "structural coupling": "a state in which two

systems shape the environment of each other in such a way that each depends on the other for continuing its *autopoiesis* [self-constitution] and increasing its structural complexity.[36] Key here is Luhmann's antecedent understanding of self-referential systems: "systems that have the ability to establish relations with themselves and to differentiate those relations from relations to their environment."[37] As I shall indicate shortly, such a definition of self-referential systems likewise seems to hold for a Whiteheadian society, provided that the society be understood as an objective structured field of activity for its constituent actual entities from moment to moment. Luhmann, of course, would strongly object to this comparison between a Whiteheadian society and his own notion of a self-referential system since the latter is "non-psychic."[38] That is, its components are "elements" with purely objective relations to one another in virtue of the structure of the system.[39] They are not momentary subjects of experience with "internal" relations to one another.[40] But can a system be *self*-referential without reference to subjectivity as exercised either by the system as a whole or, as in the case of Whiteheadian societies, by its constituent actual entities in their internal relations to one another? Luhmann, for example, states: "systems must create and employ a description of themselves; they must be able to use the difference between system and environment within themselves, for orientation and as a principle for creating information."[41] Yet can a system as a purely objective reality "create and employ" a description of itself so as to orient itself vis-à-vis other systems and thereby to generate information?

For Luhmann there are indeed "psychic systems" which co-exist along with other social systems (organisms, machines, etc.) within the overall ambit of systems theory.[42] Likewise, the ongoing co-existence of psychic systems demands a new kind of social system (communication systems) to determine the boundaries between psychic systems. As internally organized self-referential systems, psychic systems cannot determine their proper boundaries vis-à-vis one another.[43] A higher-order system (a communication system) must come into play to regulate this "indeterminability" among psychic systems.[44] Yet Luhmann is adamant that the concept of "subject" as used by Immanuel Kant and others should be replaced by the concept of self-referential system:. "Selection can no longer be conceived as carried out by a subject, as analogous with action. It is a subjectless event, an operation that is triggered by establishing a difference."[45] But he then adds: "Difference does not determine what must be selected, only that a selection must be made. Above all, the system/environment difference seems to be what obliges the system to force itself through its own complexity, to make selections."[46] Once again, the language of subjectivity is unmistakably present: the system/environment difference somehow "obliges the system to force itself to make selections." How does a system lacking in subjectivity make such a selection?

In his book *Luhmann Explained,* Hans Georg Moeller makes clear that Luhmann does not deny the de facto reality of human beings but only claims that human beings exist on several levels at once (bodily, mentally, socially) and that these levels as autonomous self-referential systems do not make up an organic whole.[47] Generalizing even further, Moeller argues that for Luhmann "[r]eality is not an all-embracing whole of many parts, it is rather a variety of self-producing systemic realities, each of which forms the environment of all the others. There is no common 'world' because reality is in each instance an effect of individual systemic autopoieses."[48] Luhmann consciously borrowed the term *autopoiesis*

from his analysis of the work of Humberto Maturana and Francisco Varela, two biologists from Chile who applied systems theory to the study of biological reproduction, the way in which living cells are from moment to moment the product of their own internal processes of reproduction.[49] But, whereas subjectivity would seem to be presupposed in the reproductive process of living cells, for Luhmann it is not present in self-referential systems. Hence, even if one concedes the usefulness of general systems theory as a methodology for objective analysis and comparison of otherwise loosely connected scientific disciplines, does it from a philosophical perspective offer anything more than a fragmented understanding both of human nature and of the workings of Nature as a cosmic process?

I turn now to a comparison of Luhmann's notion of a self-referential system with my own modified understanding of a Whiteheadian structured society. As already noted, Luhmann claims that social systems are invariably self-referential systems, namely, "systems that have the ability to establish relations with themselves and to differentiate these relations from relations with their environment."[50] In *Process and Reality* Whitehead seems to say approximately the same thing about the way in which a society is internally organized: "Thus in a society, the members can only exist by reason of the laws which dominate the society, and the laws only come into being by reason of the analogous characters of the members of the society."[51] Just as in Luhmann's notion of a self-referential system, therefore, a Whiteheadian society seems to be self-referential. There is an ongoing dynamic exchange between its constituent actual entities and the laws or objective structure of the society to which they belong so that each society in virtue of its own internal mode of operation is objectively somewhat different from other societies of actual entities in its environment. Where Luhmann and Whitehead differ in their respective description of the constituents of a system or society is that for Luhmann the "elements" which constitute the system are purely objective. They have no value in themselves apart from the system: "the unity of an element (e.g., an action in an action system) is not ontically pregiven. Instead the element is constituted as a unity only by the system that enlists it as an element to use in its relations."[52] For Whitehead, on the contrary, the constituent actual entities are ontological realities in their own right; in Whitehead's view, they are "the final real things of which the world is made up" quite apart from their belonging to any given society.[53]

But precisely here is where Whitehead may have erred in putting too much emphasis on the role of individual subjectivity in the makeup of a society.. In giving constituent actual entities an ontological reality distinct from the society to which they belong,[54] Whitehead seems to have reduced the ontological status of the society to that of a genetically linked aggregate of analogously constituted actual entities. Yet an aggregate of constituents, however closely connected, does not correspond to what Luhmann has in mind with a self-referential system determining its own mode of operation vis-à-vis other systems. Here, however, is where my redefinition of a Whiteheadian society as an objectively structured field of activity for successive generations of actual entities (momentary self-constituting subjects of experience) could possibly bridge that difference by way of a compromise position. If a Whiteheadian society has an enduring objective reality as a structured field of activity for its constituent actual entities in their dynamic interplay from moment to moment, this allows for the objectivity which Luhmann so highly prizes and at the same

time grants to the elements of the system in question a subjectivity or innate power of self-constitution on which Whitehead insists.

That is, just as in Luhmann's understanding of systems and their elements, in my interpretation of Whiteheadian societies there is clear top-down causality from the common element of form of the society upon its constituent actual entities in their individual self-constitution from moment to moment. But whereas Luhmann, given his focus on objectivity, basically ignores the supporting role of individual elements in the formation of a system's governing structure, I agree here with Whitehead in his insistence that the origin and maintenance of the governing structure of the society comes from the ongoing interrelated activity of its constituents, namely, actual entities as momentary self-constituting subjects of experience. Thus, whereas Whitehead in his understanding of a society focuses exclusively on the efficient causality of constituent actual entities in shaping their common element of form as a society, and while Luhmann emphasizes the formal or informational causality of the governing structure of the system in organizing its various elements, I choose the middle path in my claim that a Whiteheadian society and a self-referential system for Luhmann should be considered as constituted in equal measure by bottom-up causality and by top-down causality. In this way, there is a suitable combination of subjectivity and objectivity in producing the functional unity of either a Whiteheadian society or a self-referential system for Luhmann.

Still another feature of a self-referential system as described by Luhmann in *Social Systems* is to be found in his notion of system differentiation: "System differentiation is nothing more than the repetition of system formation within systems. Further system/environmental differences can be differentiated within systems. The entire system then acquires the function of an 'internal environment' for these subsystems, indeed for each subsystem in its own specific way."[55] This can be usefully compared with Whitehead's concept of a structured society, a society "which includes subordinate societies and nexuses with a definite pattern of structural interrelations. A structured society as a whole provides a favorable environment for the subordinate societies which it harbors within itself. Also the whole society must be set in a wider environment permissive of its continuance."[56] Luhmann's notion of system differentiation and Whitehead's understanding of structured societies, however, are brought into even closer conceptual alignment if one thinks of both Whiteheadian societies and Luhmann's self-rerferential systems in terms of structured fields of activity for their constituents (actual entities or elements). Physical reality, in other words, is best seen in terms of fields within fields. The term "field,"of course, is an analogous rather than a univocal concept. That is, it can be applied to different contexts with somewhat different results as a consequence of a particular mode of operation. A gravitational field between two planets in the solar system has a different mode of operation than an environmental field in its mode of operation with respect to the plants and animals living within it. Yet in both cases the field (Whiteheadian society or self-referential system) possesses an internal unity and thus has an individual identity by reason of the ongoing interplay of its constituent parts or members (its constituent actual entities/objective elements). Likewise, in both cases the field in question normally serves as part of the infra-structure of still other more comprehensive fields of existence and activity for entities within the overall system of Nature.

5. Conclusion

In this essay I have tried to vindicate the notion of an open-ended system in two ways. In the first place, I set forth my hypothesis that Whiteheadian societies, above all structured societies, are open-ended systems. That is, the system itself contains structural elements or components (actual entities, momentary self-constituting subjects of experience) that are applicable to an ever-expanding range of empirical data to be found in the natural and social sciences. The cognitive system, therefore, can easily adjust to a new situation, an altered physical environment, without damage to the integrity of its underlying world view or metaphysical vision. Secondly, I have proposed that the notion of self-organizing, unifying or self-referential systems as used by Stuart Kauffman, David Sloan Wilson and Niklas Luhmann respectively in the elaboration of their more empirically oriented theories in the natural and social sciences can be usefully compared with the notion of a Whiteheadian structured society as a strictly metaphysical or trans-empirical concept so as to gain a broader philosophical understanding of what is going on in the world of Nature and within the human mind on a day-to-day basis.

Such a comprehensive vision of reality, to be sure, has always been the goal of metaphysical systems in Western civilization from ancient times until the present moment. But, if the notion of a Whiteheadian society (above all, a structured society) does qualify as the master metaphor or governing concept within an evolutionary understanding of reality, then what has traditionally been meant by metaphysics as an academic discipline has undergone a subtle but quite significant change. That is, if the structural elements of the metaphysical system are no longer to be regarded as unchanging principles of Being but rather as principles of Becoming, namely, indeterminate heuristic structures for the organization and analysis of empirical data, then the traditional meaning and value of metaphysics as an academic discipline has been transformed. Metaphysics is then not the systematic articulation of the way "things" are apart from the workings of the human mind, but rather a model or imperfect representation of repetitive patterns of existence and activity within various processes in an event- oriented rather than a thing-oriented world.

In effect, then, metaphysical systems should be seen in the same light as models or paradigms in the natural and social sciences: that is, "abstract symbol systems which inadequately and selectively represent particular aspects of the world for specific purposes."[57] Metaphysical systems are, however, for that reason not to be considered simply as fictional or purely contrived imaginative schemes. As Ian Barbour in his book *Religion and Science* comments about the use of models or paradigms in both religion and science, they "are to be taken seriously but not literally; they are neither literal pictures nor useful fictions but limited and inadequate ways of imagining what is not [directly] observable. They make tentative ontological claims that there are entities in the world something like those produced in the models."[58] This is also what Alfred North Whitehead seems to have had in mind with the following comment in the opening chapter of *Process and Reality:*

> Rationalism never shakes off its status of an experimental adventure. The combined influences of mathematics and religion, which have so greatly contributed to the rise of philosophy, have also had the unfortunate effect of yoking it with static dogmatism. Rationalism is an adventure in the clarification of thought, progressive and never final. But it is an adventure in which even partial success has importance.[59]

6. References

[1] This essay summarizes material more fully explained in my new book *Does God Roll Dice?* recently published by Liturgical Press in Collegeville, Minnesota.

[2] Philip Clayton, *Mind and Emergence: From Quantum to Consciousness* (Oxfors, UK: Oxford University Press, 2004), 39: "emergence is the theory that cosmic evolution repeatedly includes unpredictable, irreducible, and novel appearances." Clayton concedes that many natural scientists still favor "weak" emergence which is reductively ontological physicalism, the belief that "all that exists in the space-time world are the basic particles recognized by physics and their aggregates" (4). He himself is committed to "strong" emergence which allows for top-down as well as bottom-up causation for the explanation of progressively more complex levels of existence and activity within the cosmic process (31-32).

[3] See, e.g., Aristotle, *Metaphysics,* 1013a: in *The Basic Works of Aristotle*, ed Richard McKeon (New York: Random House, 1941); sancti Thomae Aquinatis, *Summa Theologiae* (Madrid, Spain: Bibliotheca de Autores Cristianos, 1951), I, Q. 2, art. 3 resp.

[4] Stuart Kauffman, *At Home in the Universe: The Search for the Laws of Self-Organization and Complexity* (New York: Oxford University Press, 1995), vii

[5] Charles Darwin, *The descent of man and selection in relation to sex* (New York: Appleton, 1871), 166.

[6] Kauffman, *At Home in the Universe*, 8.

[7] Stuart Kauffman, *Investigations* (New York: Oxford University Press, 2000).

[8] Kauffman, *At Home in the Universe*, 47.

[9] Ibid., 75-86, 99-111.

[10] Alfred North Whitehead, *Process and Reality:An Essay in Cosmology*, Corrected Edition, eds. David Ray Griffin and Donald W. Sherburne (New York: Free Press, 1978), 34.

[11] Kauffman, *Investigations,* 3-4. 8, 29, 68-73.105, 120, 128-129, etc.

[12] Whitehead, *Process and Reality*, 35: "Thus the ultimate metaphysical truth is atomism. The creatures are atomic." See, however, Alfred North Whitehead, *Adventures of Ideas* (New York: Macmillan, 1967), 204: "A society has an essential character, whereby it is the society that it is, and it has also accidental qualities which vary as circumstances alter. Thus a society, as a complete existence and as retaining the same metaphysical status, enjoys a history expressing its changing reactions to changing circumstances." Whitehead then adds in a footnote: "This notion of 'society' has analogies to Descartes' notion of 'substance.'" But he never spells out in detail how a society is simultaneously "a complete existence" and still different from the notion of substance in classical metaphysics.

[13] Cf., e.g., Ervin Laszlo, *Introduction to Systems Philosophy: Toward a New Paradigm of Contemporary Thought* (London: Gordon and Breach, 1972), 47-53.

[14] Whitehead, *Process and Reality*, 34.

[15] For a more detailed analysis of how such an autocatalytic mechanism works within a Whiteheadian structured society, see Joseph A. Bracken, *Subjectivity, Objectivity and Intersubjectivity: A New Paradigm for Religion and Science* (West Conshohocken, PA: Templeton Foundation Press, 2008), 144-148.

[16] Kauffman, *At Home in the Universe*, 26; see also Bracken, *Subjectivity, Objectivity and Intersubjectivity,* 149: "The constituent actual occasions [actual entities] by their dynamic interrelation at any given moment account for the unexpected emergence

of novelty. But the society as the context or field of activity within which the actual occasions arise and to which they contribute their momentary pattern of interrelation changes in its overall structure much more slowly."

[17] Kauffman, *At Home in the Universe*, 205.
[18] David Sloan Wilson, *Darwin's Cathedral: Evolution, Religion and the Nature of Society* (Chicago, IL: University of Chicago Press, 2003), 2.
[19] Ibid., 9. See also Charles Darwin, *The descent of man and selection in relation to sex* (New York: Appleton, 1871), 166.
[20] Sloan Wilson, *Darwin's Cathedral*, 15-16.
[21] Whitehead, *Process and Reality*, 34.
[22] Ibid., 18.
[23] Sloan Wilson, *Darwin's Cathedral*, 18.
[24] Ibid., 17.
[25] Ibid., 31.
[26] Ibid.
[27] Whitehead, *Process and Reality*, 22-23.
[28] Ibid., 103.
[29] Ibid.
[30] Aristotle, *On the Soul*, Bk. II, Chap. 1 (412a): in *The Basic Works of Aristotle*, ed. Richard McKeon (New York: Random House, 1941).
[31] Whitehead, *Process and Reality*, 177-178 where Whitehead distinguishes various grades of actual entities, depending upon their complexity and degree of originality.
[32] Sloan Wilson, *Darwin's Cathedral,* 17.
[33] Ibid., 37.
[34] Niklas Luhmann, *Social Systems,* trans. John Bednarz, Jr., with Dirk Baecker (Stanford, CA: Stanford University Press, 1995), xii.
[35] Hans-Georg Moeller, *Luhmann Explained: From Souls to Systems* (Chicago, IL: Open Court, 2006), 8.
[36] Ibid., 19. See also Luhmann, *Social Systems*, 222-223.
[37] Luhmann, *Social Systems*, 13.
[38] Ibid., 14.
[39] Ibid., 20-23.
[40] Whitehead, *Process and Reality*, 58-59.
[41] Luhmann, Social *Systems, 93.*
[42] Ibid., 2.
[43] Ibid., 28-29.
[44] Ibid., 29.
[45] Ibid., 32.
[46] Ibid.
[47] Moeller, *Luhmann Explained*, 10.
[48] Ibid., 14.
[49] Ibid., 12-13.
[50] Luhmann, *Social Systems*, 13.
[51] Whitehead, *Process and Reality*, 91.
[52] Luhmann, *Social Systems*, 22.
[53] Whitehead, *Process and Reality, 18.*

[54] Ibid., 22-23.
[55] Luhmann, *Social Systems*, 18.
[56] Whitehead, *Process and Reality*, 99.
[57] Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco, CA: Harper San Francisco, 1997), ll7.
[58] Ibid.
[59] Whitehead, *Process and Reality, 9.*

6

The Meaning of Education in the Age of Technology

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1. Introduction

This paper presents an analysis of the meaning of technology from philosophical, sociological, anthropological, logotherapeutic and pedagogical points of view. The method applied is double hermeneutics - observation with participation, the author who evaluates social phenomena also takes an active part in them and a critical look at his own starting point. Since the paper is written from a humanistic perspective, a rather critical evaluation of new technologies is called for. Moreover, a review of sources is used, as are reflexion and an evaluation of the relationship between man and technology, as well as, in the conclusion, inductive generalization. The paper analyses positive and negative social and personal conditions as well as human capability to give meaning to life. Furthermore, there is an analysis of the failings of anthropocentric instrumentalism and attempts are made to provide a synthesis of a more complex comprehension of technology in the anthropocentric paradigm. We scrutinize the reasons for Christian ecological humanism. In the conclusion we shed some light on the repercussions of these dilemmas on pedagogy, in particular we probe into the existence of a possibility to educate man about the meaning of life.

The paper aims to show how the development of technology influenced the issues set forth in the proposal and it offers some comprehensive solutions. Since it is widely believed that the human kind does not have a structured idea how to steer technological development, it is only welcome to critically examine the impacts of technology on human welfare.

2. Is the man more than merely a product of technology?

Technology has been appraised in a positive or negative light. Hence, four theories: (1) apologetic, (2) negativistic, apocalyptic, (3) value-neutral, and the forth one on complex ambivalent comprehension, which has only been emerging and encompasses the three previous ones.

Ad1. An apologetic view of technology means that only positive and no negative impacts are claimed.

Ad2. A negativistic view comprehends the technology as something that merely poses threats and basically rejects it, which foretells the apocalypse.

Ad3. An instrumental rational interpretation of technology is value-neutral.

Ad4. A complex ambivalent view of technology is on the lookout for theoretical possibilities of a more comprehensive relationship to (man's) nature and technology.

The philosophy of technology[1] examines, as such, all these theories because technology has brought about an increasing number of negative and unwarranted effects. The explosion of the first two atomic bombs in Hiroshima and Nagasaki in 1945 made it clear that misuse of technical devices could jeopardise the existence of life on Earth. Mankind has had to partially face technical destruction (for instance, the damage done to the nuclear power plant in Fukushima in 2011, the oil spill on an oil rig in the Gulf of Mexico in 2010).

Technocentrism has an eccentric effect on man with the following consequences. First, that the boundary between our primary nature and the world of artefacts becomes blurred. Second, it creates an illusion that man could have everything under control, though he himself refuses to be completely controlled by technological production. Third, man no longer experiences either nature or technology from his spiritual depths and can thus not speak about a complete experience, which is why holistic thinking about technology has only just started to emerge.

In fact, a crisis has arisen because the man is no longer the subject of technology – as he used to be at the outset – but has become its object. Man's goal was to assume a superior role. However, he ended up being in a subordinate position.

Each new developmental stage of technology includes an implicit theory about the man. If the aim is to answer the question about whether and how man as a producer of meaning transcends technical devices[2], one needs pose questions about how broadly or narrowly technology is comprehended. The man identified with the final developmental stage of technology is *homo technicus*. However, from a comprehensive anthropological point of view, no matter how highly developed technology is, it fails to replace the man himself and his belief in God.

One of the best-known and indisputable definitions of technology is that it is specifically a man's invention which takes into consideration the laws of nature with regard to certain goals. However, it considers them through the so-called cunning of reason (the original Hegel's expression is *List der Vernunft*). Technology has sometimes been interpreted as an almighty force and a substitute for God. But technology is only capable of doing what it has been programmed to. The development of technology has been argued to make up for human shortcomings (in comparison to the animals) (*Gehlen*, 1961), and his hostile attitude to nature. It is quite obvious that man is not capable of living in the wild without the help of technology - he has no animal instincts to do so. The return to nature is no longer possible. At any rate, the nature alone would not do, the man needs to see the meaning of life too.

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[1]Almost corresponding to this is the differentiation between the engineering approach (the *engineering of philosophy of technology* by the authors *F. Kapp, P. K. Engelmeyer, F. Dessauer*) and the humanistic approach (*humanities philosophy of technology* by the authors *L. Mumford, J. Ortega y Gasset, M. Heidegger, J. Ellul, Berdjajev*). The third type is the most complex one.

[2]In this paper, the term technology is used for the entire production of technical devices, tools, machines, as well as other products. When only their impact is described, they are all referred to as devices.

Technology has several functions, such as the incorporation, as well as the strengthening and relief (*Entlastung* in German) (*Gehlen*, 1961). The relief is a transfer of physical and mental functions to technical devices. For example: man uses means of transport instead of legs, a hammer to extend his arms, machines instead of muscles, and computers instead of his brain. By using a tool, he becomes dependent of all these devices. At this point, instrumentalization of all things available comes about. Through the process of mediation (*Vermittlung* in German) it seems that devices determine the goals of users, while in reality man is more productive because of them. *Jonas* (1984) thus established that *homo sapiens* has been replaced by *homo faber*. It was *Marx* (1969) who ascertained that the industrial production brings about new kinds of alienation, including a soulless situation. *Homo faber* becomes empty, while products available as part of consumption are full of spirit. Technology has become an imperial subject of history and is the principal determinant of man's evolution (*Taylor,* 2011).

The new global technology of power is incredibly complex (*Fischer,* 2010). Global mass media is aware of its power, which is why people are spontaneously afraid of it. Nevertheless, people want to make their bodies and mind stronger in order to better reflect the image digital spectacle and simulacrum are providing and thus partake in the game.

Inherent to the development of technology is utilitarian ethics, which examines the purpose of technology exclusively through its beneficial use or harmful misuse. There is no clear boundary between the two, but time and again we learn to recognize it by trial and error. Technocrats inevitably have a stake in technology, but since they do not acknowledge that, they consider their interpretation of technology to be value-neutral.

Generally it is believed that man has not adjusted industrial technologies (needed for the production of as many identical products as possible) either to himself or to the natural environment. He has installed them into the eco-system and in doing so he has also harmed it. It was *Engels* (1953), who established that the industry is destroying the previously clean nature and that a positive impact is only foreseeable in the first stage of changes whereas for all later ones it is not. Recycling of technological waste does not suffice, what is also needed is rehabilitation of the nature. An eco-centric paradigm has recently made developed countries switch from non-renewable to renewable energy sources.

From a historic perspective there are four stages of the development of technical goods, hand tools, industrial machinery, automatization and devices adjusted to the environment. Hand tools were predominant until the end of feudalism, machines started to prevail with the industrial society, while automatization was a result of information revolution. Our incomprehension of the mechanism of sophisticated devices puts us in a state of painful ignorance (as was the case with the Trojan horse). We ignore in what way technical devices impact our inner world and ourselves. The negative effects of overdoing it do not show until later.

The path to understanding is a dialogue with both extreme views, i.e. the apologetic and the apocalyptic ones. Apology of technology is on the one hand necessary, while on the other it is blinded as it fails to notice the boundaries of its positive effects. In this view all beings are techno-logos, which is the sense of totally institutional-instrumentalist engineering represented not only by natural sciences but also by social ones (*Popper,* 1950). This is reductive thinking does not look for the meaning. It is impossible to rationalize all of the

elements of technology, since man is also irrational, unpredictable. Furthermore,some technical devices have hidden defects. Likewise the misuse is a consequence of man's uncontrolled destructive motives. Still, the academic bias about a perfect rational control is rather popular.

The liberating knowledge comes from instrumental rationality being exceeded by purposive rationality (*Zweckrationalitaet* in German) (*Habermas*, 1971) which originates from comprehensive irreducible thinking. Since there is something specifically human in (ir)rational technology, it comes as no surprise that man has used technology to create and destroy the world, just like himself. (*Urbančič,* 2011).

Man may prevent certain negative effects of devices but he cannot defeat the evil totally. To address the issues concerning technology he has to open up to its essence (*Heidegger,* 1954). Reflection of technology is necessary for the sake of acquiring a free attitude to it. Accidents provide an opportunity to get familiar with its limitations. A free choice regarding the use of methods signifies many-sided and greater responsibility.

Heidegger (1954) discusses the sociological instrumentalist value-neutral interpretation of technology as a means to produce devices and machines for useful items. Modern technology poses a challenge to nature by pulling the energy out of it and redistributing it. The goal is to take as much hidden energy (the sun, the wind, the water) or substances (e.g. oil) out of nature as possible and keep the costs as low as possible. Having been transformed, the energy is then accumulated and redistributed for various different functions.

Since technical devices are idealized, or are - as this was a case of some primitive tribes – attributed some sort of magical power, there is nothing originally spiritual left in them.

From a religious perspective, man is not 'from this world'. If we try to reduce him to it, this means the sacred (*heilig* in German) is substituted by the secular. Heidegger did not determinedly say that the non-technical divine essence in the man radically resists digitalization. *Derrida* (1996) defines this as the difference between what can be simulated and what cannot be. This phenomenological remainder of technological reduction[3], was previously already implied in Kant's concept of things in themselves (*Ding an sich* in German), which encompasses the so-called *noumena*[4], the nature and God, and leads to the biblical secret of redemption. Heidegger reveals the difference between our authentic '*Dasein'* (the expression originates from German) and the impersonal they (*man* in German).

Technical devices alone are not nearly as dangerous as adrenalin-driven, competitive man full of uncontrollable inclinations and passions, oblivious of the stress, wounds and pain. There is no point in demonizing technology since it is a secret of God. Danger becomes solution when we remember and understand what we have forgotten. Failing to do so, we simply repeat mistakes (*Wiederholungszwang* in German).

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[3]Herewith Husserl's (*Husserl*, 1975) technical antipode of three reductions of recognition (i.e. epochs, eidetic and transcendental) is paraphrased. It is the last one (the transcendental one) that leads him to a meaningful world of life. From this perspective, the entire technology remains within a cognitively uncritical »natural disposition«. What used to be the appearance (*Schein* in German) is nowadays a disarray of the virtual and the real.

[4] *Noumena* is an expression specifically used by *Kant* and signifies the essence of human being.

Each new stage of technological development brings about new types of efficiency (e.g. multi-functionality) but also alienation. The age of access to information technology applies approximately to a quarter of 8 billion people, i.e. the majority of the world's population has no internet access. Its users are however increasingly dependent on it, especially the online generation.

In Ancient Greece man was the most 'powerful' species (*deinites* in Greek) whereas today he is endangered since he can destroy all life on Earth by means of technology. The essence of technology is twofold, since man is both a dangerous wolf and a peace-loving sheep (*Fromm,* 2004). In his ethical benevolence there is a promise of preserving life.

Seemingly paradoxically, man has become a machine ready to be used in neoliberal capitalism even though he believes himself to be the master of the world[5]. As a subject of modern times, he can preside only by subordinating the world as an object which he is part of. In doing so, he has jeopardized life through environmental pollution and genocide.

The illusion of domination is twofold. On the one hand, there is an enormous amount of energy outside man's control (e.g. volcanoes, earthquakes, tsunamis, tornados). On the other, unforeseen events upset carefully laid plans. Man fears natural and man-made disasters. He fears both extreme rationality and irrationality. While this has enslaved him, it has also turned into his vocation, since it calls on him to be creative. Technological innovations are merely a means to an end of amassing goods. These are mindless goals. Is a man (*homo humanus* in Latin) with his love of the world of life more than just a sum of technologies?

3. Apocalyptic threats of the instrumentalized society

The scientific technical revolution has leads to a new organizational culture, where cooperative, team and individually responsible, autonomous and meaningful work prevail. This however has drawbacks. Technocrats and technogarchs who stimulate technical development cannot conceive man's domination over nature is also domination over himself. The myth of enlightenment in the sense of a rise in rational science from 15th to 21st centuries is a myth about the general freedom. This supposed liberation is non-existent since man has turned into a function, a robot and superfluous material. In fact *Horkheimer* and *Adorno* (1989) have accused the Age of Enlightenment of being guilty of the Holocaust. The basis of the enlightenment is a citizen within a critical public as a rational being who manages the democracy by means of his knowledge, intellect, wisdom and information (*Habermas,* 1985).

However, enlightenment (*Aufklaerung* in German) has kept its double face. On the one hand, there is humanity, while on the other there is a severe instrumentalization of all living beings (*Mumford*, 1986). A constant battle between the two reflects the fact that on the one hand we are ever more connected to one another, whereas on the other there is an increasing inequality. The almost 100-year old prediction by *G. Wells* about the information technology connecting all people to 'the world's brain' is a reality thanks to technological inventors. This connection of people for better or worse does not seem to make us happy.

[5]For more on the difference between negative characteristics of domination (*Herrschaft* in German) and positive characteristics of management see Chapter 1 of the book by *Novak, B.* (2006). To keep up with sustainable development we cannot speak in favour of domination, but only of management.

Technocrats and technogarchs should mostly worry about the negative impacts of technology by distinguishing between the use for the benefit of mankind's welfare and misuse intended for its destruction. If man is lacking a welfare mission in his strive for survival, he is also lacking a belief in the power of outstripping nihilism. This is why some[6] have declared the end of man on account of depersonalization, instrumentalization, violent unruliness, redundancy, obsolescence, raw materials and waste.

Man could still discover why such technology is expedient and reasonable, but due to »his stunted intelligence« (*Zohar, Marshall*, 2006) he cannot do it systematically. The evolution of technology points out to him the boundaries of man's cognition. Zohar and Marshall believe that developing the spiritual intelligence and the spiritual capital is the only road to salvation. Obviously the partial reforms used so far no longer suffice for the resolution of the complex social crises of the 21st century.

A one-sided Tayloristic division of labour resulted in workers being merely an appendage to machines or even the mega-machine. Man – worker (*homo faber* in Latin) is a device amongst many. Workers manipulate devices in such a way that the devices actually manipulate the workers (*Anders*, 1985).

According to *Krishnamurti* (2000) technology used for destruction does not make sense. "Exaggerated emphasis placed on technical ability turns out to be destructive in the long run" (*Krishnamurti,* 2000; p. 30). This happened during the Holocaust. According to *Bauman* (2006, p. 33) "concentration camps signified an expansion of industrial factories." *H. Arendt* (2003) likewise believes one of the factors of totalitarianism in World War II was the misuse of technology.

It is safe to assume that the use of mobile phones, Facebook and similar leads to narcissism. *Elgan* (2009) says: "If new technology really does promote narcissism, then younger people would be more narcissistic than older people, because they had mobile technology during their formative years, and have been shaped more by it."[7] Technology has been seized by various greedy technogarch (entrepreneurs, shareholders, anonymous structures). The oligarchic techno-science keeps telling us about unlimited progress and about how there is no need to search for the meaning as it is present in the proper use of devices.

Anders and *Mumford* (1986) both perceive the machine as a deformation of the organic world. While *Anders* sees it merely as a technical device, *Mumford* defines it in its broadest sense also as a social organization. He distinguishes between working, military and bureaucratic mega-machines. The communication machine is suitable for labour management, without it the mechanical engine cannot work. The working machine was invented in order to save and concentrate labour. It entails the idea of the minimum possible amount of labour force for the largest possible profit.

Modern-age Enlightment is a process of progressive profanation. Despite the decline of comunism there is the prevalent standpoint that the modern-age enlightment has

[6]The end of man signifies apocalypse. There are a number of representatives of the end of mankind: *Anders, Lewis, Foucault, Fukuyama, Baudrillard*, etc.

[7]For further information see: http://www.infoworld.com/d/mobilize/does-mobile-and-social-technology-breed-narcissism-830.

returned to a myth – since "things within the social entirety have turned into metaphysics, an ideological curtain, from which real evil is about to emerge" (*Horkheimer, Adorno* 1989). Keeping a positive rational core of experience is a difficult task. It is dangerous to retreat into rigid pre-enlightment postures. However, in thousands of 'hallowed' masks it is possible to recognize idols of nihilism, behind which there is the intention of power, concealed in the background of the interested ideology (*Horkheimer, Adorno* 1989).

Lewis (1998) highlights the side effects of the strategy based on technical progress and the supremacy over nature. This brings us to a closed circle. By enslaving the external nature, man has basically enslaved himself (this is also a thesis of the Frankfurt School). *Lewis* considers this to be man's self-abolition, which was brought about by the elimination of the ethics and withdrawal from the natural order of the universe. He uses the Ancient Chinese term 'dao'.

Therefore, what negative social factors stand in the way of the quest for the meaning of life and consequently the meaning of education? The general factors are entailed in the characteristics of western societies and their thousand masks of evil. There is no spiritual meaning, as »God is dead« (*Nietzsche,* 2000) and anything is allowed. *Anders* (1985) advocated the motto for the era "to do anything that can be done, to exploit and even use oneself". At an individual's level this corresponded to '*do it yourself*'. *Feyerabend* pointed out the assumption '*anything goes*', which has its positive and negative sides. The negative is that man due to his destructive drive is not only mortal but is actually capable of killing and perpetrating genocide. This cannibalistic, suicidal trait gives the work a negative feeling of the Orwellian world.

In a crisis, the massificated man acts on behalf of democracy. This is not a healthy society, it is a society of fear (*Furedi*), a risk society (*Beck),* liquid modernity (*Bauman,* 2006), a detraditionalized society (*Giddens,* 1991). A society of chaos and anarchy is created by individuals who exercise their right of choice despite the legally codified norms. They are enforcing the cult of innovation in place of the former cult of personality. In the early 1970s, the microchip and the computer changed the world and the number of technological inventions has considerably increased since. They have become multi-purpose and their effects go beyond the ideas of the inventors.

A new class of operators has emerged. *Geisler* (2001) writes about the transition from technocracy, i.e. technology managed by the society, to technogarchy, i.e. technology penetrating every single part of one's personal life. Technogarchy allows for a gap between those in charge of the technological-scientific development and having access to its positive effects and those who are poor since they have no such access. Standing on opposite sides there are the sophisticated *homo technicus* and the impoverished '*homo simplex*'. The gap due to the socio-economic inequality is not necessarily growing, there is however no consensus on how to eliminate it. Technogarchy is a matter of technocratism which manages all available means, including people.

The 1961 – 1965 Second Vatican Council, prior to the Club of Rome report (1973), established that this was a matter of boundaries of social progress. Like *John Paul II*, *Benedict XVI*[8] also

[8]See the websites: http://www.druzina.si/icd/ internet.nsf/all/ BCB6363DE375951AC12578 AB002800F7?OpenDocument (found 10th of July. 2011)

pointed out that the new technologies endanger people in many ways. They may lead to confusion and mistaking the real and the virtual worlds. Since the virtual may be completely separate from social reality, this may lead to unforeseeable consequences, amongst others to people becoming indifferent to their actual life. Even so, the Roman Catholic Church likes to use the new technologies. This shows that technology may be used for spiritual and religious purposes.

4. Reflection on values, the meaning and ethics[9]

Thanks to the mass media various technical devices have already penetrated everyday (public) life and are an objective fact. Items of information have a life of their own, regardless of our stance, since "communication communicates" (*Luhmann*) as long as it propels a specific system. Total mobility is characteristic of the world of total(itarian) communications. Technology functions globally. As it is not subjective, it does not steer us towards any goal, does not give us any meaning, does not promise redemption, does not regret anything and does not uncover the truth. This is exclusively the task for man's reflection. That is why the paper puts the neo-liberal disorderly individual within an ecological-solidarity framework, his freedom is understood within the ethics of responsibility, the truth as a whole is strived for and various perspectives regarding the meaning of life and education for life are developed. This is not traditionalism from the pre-technological era, it is post-anthropocentrism.

Obviously we have fallen behind on account of going too fast. *Virilio* (1996) believes that due to the speed of the technological liberation, the world has become smaller, it has flattened and the time has become thicker.[10] What counts today are firsthand experiences (brutality), omnipresence and the latest special offers of inexpensive products. Disciplinary capitalism (an expression used by *Foucault*) finds the slowing down of the development unacceptable. Technology has obviously made us lose our primal contact with nature and thus also with the meaning of life but the economic slowdown has forced us to reconstruct the meaning.

Spiritual freedom does not come with technological virtual standards. The meaning does not become obsolete like the everyday products do, and does not lag behind the way supply does. Otherwise *Heidegger* with his ontological difference and *Derrida* with his radical difference would not be topical anymore. The pragmatic misuse of technology happens by ignoring own consciousness and interests of others. The evil becomes something trivial and bites itself despite the friendly face of the casino capitalism. Humanistic thinkers, such as *Marx*, *Scheler, Berdjajev, Fromm, Fink, Husserl, Heidegger, Krishnamurti* do not see any meaning or purpose in technology. It takes meaning and purpose to have a functioning individual and social regulation.

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[9]This part reflects on the first dilemma, which pertains to the question whether man gives priority to material production of goods or the spiritual production of the meaning. This is also the topic addressed in the second part of the seventh dilemma.

[10]*Friedman M.* (2010) also speaks in favour of the ecological paradigm by establishing that the world we live in is hot, flattened and overpopulated.

Already prior to World War II, *Husserl* (originally 1933, 1990) perceived the crisis of the European consciousness in its naturalized and technicized nature. Spiritual consciousness was therefore not uniform but rather partial. It was based on the responsible freedom of individuals. These individuals make the community function at the interpersonal, intercultural and international levels. The openness of Europe to a world of life relies on the individual responsibility and the common discourse. The essence of Europe is thus to 'care for the soul' (an expression used by *Patočka*), something the present-day of European Union has let slide. The EU has not decided whether to give preference to material or spiritual evolution.

Nietzsche's revaluation of all values (*Umwertung aller Werten* in German) may be understood as his will to power or his will to meaning. The revaluation requires special spiritual intelligence. For some authors spiritual intelligence[11] is the capability to rehabilitate spiritual values. Man's love for life (what Fromm calls biophilia) may thus become stronger that his love for death (necrophilia) and his authentic being more important than his personal belongings.

Zohar and *Marshall* (2000, 2006) have both written about the stunted spiritual intelligence as the capability to give meaning. Spiritual activity is the highest quality of man's life, characterised by values, positive motives and patterns of the functioning of personality. This intelligence may foster through spiritual culture. The more people opt for it, the easier it is to achieve the critical mass needed to transform destructive capitalism

4.1 Monopolistic or pluralistic views of the meaning?[12]

Why search for the meaning? Searching for meaning is proper to man since it provides him with the feeling of »ontological safety« essential for the development of his identity (*Giddens*, 1991). However, it is unclear how to put this uncompleted project of modernism into practice in today's uncertain world.

The concept of meaning is understandably viewed in various ways. We are interested in finding theoretical and practical possibilities of re-discovering personal and common meanings. Man has lost the meaning due to his selfish partial disposition, so to find it he needs a comprehensive approach. He may look in a comprehensive anthropological vertical since this is not only a matter of an uneven socio-economic development, but also of an uneven structurally anthropological one. The part of personality to develop the fastest is the sensory-expressive one, while the spiritual side is the slowest. The spiritual development must not be forced upon, or it may not happen. The meaning is often quite elusive and with some individuals it does not emerge until the old age (*Lukas*, 1999).

Several recent materialistic-economic crises produced the loss of meaning during the processes of modernization, pluralization and, in Europe in particular, secularization (*Berger* in *Luckmann*, 1999; p. 8). The era of individualism emphasizes a particular meaning each individual has due to their specific values. Still the meaning has to be unified or it is

[11] For further information on the authors of different definitions of spiritual intelligence see the website: http://en.wikipedia. org/wiki/ Spiritual_intelligence. (10th of July 2011)
[12] An analysis of the second dilemma is provided here.

impossible to identify it. The fragmentation of culture also signifies broken up personalities.

By escaping into a virtual world, an individual escapes into his own psychological imaginary world. In order to survive, man's love for life must be stronger than his love for death and his will to meaning stronger than his will to power. He thus puts his being before his possessions and his humane ethics before the ethics of authority. Since the world of intelligent technology encompasses only a simulation of the meaning, we must learn to create meaning; experience teaches us that technical devices without ethical meaning for the common good are misused.

The search for the meaning is possible within nihilism. There is no point in doing everything we can, as this is an act against our soul. Our soul calls for a time of rest, of quiet, of being absorbed in oneself in order to study the impressions. Overstimulation may breed aggression.

4.2 Logotherapeutic comprehension and constituting of the meaning

Nowadays the deprivation of will to meaning is on the increase resulting in being-related deprivation or emptiness. Symptoms include boredom, lassitude, apathy, torpidity, depression, purposelessness. It is party induced by various social factors, such as greed for possessions, extended periods of unemployment, decay of cultural values, pervasive nihilism. The present-day youth (squatters according to *Galimberti,* 2009) exhibits the being-related emptiness through intoxication, despair, aggressions and other forms of pathology, suicide.

The path to a comprehensive meaning of the family was described by *Frankl* (1994) as the act of knowing oneself through another. The more you are somebody else, the more you are yourself. According to *Frankl* (1994, 2005) the will to meaning fundamentally drives a person to find the meaning and the intention and to act upon them. This was an axiom of his logotherapy, empirically tested on his patients. He encouraged their spiritual motivation. The will to pleasure (Freud's expression) and the will to power (*Adler, 1999)* are both derivatives of the man's main concern: his will to meaning. Personal power is a means of getting the ultimate objective, i.e. the meaning, while pleasure is a side-effect. Another side-effect is self-actualization (*Maslow,* 1982). The meaning is a comprehensive spiritual encounter and happiness (*Frankl*, 2005). To him cohabitation and cooperation make sense, as they help us avoid neurosis. He believes the meaning of suffering lies in the love for life. The overcoming of suffering involves personal growth, which can be achieved by working on oneself. The existential absurdity and emptiness only emerge on the surface of the personality and not deep inside it where the hidden God resides. The meaning of life lies in creativity, experience and the values.

Patience is required by the search for the meaning since we are in a discovery learning stage. The meaning does not elucidate us once and for all, does not respond to advertisements and it is irreplaceable. If young people knew that in time everything "gets tuned and fulfilled" (*Lukas*, 2002), they would not forcefully demand that the present moment yields all they command. *Lukas* (2002) sets the next formula for the search for the meaning: thought, emotion, experience, enchantment, discovery, vision. Thus meaning is made up of parts and developmental stages, and it is not just a thought, vision or experience lacking cognition.

According to *Lukas* (1999), meaning-related upbringing starts within a family and lasts the entire lifetime as we learn to fill the negative poles with the positive ones, in other words we learn how to get back on our feet again after we have fallen.

The meaning expresses a positive attitude to life, while the lack of meaning expresses the opposite.[13] A positive way of thinking, feeling and communicating reflects our acceptance of life as is. It takes an affirmative attitude to it and says 'yes' (the so-called *Ja-Sager* according to *Scheler* and *Frankl*). On the other hand, engaging in negative, aversive emotions and thinking says 'no' to life (the so-called *Nein-Sager* as described by *Scheler*[14]) and rejects it. *Fromm* (2004) describes necrophilia as the love for death and rejection of life. In Western societies this is manifested as xenophobia, a lower demographic growth and war against Muslim terrorism. There is also Catholic differentiation between the culture of life and the culture of death. *Habermas* (1985) distinguishes between the lifeworld (*Lebenswelt*) and its colonization.

Potentially, we could pick the effects of technology. Technology helps us out and makes our lives easier, while it may also make them more complicated. There are safe and dangerous technologies. Industrial waste for instance pollutes the water, but the waste water treatment plants clean it. Military technology puts potential enemies at risk on purpose, while the pharmaceutical technology may cure potential patients by new medicines or put them at risk (by man-made viruses).

5. A conflict or reconciliation between the anthropocentric and ecocentric holistic paradigms[15]

In order to maintain a natural and normal life cycle, environmental education adopts a positive and attentive attitude to nature, as well as an altruistic, emphatic, symbiotic, cooperative and selfless attitude to others. Such an open framework established within a temporary mastery and with a self-restrictive authority enables the man to find the meaning of life.

A manifestation of nihilism is instrumentalism which halts the development of ecological ethics; it does however sustain utilitarian and hedonistic egocentrism. The ethics of solidary personalism initiates a universal dialogue. This is a fertile ground for solving world problems. The origins of solidary personalism can be traced to *Gadamer's* (1961) idea that we are at the same time others and ourselves. *Levinas* (1998) introduces the concept of a 'face-to-face' encounter. Such encounter of the Other makes one responsible for the Other and motivates one to get out of oneself and offer help. One is even ready to die for the Other (*Levinas,* 1998).

A comprehensive understanding of sustainable development calls for a reduction of the consumption of natural resources by approximately ten times, whereby the quality of life is improved. In essence, sustainable development is compatible with nature. Nevertheless, it has been exploited for the continuation of the existing economic patterns, i.e. striving for a constant "sustainable" economic growth without considering the environmental limitations.

[13]This question is part of our sixth dilemma.

[14]See the website on Max Scheler: http://sl.wikipedia.org/wiki/Max_Scheler (20th of July 2011).

[15]The ninth dilemma regarding alternative ethics is closely connected to the tenth dilemma regarding alternative pedagogical concepts defined in section 4.1. Each ethical relationship is considered ethical education within the family- and school-related communication.

This however is anti-sustainable. The Green movement has been fighting a corner with partial interests for the fastest technological-economic development. This is a conflict between the anthropocentric and ecocentric paradigms and between the utilitarian and ecological ethics.

The meaning[16] has been defined by ancient practical, moral philosophical disciplines and the modern French and British moralists as well as by more recent ethics. The search for the meaning reflects values and ethical beliefs of a given discipline. Since the ancient times there has been a conflict between hedonic and ascetic ethics. As part of the capitalism of 'obligatory pleasure' (*Žižek's expression*), ascetic ethics is a barely palatable alternative encountered within the policy of belt-tightening.

On account of man's harmony with nature, mankind and God, *Kant* (1956) developed deontologically rigorous ethics. The categorical imperative enforces the law in a formal, autonomous, dignified manner and is duty bound. He formulated it in several ways, for instance as the norm according to which man always acts as if he was setting example for the most general law. It acts without any material imperatives, such as education, sense of morality, God's will, aspiration for happiness, etc.

Since the good will, which is autonomous, needs to be respected with regard to other people as well, one needs to act in such a way that the mankind, either in the form of oneself or any other person, will always be used as a goal and not as a means to achieving something (*Kant*, 1956). It is essential to derive from inner values everyone is familiar with. *Habermas* (1985) defines this method as a communicative action and a dialogue with arguments.

Jonas's ethical imperative tasks the contemporary man with responsibility not to 'cause' harm to the livelihood of future generations (*Jonas*, 1984). Unlike other animal species, man is aware that he is a part of nature and that his own attitude towards nature is the same as towards himself. The same principle applies for his attitude towards the future generations and his ancestors. He is completely responsible for his own humanity. These considerations make up the complex will to meaning. This is also the broadest context for the face of the Other (the already deceased one or not yet born one) within the realm of giving meaning to the controversial impacts of technology.

Deformations of *homo technicus* are possible at all layers (from sensory fascination, emotional rapture, collective mass emergence to spiritual deceit). By the same token, the meaning helps to patch up these layers. *Schweitzer* (1931) expresses concern for all the life on Earth with awe. All ethical imperatives strive for a consensus and symbiosis with simultaneous awareness of vulnerability and the risk of injuries. The greater the power, the bigger is the responsibility for its consequences.

Geršak (2009) hermeneutically explores the meaning of Christian ecological humanism in new interpretative dimensions of biblical texts. *Geršak* (2009), *Žalec* (2010), *Matulić* (2005) all

[16] Various different things have been mentioned with regard to man: that he has a meaning organ (*Frankl*), a layer of consciousness which gives meaning (*Husserl*), a practical sense of orientation (*Bourdieu*), the choice criteria - (*Glasser*), in short, that he has the ability to distinguish between good and evil.

favour a universal dialogue with unlike-minded people. Moreover, *Žalec* (2010), like *Juhant*[17] (2009), flags up solidary *personalism* as a future prospect.

Initiators of the new ecological ethics put the values of the nature in the centre of civilization. This idea met at first with resistance of the establishment. The escalation of ecological crisis, however, has strengthened ecologists' influence and the ecological paradigm. A spontaneous response to the global mega-machine is the rise of alternative movements and protests.

The back-to-nature movement is an umbrella term for environmentalists with deep-seated or superficial beliefs, the pagan ones who swear by the secrets of native tribes, or even terrorists. However, the Christian ecologists are willing to talk to utilitarians, hedonists, sceptics and ecologists of other religious convictions. *Geršak (2009)* proposes reconciliation between the anthropocentrism and respect for the nature, as well as the ecocentrism and the respect for the man in his personal and collective relations. According to *Geršak* the state of (man's) nature indicates the degree of compliance with God's will. The degradation of the environment reduces chances for a dignified, fulfilled and meaningful life. It signifies a creeping apocalypse (*Jonas, 1984*). To prevent it various ethical movements have come together.

Since it is an illusion that the science and technology will address their own shortcomings, "ethics acquires the role of their critical self-limitation" (*Lukšič*, 1999; p. 125). Self-limitation originates in the values of frugal, quality survival by means of ascetic ethics.

5.1 Alternative types of pedagogy

We have discussed social and personal conditions of the search for the meaning because of ambivalent role of technology. Let us now turn to the role of education. School subjects such as industrial arts (shop class) should consider various views on technology, its use, misuse and risks. In view of a complex comprehension of technology, it would makes sense to connect industrial arts within school with ethical, historical, aesthetic, civic spiritual and religious education as well as education for peace.

Education in its broadest sense has since the ancient times been defined as humanization of the man, which includes formation of the meaning of one's own existence (*Fink,* 1989). Transmissive pedagogy is reduced to didactic technology, since modern science characterized by the question »how« is implicitly technical. Simultaneously with the new information and communication technologies (ICT), pedagogical praxis should likewise be given meaning. If ICT enables dialogue within school, it acquires a transformative role.

Contemporary pedagogy perceives education as nothing more that technical production according to a set model (*Fink,* 1989). Fink believes education functions to transmit specialized knowledge to future generations, since this enables undisturbed functioning of society. However, according to *H. Arendt* (2009) the exact opposite is achieved – within the school system designed the way it is and the system of lifelong learning, behavioural and personality disorders are a necessary and ever-present phenomenon.

[17] *Juhant* (2009) provides a systematic overview of ethical disciplines in the history of the philosophical thought. He analyzes the present-day state of the society and at the same time explains why unethical deeds of contemporary man are only making it worse.

Education which has no spiritual component, leads to barbarity. (*Fink,* 1989)[18] Even today, the mission of upbringing and education should be the formation of a single meaning of life. Fink has observed that "education which is limited only to a function of transmitting specialized knowledge, is not based on a spiritual way of life" (*Fink,* 1989, p. 135) that: "The meaning of being is a signpost of a meaningful regulation of the entire education" (*Fink* 1989, p. 10). The problem is that some people see no meaning of life, since education as a collection of techniques does not form it in spite of emphasizing children's rights, school does not enable any learning for being or cooperative learning. Instead it is more focused on the knowledge and work, which is insufficient according to Delors' four pillars of learning.

Education is a primordial phenomenon of the human society *(Fink*, 1970, 2005). It has been and it will be an issue since various social interests are at play there. Education is a creative process of self-comprehension of our *Dasein*, it is an ever-conscious attempt at giving life to a spiritual meaning, either from an intellectual, moral or artistic insight. "The absence of the final and the highest collective goal indicates questionability of the present-day pedagogy." (*Barbarić* 2005, p. 151) This state of absence of a uniform meaning is known as nihilism. Massification (*Vermassung* in German) is also present in schools in the form of barbarian violence.

Man needs self-comprehension and self-actualization. Formation is possible only if based on some primordial-picture, a role model, an idol. The history of role models and primordial-pictures is at the same time the history of understanding pedagogical concepts (*Fink*, 1992). Even as an original and independent being, man needs to perform the bureaucratically prescribed acts that fall into his "field of action, while he keeps his personality to himself for the sake of his own functionality" (*Galimberti,* 2008, p. 51). This means that, in a competitive society, personal growth techniques and educational subjects (art, music, civic education and ethics) are also translated into the language of efficiency.

To find meaning in the time of nihilism, man needs to have full consciousness.[19] In times of being-related emptiness, education can do much better than merely hand down traditions and knowledge, namely it can empower to look for the meaning of autonomous and genuine decision-making.

Galimberti (2008) sheds some light on transformation brought about by the age of technology. We barely notice the transformation since we perceive technology as being a tool rather than the environment. As such technology has a bigger impact on our (trans)formation. In addition, it adheres to the rules of rationality, functionality, and efficiency, whereby man's needs easily become subordinate to the needs of a technical device. *Anders* (1985) observes that devices actually educate us. An interactive relationship between devices and their users is possible, but in this case the teacher is required to do more preparations and the learner to show more readiness to critically respond to challenges.

It is a good idea for an ethics teacher (a class teacher, a school counsellor) to inform students about the history of the search for the ethical meaning. Even logotherapy is doable in schools in the form of 'aid for self-aid'. Since *Frankl* finds all reality to be meaningful, we do

[18]The occurrence of youth violence resulting in fatalities in Norway, Germany, the USA and Great Britain is an indication of barbarity.

[19]Conscience (*Gewissen* in German) is in the etymology of the German expression connected with knowledge (*Wissen*).

not create the meaning, we rediscover it time and again. *Frankl* derives from this a key thesis for pedagogy, i.e. we cannot give man the meaning through either therapy or education; we do however need to encourage him to start discovering it for himself responsibly (*Lesar* 2002).

In each developmental stage of making a moral judgement, every person encounters a special logical construction of the meaning shaped by the realization that the perception and the logical construction of the reality may be different. The development and education thus constantly disrupt old patterns and search for a deeper truth of being (*Kroflič, Kovačič-Peršin*, 2005).

We must not be frightened of the inner journey. "In all professions that have a profound impact on other people and where our psyche is our main tool, the mental state is of utmost importance" (*A. Guggenbühl-Craig* 1997, p. 170). We enter such professional relations "with our soul, with our own person; machines, methods and techniques come second. Ourselves, our integrity and veracity, our personal connection with the unconscious and the irrational – this is our tool" (ibid., pp 38–39). This realization is often neglected in pedagogical practice. Man is unruly only when there is no human quality left in him.

As per *Kroflič* (2010) the socialist monopolistic-ideological school was not a good one. However, the Pluralist School faces the same pitfalls mentioned by *Berger* and *Lukman* about the society. *Kroflič* highlights the need for solid (pre-) ethical safeguards in the pluralistic public school and the society, since these safeguards fine-tune the language of human and children's rights (*Levinas, Todd, Galeotti* and *Frazer).*

Such a conception of a personal meaning does not support the transmissive conception of education since education should not merely transmit the existing moral values and social norms of "the objective meaning". According to *Frankl, Buber and Gogala,* the key dimension of education is a personal relationship between the teacher and the learner. Similarly *Frankl* points out that logotherapy presumes a profound humanization of relationships and must not be viewed as a new therapeutic method. A personal relationship between the teacher and the learner is to be fostered because the meaning as a spiritual category can only grow within a spiritual dimension of a reciprocal connection (see *Frankl*).

All alternative types of pedagogy follow pedocentrism, i.e. seeing a child as a whole and putting children's active and independent experience in the centre of attention. They all do so in order to use a new method to achieve the conventional ideal of being in harmony with God, oneself and others. Man lives within a constant identity and diversity of changes. The entropy of technical changes undermines his positive self-image. There is a lot of talk about integrative curricula and inclusive types of pedagogy. Nowadays the identity-related harmony with oneself, which is not given by birth or social status, needs to be learnt.

From a comprehensive anthropological perspective, man is by nature a being of dialogue on biopsychosocial and spiritual levels of his personality. The need for the school of dialogue (the medieval, Renaissance school, reform pedagogy, transformational, *Ignatian, Gestalt* pedagogy) has been emphasized ever since Socrates. To oppose mechanicism and positivism, *Steiner* developed the concept of eurythmy as part of his anthroposophical teaching. Eurythmy was known in ancient times as contemplative practice.

The Italian pedagogical movement '*Reggio-Emilia*' has spread the idea of a feasible "new utopia" and of a "proper" way of acting. This movement pushes towards uncertainty, towards a place where everything is acceptable, while having deep roots in political values and developmental theories.

The pedagogy of listening is another practical approach to education. It puts into practice the pedagogy of relationships which it builds on theoretically. Ethically, the pedagogy of listening has most convincingly been explained by *Todd* (2003): listening to the story of another person is a tool to stop projecting one's own prejudices to the image of another person and thereby it is possible to recognize the other as different. The practice of the pedagogy of listening was most comprehensively developed by *Rinaldi* (2006) within the concept of *Reggio Emilia*. Most importantly, the concept of listening positively validates (acknowledges) the partner in a dialogue as one's equal, which is in particular important between two people with different levels of social power (an adult and a child).

Waldorf pedagogy is practiced at the levels of nurseries and primary schools as well as secondary schools and higher education institutions of various professional profiles. It is associated with some similar social activities, which have their roots in the anthropo-philosophical cognitive method (for instance medicine, nursing homes, various social, medical and drug addict therapies, etc.). Teachers act according to children's nature while keeping the real life practical and safe, leaving aside the abstract. Everything is the rhythm. The Waldorf school strives for a comprehensive development. It is therefore paramount for pupils and teachers to be partners in the teaching process. Similarly to other alternative types of pedagogy, the Montessori pedagogy deems technology to be part of a supportive environment for the child's development. Their motto is "Help me do it myself".

To some extent all schools are transmissive. However the transformative school strives to reform them. Transformative pedagogy studies and sets objectives for the transformative school. Its aim is to encourage various forms of transformative learning[20] and to address how to make the society of knowledge/learning function, what determines it, what is the relation between (constant) school reforms and social needs, etc. (*Senge*, 2006)[21]. Clearly this type of learning is meant to be socially interactive, even though it does not change the society.

The plurality and heterogeneity of the school space calls for a considerably more complex comprehension of conditions necessary to create an environment of symbiosis, than what was characteristic for the conceptually monolithic social environments at the time when nation-states were established in Europe. Nowadays there is a need to exceed the merely rational school with concepts of symbiosis and solidarity while accepting the individuality as a cultural value.

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[20]There are several definitions. One of the most comprehensive definitions of transformative learning is the transformation of pupils into efficient personalities, because it empowers them for 1. the development of healthy and productive relationships, 2. solving productive relationships by helping develop emotional intelligence, 3. guiding oneself and achieving goals, 4. the attention for good healthy results, 5. maintaining wise responsibility. Transformative learning is oriented towards pupils and the dialogue with them.

[21]For more on the differences between the qualities of transmissive and transformational schools see a book by *Novak B.* (2006, Chapter 3, pp. 112-146)

A contemporary classroom provides for technical visualization with electronic boards, interactive classrooms and cameras. These devices may aid comprehensive learning providing that studying takes place, the teacher's hierarchic or status authority is undermined in a democratic communication with pupils and in a dialogue between visible and invisible pedagogy. Meaning is not only found in the visible world but also in the invisible one, which is why pedagogy of the visible and the invisible worlds needs to be harmonized (*Bernstein*, 2007). Another argument is that the meaning is either there or it is not (*Frankl, 2005, Lukas, 2002, Krishnamurti, 2000*).

To put it in a nutshell, in the age of technology, education is not superfluous since there is the need for personification, humanization and compensation for shortcomings. Technology may partially dim people; education though may open them up to a multi-dimensional development. Technology may be harmful to them but education may help them heal wounds of the mind. Where technology makes them dependent, education introduces them to independent thinking. Where technology fragments them (the patchwork identity), education puts them back together. Man is capable of finding the lost meaning again, that is why education should not be left to machines. Being able to operate in the world is equal to the invention of the meaning.

6. Synthesis of conclusions

Unlike other animal species, man is the only spiritual being. However he is also the one with the greatest ability to destroy all life on Earth.

Modern technology may help or hinder our search for the meaning. All four technology theories are topical; however the apologetic theory, which sees no risk, needs to be transcended. The neutral theory places technology in the role of even greater rational control and is therefore instrumentalistically apologetic. Its weakness is that it hands over the responsibility for dehumanization to technologists and inanimate devices. The apocalyptic theory magnifies risk into total disaster. Since it demonises technology, it predicts the end of the human race. Moreover, it stigmatizes decadent nihilism. The only remaining options are either to fight or escape to the clean nature.

If the only choice is for man to control machines or for machines to control man, then peace with technology is not possible. The last developmental stage of technology has in fact provided man with great benefits and, simultaneously, with the risk of destruction. Consequently, only a complex theory is dialogically productive since it recognises both positive and negative aspects of technology and enables the search for the meaning. This search presumes that the will to meaning is stronger than the will to technological power: *homo spiritualis* is ahead of *homo technicus*.

Technology alone is not enough for human survival but we cannot live without it either. Believing in a better world of technology does not mean we should abandon our faith in the meaning or the meaning of redemption. At any point meaning may be found or lost. It is therefore not ethical if *homo technicus* stops his project of humanization on account of technology. We are responsible for living, and we are accountable to ourselves, our ancestors and posterity. Since we are the only technologically skilled species on Earth, we have already reached the developmental stage where we constantly make decisions about

whether we want to carry on our evolution or put an end to it through a global genocide. This is the first hypothesis.

The second hypothesis was investigated by means of transcending the enlightment anthropocentric paradigm of industrial divided man (*homo duplex* in Latin) with an ecological humanistic paradigm which is unifying, holistic and ecological.

An ethic of solidary personalism is feasible within Christian, ecological, humanistic ethics. The quality of being different hinders the propensity to sameness. It acts as a corrective to decadent nihilism, instrumentalism, particularism of interests, the culture of death (necrophilia), pragmatic utilitarianism and all other risky instances of one-side exaggeration. In postmodernism a rise of the individual brought about a plurality of meanings, but without a uniform spiritual meaning of solidarity.

The third hypothesis advocates the possibility of educating man. The dilemma between the permissive or repressive education is one-sided. Nowadays the education is necessary and meaningful in a family, schools and other educational institutions as a corrective of negative impacts of technology and as an encouragement of the positive ones.

Global techno-culture is governed by codes and by increasingly demanding customers who are paradoxically the worst of all parasites. They trigger hyper-competitiveness in the face of which people should develop their own lifestyles to be able to give more meaning to limitations (the »defiance of the spirit« (*Frankl's expression*). This is education for a modest but spiritually and culturally rich life.

From the theological and eschatological perspectives, the blind will see, the spiritually illiterate will become literate, mankind will move to a higher level of self-awareness. This is a general answer to the question about when and how man will stop being 'crooked wood' (*Kant*), a sliding thinking avalanche (*Sloterdijk*), a sick animal (*Nietzsche*). The school should teach how to have a critical attitude to technology.

The aim of spiritual education is to develop spiritual culture. In doing so it is necessary to first distinguish between soulless circumstances resulting from the education of devices and spiritually rich circumstances which have resulted from the education of the meaning. It does matter what state the spirit is in. As we know, the spirit can be both: bad and good, limited or free. The fact that not everyone gets to experience the free spirit of love is not a proof that noone can experience it. The fact that some people do get to experience it is enough for others to remain hopeful. The meaning of communication technology is collecting and transmitting information. The meaning of education is transmitting personal patterns.

The feeling of meaningfulness is a matter of relationships within a family and elsewhere, it is a matter of the life orientation and the lifestyle, which enables us to be joyful, creative, free and responsible all at the same time. It is a matter of a lifestyle which our era might not be too friendly towards, there is however still a very wide path leading to it. Education is thus not so much science as it is an art (*Zalokar Divjak*, 1998, 2010).

The first nine dilemmas implicitly provide an answer to the tenth one. The answer to the first dilemma on materialistic or spiritual values is that the man as a subject of technology has recently become its object and has no distinct spiritual values. The second dilemma is

the dilemma between one monopolistic and several individual meanings. The answer is that there is no uniform meaning within the modern secularized society. The third dilemma concerns the development of the society. It is a matter of predominantly instrumentalist development of a society of fear and confusion. The fourth dilemma is a continuation of the first one and is closely related to the fifth one. According to the fifth dilemma man cannot be his own goal unless he has spiritual and ecological values and the ethics suitable for these values. Nihilistic orientation of destruction and creativity is predominant. According to the sixth dilemma he thus has no positive attitude to life but a negative one. The seventh dilemma regards theories of technology whereby the complex ones combine best a positive and a negative attitude towards technology. The eighth dilemma concerns the possibility of going beyond nihilism and is analyzed by contemplating the values of the meaning. The ninth one is closely connected to dilemmas number eight and ten. It concerns the choice of modern ethics, which are, in our opinion, suitable for resolving the crisis. These are the ethics of Christian ecological humanism and personalistic solidarity. As part of the tenth dilemma, it has been pointed out that the principles of the search for the meaning can be implemented in sample schools, and also that education as a compensatory activity is the domain of alternative private schools. A uniform meaning is obtained in private alternative schools through spiritual education.

New technologies should be environment-friendly and in harmony with the human nature. The rate of new inventions should mirror the level of our spiritual maturity and updates in technology reflect our self- improvement. This means the reversal of the developmental trend.

Supposedly information technology maintains and even develops the traditional and contemporary meaning; otherwise it is not supportive but destructive. An individual is rarely confronted with their own mortality (what Heidegger calls *Sein zum Tode*). The confrontation though is empowering and contributes to fearless management of technology, especially if the social environment is supportive. This however is often lacking, so it comes as no surprise that despite the progress, people are unable to change their old or new bad habits. In this respect education for sustainable development could prove useful.

In this technological age many favour reconsideration of the civilizational and cultural values. We are convinced such a thorough and generally acceptable, historically comparable analysis is underway and we hope that by exploring this complex topic we have contributed to the realization about the need for the world ethos and the need for a universal dialogue.

7. References

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