BEYOND METAPHYSICS?

Explorations in Alfred North Whitehead's Late Thought

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RENEWING SPECULATION: THE SYSTEMATIC AIM OF WHITEHEAD'S PHILOSOPHIC COSMOLOGY

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1. Introduction

In the preface to his magnum opus PR, Whitehead lists nine "prevalent habits of thought" that he wants to reject in so far as their influence on philosophy is concerned. The first, and the one I will focus on here, is "[t]he distrust of speculative philosophy" (PR xiii). This distrust—partly a non-rational and vague doubt or suspicion and partly a serious and firmly founded sceptical position that could be reasonably argued for—coincides with the well-known feature of both modern science and philosophy that criticizes speculation and disputes its cognitive relevance. While the distrust of speculation, as Whitehead sees it, is related to theories that transcend the limits of experience and primarily concentrates on metaphysical conceptions, it is not restricted to the positivistic and analytical traditions of the 20th century alone, but characterizes modern philosophy in general and can be seen, for example, in Descartes, Hume, and Kant.[1]

What is Whitehead's way of dealing with this distrust of speculative philosophy Instead of simply refuting the above-mentioned criticism, he intends to offer a convincing alternative to the enterprise in question. Whitehead presents his own project in PR under the despised notion of speculation and gives a renewed exposition of what speculative philosophy might be, in a version that could be resistant against the common critical approach. This new exposition of speculation and its execution in PR can be divided into three closely connected aspects of one and the same aim: First, by putting forward his own theory, he seeks to continue the tradition of speculative philosophy. Second, by pointing out the distaste that many critics have for it, he seeks to renew speculative philosophy. Third, by sorting these matters out, he seeks to reflect upon speculative philosophy. I will try to shed some light on all three of these aspects concentrating, however, mainly on the third—Whitehead's reflections upon speculative philosophy. These reflections again imply different aspects: How does Whitehead describe the epistemic source, the main project, the nature, and the method of speculative philosophy? And to what extent does the project of renewing speculation coincide with the project of a

philosophical cosmology? In treating these aspects, I will use the notions of speculative philosophy and of metaphysics in the same manner, since, on the one hand, Whitehead argues for "a sound metaphysics" (PR 84), while, on the other hand, his intentions reach far beyond a metaphysical conception of the traditional type. Yet it is not so much the content of Whitehead's cosmology that I am interested in here, but the way in which he bases metaphysics on his systematic or methodological framework established in PR and FR. A connected issue will be the question of how his later works, especially AI and MT, are related to his systematic aim outlined in PR. Since those later works reveal a significantly lower standard of systematic elaboration, I will have to ask whether Whitehead's renewal of speculation is finished with PR, or whether we are confronted with some mode of ongoing renewal.

2. Reason as the source of systematic speculation

In FR Whitehead contrasts two functions of reason as follows: The first function defines reason as one of the operations constituting living organisms in general, which means that it is a factor within the totality of life processes determined by purposes or final causes (FR 9 et seq.). In analogy to the sphere of organic life Whitehead describes the entire cosmos as coherently determined by "some lowly, diffused form of the operations of Reason" (FR 26). These activities make up the progressive tendency of the universe and function as a counter-agent against the also universally effective tendency of a slow decay of physical nature (FR 29, 31). The other function of reason is an activity of theoretical insight, which is independent from organic and physiological processes and stands apart from the sphere of the general processes in nature. In this latter mode "Reason is the operation of theoretical realization. In theoretical realization the Universe, or at least factors in it, are understood in their character of exemplifying a theoretical system" (FR 9). The two functions are distinguished by Whitehead as practical or pragmatic reason on the one hand and theoretical or speculative reason on the other. These functions or aspects of reason are identified by Whitehead with the reason of Ulysses and with the reason of Plato, namely reason as seeking an immediate method of action and reason as seeking a complete understanding of reality. The deficiencies of pragmatic reason and the importance of speculative reason as the instance of a complete understanding can be recognized in the disasters that have been produced by the narrowness of men confining themselves to a good methodology: "Ulysses has no use for Plato, and the bones of his companions are strewn on many a reef and many an isle" (FR 12).

3. Cosmology as the project of speculative reason

According to Whitehead, one of the main tasks of speculative reason is to produce cosmological schemes. In PR xii he declares his intentions "to state a condensed scheme of cosmological ideas" and "to elaborate an adequate cosmology". Here we have to explain the notions of cosmology and of scheme, because both notions have a special terminological meaning and also carry a certain programmatic importance It is particularly an analysis of the notion of cosmology that is essential, if we want to understand Whitehead's epistemological position and reconstruct the systematic aim in PR, subtitled "An Essay in Cosmology". With regard to his cosmological scheme, Whitehead formulates certain criteria that are of special relevance for my present purposes, because he does not only apply these criteria to his own conception, but also uses them as a checklist for the evaluation of central positions in the history of philosophy. In this respect Whitehead's *systematic aim* tends to coincide with a certain kind of *historical aim*.

The term "cosmology" as a notion for a branch of philosophy was established by Christian Wolff, who divided metaphysics into a *metaphysica generalis* or *ontologia* on the one hand and into *metaphysicae speciales*, i. e. (rational) theology, psychology and cosmology, on the other. The subject of a cosmology specified in this way is primarily the explanation of the world as a natural system of physical substances. It integrates metaphysical and ontological approaches reaching back to the beginnings of pre-Socratic thought. From a systematic point of view this cosmology overarches empirical conceptions—e. g. in the field of astronomy—and mere speculative conceptions independent from observation. These empirical and non-empirical approaches were already conceptually distinguished by Wolff (as *cosmologia experimentalis* and *cosmologia rationalis/scientifica*), although, nevertheless, he integrated both of them into the unifying discipline of cosmology. Later, they became more clearly separated. Scientific research has discovered instrumental resources and a more specialized range of problems and questions, and thus modified modern cosmology to the status of a discipline within the field of natural science.

Neither traditional cosmology in Wolff's sense of the word nor cosmology as a modern discipline among the natural sciences can serve as a convenient classification of Whitehead's project of a philosophical cosmology. With regard to the traditional division, his approach is by no means restricted to cosmology as a *metaphysica specialis* but rather overlaps with both the area of the other *metaphysicae speciales* and with *cosmologia generalis*. What is of particular relevance for Whitehead's cosmology, however, is not the complete generality of metaphysics, but rather the present cosmic epoch or stage of reality as exemplifying the most general metaphysical characters (PR 90, 441). Certain affinities to cosmology as a modern scientific discipline are also

quite obvious. Especially in PR and SMW an association with scientific matters and notions is intended, and in FR hypotheses concerning the origin and development of the material universe are implied. But as a speculative system with the aim of universal applicability Whitehead's project reaches far beyond the principally restricted and abstracting perspectives of the natural sciences. These circumstances make it difficult to describe his notion of cosmology in terms of well-known and established scientific classifications. Moreover, Whitehead's use of the term "cosmology" is obviously not uniform throughout and therefore requires further differentiation.

A. Whitehead's notion of philosophical cosmology

I distinguish between three different uses of the term "cosmology" in PR as follows: Firstly, Whitehead uses "cosmology" as a rough equivalent of "view of the world" or "view of life". In this very broad sense of the word, "cosmology" refers to conceptions based on science, e. g. the view of the world typified by Copernicus and Vesalius (SMW 1), but also to basic views of early or pre-scientific epochs. The religious cosmologies of antiquity (AI 104), the dramatic cosmology of the Greeks (SMW 9 et seq.), all kinds of elementary outlook inspired by—or inspiring—religion, aesthetics, ethics, science, or other cultural activities (AI 11 et seq., 103) fall under the heading of "cosmology." A cosmology in the sense of a common outlook is—according to Whitehead—determined by an epoch's dominating interests, within which science can occur among other forms of cultural activity. The dominance of the modern sciences "during the past three centuries" (that means from the 17th until the 19th century) is criticized as a restriction at the expense of other perspectives (SMW xxi). Whitehead comments upon the scientific emphasis of modern times as a cosmological provincialism, from which he derives a compensatory task for philosophy.

Secondly, what he seems to denote by "cosmology" is a scientific scheme differing from others by a higher degree of generalization. This claim is presented in the way that "there should be one cosmology presiding over many sciences" (FR 87), that "the cosmological scheme should present the genus, for which the special schemes of the sciences are the species" (FR 76), and that cosmology and the sciences should be "mutually critics of each other" (FR 77). This exposition of "cosmology" comes close to the notion of a *paradigm* established by Thomas Kuhn in the sense of a theoretical framework within which scientific theories can be tested, evaluated, and even revised thus resulting into scientific revolutions.[2]

Thirdly, a cosmology, according to Whitehead, is a scientific or philosophical scheme such as the one he himself has worked out in PR. In this sense, a cosmology can either be a scientific conception—an example he frequently mentions is Newton's cosmology (of the *Scholium*) (AI 156 et seq., MT 145

et seq., PR xiv, 93)—or a philosophical conception—Whitehead's main examples for this are Plato's *Timaios* (PR xiv, 93), Descartes' cosmology (MT 145), or so called *monistic* or *monadic* cosmologies (PR 19, 27). A cosmology in this third sense of the word can neither be identified with a general outlook in the first sense nor with a general scientific scheme in the second sense. Nevertheless, the third notion of cosmology overlaps with essential components of the two other notions or implies them. This can be demonstrated from Whitehead's explanation and exemplification of "cosmology" in the third sense, and also from the execution of his own system. The third meaning of the term "cosmology" seems to be the most important for Whitehead. It presents cosmology as a scientific or philosophical or metaphysical conception combining the systematic character of a discipline with the universality of perspective that is typical of a pre-scientific outlook. It combines universality with systematization. This broad and unspecific use of "cosmology" is not a peculiarity of Whitehead. A quite similar understanding of this term has been adopted by Karl Popper in the English preface to his *Logic of Scientific Discovery*, which reads as follows: "I . . . believe that there is at least one philosophical problem in which all thinking men are interested. It is the problem of cosmology: *the problem of understanding the world—including ourselves, and our knowledge, as part of the world*. All science is cosmology, I believe, and for me the interest of philosophy, no less than of science, lies solely in the contributions which it has made to it" (Popper 1959, 15; cf. 19).

Whitehead's characterization of cosmology as a philosophical or scientific conception is closely connected with his description of philosophy in general As one of the functions of philosophy he mentions its role as a "critic of cosmologies," further described as the function to "harmonise, refashion, and justify" different intentions or views concerning the nature of things—views such as science, aesthetics, ethics, and religion (SMW xxi). Furthermore, Whitehead postulates that philosophy has to emphasize the complete range of facts that are exemplified in the world in "shaping our cosmological scheme" (ibid.). Accordingly, we can distinguish a twofold task of philosophy with regard to cosmology, namely a critical and an innovative or productive one. "Cosmology", we are told, "is the critic of all speculation inferior to itself in generality" (FR 86). Hereby Whitehead stresses the critical task. In contrast to that, the innovative task of cosmology is "to frame a scheme of the general character of the present stage of the universe" (FR 76). Nevertheless, both tasks coincide in a cosmological conception of the kind that Whitehead has in mind. The task of framing such a general cosmological scheme, taken together with the task of a critical reflection on other views of the world, and then combined with the universal perspective and with the systematic aim of a science, leads to the basic and well-known description of cosmology given in the preface to PR: "Also, it must be one of the motives of a complete cosmology to construct a system of ideas which brings the aesthetic, moral, and religious interests into relation with those concepts of the world which have their

origin in natural science" (PR xii).[3] The unification of scientific and cultural aspects to the extent of linking together all relevant ideas of the civilized universe remains a constant issue in Whitehead's later writings and is repeated as a provisional result with regard to his doctrine of the comprehensive relatedness of the world in MT. Here he summarizes his "survey of the observational data in terms of which our philosophic cosmology must be founded" as follows: "[W]e have brought together the conclusions of physical science, and those habitual persuasions dominating the sociological functionings of mankind. These persuasions also guide the humanism of literature, of art, and of religion" (MT 165).

Whitehead's admittedly rather vague explanation of the task of cosmology, according to which disparate cultural interests should be (as quoted) brought into relation or brought together, contains more than just one aspect. Cosmology is supposed to produce a general scheme for the interpretation of the world, but it is also meant to provide an opportunity to reflect on the different approaches to this world and answer questions such as: How is the world experienced and comprehended by science, religion, arts, and literature? In that way a cosmology does not only represent an instrument for the interpretation of our experience but also a hermeneutics of the single approaches to the world that have to be synthesized by the cosmology.

B. Cosmology and the philosophical tradition

Though the programmatic description of what he calls a complete cosmology might at first sight be understood as the claim to a quite new type of theory, Whitehead integrates his project into a historical development reaching back to the early beginnings of science and philosophy. The basis for this is the assumption of a constant reservoir of problems that all modern cosmological conceptions have in common with their classical models: "They revolve round the diverse notions of Law, the diverse notions of the communication between real individuals, the diverse notions of the mediating basis in virtue of which such communication is attained" (AI 135).

In this sense Whitehead regards two cosmological conceptions as being classical and most influential, namely Plato's *Timaios* and the cosmology of the 17th century exemplified by Newton. They represent the background against which he works out his own conception, which is at the same time committed to insights of later traditions. "In attempting an enterprise of the same kind, it is wise to follow the clue that perhaps the true solution consists in a fusion of the two previous schemes, with modifications demanded by self-consistency and the advance of knowledge" (PR xiv). This emphasizes the importance Whitehead attaches to the central historical presuppositions and his confidence in a synthesis of historical presuppositions as the most adequate method: "The cosmology explained in these lectures has been

framed in accordance with this reliance on the positive value of the philosophical tradition" (PR xiv). The philosophical and scientific traditions are valued primarily as a reservoir of ideas covering positions that have to be integrated or else criticized and rejected by a new cosmology. Any cosmology must be capable of interpreting its predecessors and of expressing their explanatory limitations (AI 131). In their historical interdependence cosmological conceptions reveal a continuity that protects them from arbitrariness and supports their mutual relevance and their capability of illuminating one another.[4] Every endeavor to develop a new cosmology in Whiteheadian lines requires a comparison with the preceding conceptions. The relevance of a new cosmology is documented by this comparison because it has to establish itself as a critical instance for them. Accordingly, the cosmologies of Plato and Newton, which assume a special historical relevance for Whitehead, function as a coordinating framework for his own conception.

4. Nature and aim of speculative philosophy

Having given a first impression of cosmology as the main project of speculative philosophy, I will now concentrate on the nature of speculation itself to get a better idea of its cognitive and systematic relevance in PR. Since reflection upon speculative philosophy implies the requirement to know what it is, Whitehead starts by giving a definition and (in this respect he reminds us of a central methodology of medieval philosophy) an analysis of the definition's single parts. When he declares that the first task of his lectures (PR) is to define speculative philosophy and to defend it "as a method productive of important knowledge" (PR 3), he obviously suggests that an adequate definition of speculative philosophy contains the basis for its defense in itself and will thus be helpful to reject any distrust of speculation as a prevalent habit of thought. Whitehead's frequently quoted definition reads as follows:

> Speculative Philosophy is the endeavour to frame a coherent, logical, necessary system of general ideas in terms of which every element of our experience can be interpreted. By this notion of 'interpretation' I mean that everything of which we are conscious, as enjoyed, perceived, willed, or thought, shall have the character of a particular instance of the general scheme Thus the philosophical scheme should be coherent, logical, and, in respect to its interpretation, applicable and adequate. (PR 3; cf. AI 222)

The fact that this definition is repeated almost literally in AI may indicate that Whitehead's later works are based on a quite constant idea of speculative philosophy.

To stress some main notions: Speculative philosophy we are informed, provides a system made up of general ideas, and its task is interpretation of experience "System" in this context means that speculation (first to be described ex negativo) is more than mere contemplation, more than *theoria* in the Platonic sense, more than a viewing of the way things are, more than a list of ideas collected at random. "System" rather involves a certain structure underlying fixed criteria and a composition guided by a certain method. Though Whitehead sometimes uses the notions of a system and a scheme synonymously (as e. g. in our quotation) (cf. also FR 69, 75), "scheme" nevertheless seems to be a notion of special meaning and relevance. As presupposed here, it is a conceptual projection guiding imagination and preceding the working out of a system (or a theory), which in this respect is the actualization or realization of an underlying scheme. The term "idea" is used by Whitehead in a broad sense that covers concepts or notions (the title "AI" is also based on this meaning) and propositions as well. "Interpretation" here just means the relevance of the scheme with regard to experience and can be resolved into the criteria of applicability and adequacy. "Experience" is used in the broadest sense, reaching far beyond consciousness and referring to everything we are able to get into contact with in so far as we are subjects of perceptive processes and communicate with our environment.

A. Criteria of speculative philosophy

In a first step, Whitehead enumerates three criteria for a speculative system: it has to be coherent, logical and necessary (PR 3). Later in the same paragraph he says that the system should be coherent, logical, applicable and adequate.[5] I read this to the effect that the criterion of necessity is to be resolved into two subdividing criteria, applicability and adequacy. Thus, a speculative system in the Whiteheadian sense in fact requires four criteria.[6] I will give a brief explanation of them: The qualification "in respect to its interpretation" is obviously restricted to the third and fourth criterion, and there is no corresponding qualification for the first and second: We may confine ourselves to the requirement that a system has to be coherent and logical in itself, irrespective of its task of interpretation. The claim that the scheme should provide interpretation is, therefore, subdivided by the criteria of applicability and adequacy. But in what sense can these two criteria be subsumed under or unified by the criterion of necessity? Whitehead gives an implicit answer in the following paragraphs. By saying that "[t]he metaphysical first principles can never fail of exemplification" (PR 4), he describes their applicability: The system needs exemplification in any instance of experience. By saying that "the philosophic scheme should be 'necessary,' in the sense of bearing in itself its own warrant of universality throughout all experience" (PR 4), he refers to their adequacy: The system needs exemplification in every instance of experience. The criteri-

on "logical" is used by Whitehead in its "ordinary meaning", that is, mainly consistency or lack of contradiction. Of major interest in this context is the criterion of coherence.

"Coherent" first of all means that

> the fundamental ideas, in terms of which the scheme is developed, presuppose each other so that in isolation they are meaningless. ... In other words, it is presupposed that no entity can be conceived in complete abstraction from the system of the universe, and that it is the business of speculative philosophy to exhibit this truth. This character is its coherence. (PR 3)

In the latter statement it becomes evident that the concept of coherence is not restricted to its methodological use as a criterion for speculative philosophy implying a "coherence of understanding (MT 51; cf. MT 152). The methodological meaning of coherence rather rests upon an ontological coherence within the sphere described by the scheme. This twofold meaning arises from Whitehead's main metaphysical position. Coherence in its methodological aspect presupposes a coherence or functional unity of all entities in the universe, i. e. the assumption of mutual immanence in Leibniz' sense. This ontological coherence according to which "no entity can be conceived in complete abstraction from the system of the universe" (PR 3) is further explained as the result of a particular entity's process of becoming, defined as "the transformation of incoherence into coherence" (PR 25). This basic feature of process metaphysics can be understood in close affinity to Leibniz's doctrine of the first substances or monads because Leibniz, like Whitehead, regards relations as essential for the constitution of a monad. As every monad is connected with all other monads by means of its perceptions and represents a living, eternal mirror of the universe, a Whiteheadian actual entity is related to all other entities by means of perspective prehensions.

A certain difficulty might be seen at this point. At the stage of the methodological foundation of his system Whitehead names certain criteria for its intention of interpreting experienced reality. But at the same time he makes metaphysical presuppositions—ontological coherence—which, strictly taken, should not be stated before but rather within the system ruled by the criteria. For Whitehead, however, the assumption of ontological coherence is an inevitable pre-systematic condition for any universal interpretation—that is, for cosmology or for metaphysics in general Formulating principles of universal relevance is an essential feature of metaphysics, so that the experienced world as a whole must necessarily be presupposed as conceivable by a unified scheme. Though Whitehead's approach in this regard might seem to reveal circularity,[7] we should nevertheless concede to him the idea of ontological coherence in a pragmatic sense: Only if coherence is presupposed can reality

be understood and can it be referred to by a conceptual scheme. Thus, the possibility of metaphysics or cosmology—i. e. metaphysics in relation to a certain cosmic epoch or characteristic features of this particular world as experienced—principally rests upon the basic assumption of ontological coherence. Accordingly, ontological coherence is not only a legitimate, but a necessary assumption preceding any metaphysical or cosmological scheme, and it is a necessary condition that the scheme answers to this assumption.

B. The method of generalization and revision

After having characterized speculative philosophy with regard to its cognitive instance, its main project and its nature (definition and criteria), I now want to consider its method. How—by means of what procedure—does speculative reason frame a cosmological scheme?

According to Whitehead, the Greek and medieval philosophers were "under the impression that they could easily obtain clear and distinct premises which conformed to experience" (FR 68). Being "comparatively careless in the criticism of premises," they "devoted themselves to the elaboration of deductive systems" (ibid.). During the following history of philosophy, people continued to place much emphasis on the development of such deductive systems. They concentrated on the validity of the deductions, neglecting the question of the certainty of the underlying premises. Whitehead, however, (a) cautions against the assumption that it is easy to formulate propositions that are precise and correspond to experience and (b) points out that the power of deduction as a method of inquiry is easily overestimated:

(a) The use of deduction by philosophy is closely connected with the assumption that philosophy can and should start from self-evidence lying within the premises: "Philosophy has been haunted by the unfortunate notion that its method is dogmatically to indicate premises which are severally clear, distinct, and certain; and to erect upon those premises a deductive system of thought" (PR 8). The most striking example for this aim is probably Descartes with his search for a clear and evident basis for his metaphysics Whitehead, in contrast, maintains, that any kind of evidence (we have to qualify: except ontological coherence) can only be expected in the final stages and not in the initial stages of philosophical inquiry, and the definiteness of results that can be obtained is always tentative, provisional, and approximate (PR 4, 8). (Also Whitehead's own metaphysical conception is committed to this provisional character indicated by the subtitle "An Essay in Cosmology".)

(b) Whitehead repeatedly stresses the fact that deduction is the primary and appropriate method of mathematics but not of philosophy. "[T]he method of philosophy has . . . been vitiated by the example of mathematics. The primary method of mathematics is deduction; the primary method of philosophy is descriptive generalization" (PR 10). But does deduction not have any

function at all within the philosophical method? "Under the influence of mathematics, deduction has been foisted onto philosophy as its standard method, instead of taking its true place as an essential auxiliary mode of verification whereby to test the scope of generalities" (PR 10).

Here we have to examine two things: What is descriptive generalization and how is it connected with the method of deduction that Whitehead regards as an auxiliary instrument only? Whitehead illustrates his peculiar methodological proposal in a well-known metaphorical manner: "The true method of discovery is like the flight of an aeroplane. It starts from the ground of particular observation; it makes a flight in the thin air of imaginative generalization; and it again lands for renewed observation rendered acute by rational interpretation" (PR 5). With the help of this metaphor Whitehead distinguishes three phases of discovery, namely: observation, generalization and renewed observation.[8]

In order to clarify the item of imaginative generalisation we have to remember that, relative to any scheme (and theory as well), there are two sets of facts. The first set of facts determines the construction of the scheme. The second set consists of facts that the author of the scheme did not have in mind or even could not have had in mind right from the start. Nevertheless, they are relevant for the scheme, if it is meant to be universal. Accordingly, in a third step we should attempt to apply the scheme to items that were not taken into account in the construction of the scheme itself. Every item of experience is expected to illustrate the generic features (or at least some of them) expressed by the scheme. We usually judge the value and power of a scheme or a theory by the degree to which it can interpret facts that were unknown, and perhaps unknowable, at the time the theory was constructed. In the case of a theory like Whitehead's speculative system, the mode of procedure is to choose some facts as relevant (because it is simply not possible to know *all* the facts to be interpreted) and to interpret this small range of facts in terms of the system. More facts, which we could not have known in the initial stage of constructing the system, turn up in the course of experience and become objects of interpretation through the system. "We must be systematic", as Whitehead claims, "but we should keep our systems open" (MT 6). Thus, we have to examine these new facts in order to see if they can be systematically expressed within the terms of the system. If Whitehead's view of deduction as an "essential auxiliary mode of verification whereby to test the scope of generalities" (PR 10, as quoted above) makes good sense at all, it has to be identified with the third phase of renewed observation. In that respect, descriptions of new circumstances are assumed as candidates of conclusions inferred from the scheme. The validity of those provisional deductions makes up the verification of the scheme.

The effort to verify the system or scheme by integrating new facts—actually anything we come across—can be called, in Peter Simons' terms, the "integration requirement", which every responsible metaphysician should be

obliged to follow. Simons links this integration requirement and the need to revise the system when encountering stubborn facts to Peter Strawson's concept of revisionary metaphysics in contrast to descriptive metaphysics (Simons 1998, 383 et seq.). Strawson's well-known distinction runs as follows: "Descriptive metaphysics is content to describe the actual structure of our thought about the world, revisionary metaphysics is concerned to produce a better structure" (Strawson 1959, 9). On the basis of this dichotomy, Strawson refers to metaphysicians like Descartes, Leibniz and Berkeley as revisionary, while Aristotle and Kant are subsumed under the descriptive branch. Simons, like others before him,[9] subsumes Whitehead's metaphysics under the revisionary type. This makes good sense, because Whitehead not only rejects the substance-quality-scheme resembling the linguistic pattern of subject and predicate, but also replaces the classical substance ontology by the assumption of elementary process units in order to produce a better structure of thought about the world. Although Whitehead classifies his categoreal scheme as a working hypothesis, which in default of extended application needs to be reformed and then tested again, we must refrain, however, from identifying this procedure with the enterprise of a revisionary metaphysics, as sometimes seems presupposed by Simons and others. Rather, Whitehead's conception of constructing and reconstructing his conceptual scheme is in accordance with both types of metaphysics in Strawson's sense—with revisionary and with descriptive metaphysics alike, or, to put it reversely, even a conception of descriptive metaphysics can be subject to revision and improvement. Thus, Whitehead's conception in fact represents revisionary metaphysics in Strawson's sense, and, beyond that, it represents a hypothetic or provisional conception in the sense of his own peculiar methodology outlined here.

C. Assemblage versus systematization

While PR, as mentioned above, aims at building a speculative system guided by a set of criteria, MT initially clarifies that "[t]here will be no attempt to frame a systematic philosophy" (MT 1). This, however, does not mean hostility to systematization. "System is important", Whitehead states concisely: "It is necessary for the handling, for the utilization, and for the criticism of the thoughts which throng into our experience" (MT 2). Nevertheless, systematization is not the first or initial step in philosophical inquiry; it rather has to start from certain presuppositions. In Whitehead's view, the primary stage of philosophy "can be termed *assemblage*" (MT 2). What does *assemblage* mean?[10] Whitehead introduces this crucial term in a somewhat indirect and vague mode of explanation in the first paragraphs of MT. Accordingly, assemblage, as the counterpart of systematization and specialization, means opposition against the dismissal of comprehensive, profuse experience. It

opens up the possibility for a variety of studies and, transcending the purview of all definite conceptions, it compensates for their restrictions and narrowness. While systematization rests upon a fixed group of primary concepts, assemblage is open to ideas of larger generality. To put it briefly, assemblage is necessary to reclaim the totality of perspectives. Thus, it does not only function as an initial or provisional stage before construing a system, but also remains a guiding procedure that prevents us from overrating systematization: "Systematic philosophy", Whitehead explains, "is a subject of study for specialists. On the other hand, the philosophic process of assemblage should have received some attention from every educated mind, in its escape from its own specialism" (MT 2).[11] Assemblage and systematic elaboration are separate but nevertheless complementary procedures—both of them being the continuation as well as the criticism of each other. Speculative thought, in the stage of assemblage, must assume systematic form if it is intended to become an ingredient of a cosmological scheme. Systematization, on the other hand, must continuously become enriched by further assemblage.

Whitehead praises Plato, Aristotle, Leibniz and William James for their twofold achievement—the one consisting in philosophical assemblage and the other consisting in their contributions to the structure of philosophic system. Though Plato "grasped the importance of mathematical system", he cannot be regarded as a systematic thinker; instead, "his chief fame rests upon the wealth of profound suggestions scattered throughout his dialogues" (MT 2 et seq.). It was Aristotle who made the next step—he "systematized as he assembled. He inherited from Plato, imposing his own systematic structures" (MT 3). The history of philosophy reveals the significant importance of the pre- or non-systematic features of philosophical inquiry through all epochs. The outstanding thinkers of the past, as Whitehead points out, "have not achieved eminence solely by their championship of systems peculiar to themselves"—they "enjoyed insights beyond their own systems" (MT 82). The function of systematization, however, is to clarify insights, to direct attention to aspects of experience that are apt to exemplify special systems. Hume and, again, Plato are Whitehead's examples illustrating the fact, "that system is essential for rational thought" (MT 83). But at the same time they represent the limits of systematization. As Whitehead puts it, they "illustrate that the closed system is the death of living understanding. In their explanations they wander beyond all system" (MT 83). Undoubtedly, Whitehead reminds us of the requirement of systematic thinking, and at the same time of the need to transcend our systematic frameworks.

As far as Whitehead's main works are concerned, PR is more devoted to systematic elaboration, while AI and MT are more devoted to assemblage. The latter, however, is not a secondary mode of philosophy, but has its own relevance and value that lie beyond all systematic aims: "Apart from detail, and apart from system, a philosophic outlook is the very foundation of thought and of life. . . . As we think, we live. This is why the assemblage of

philosophic ideas is more than a specialist study. It moulds our type of civilization" (MT 63). In MT, as Whitehead himself states clearly, he has "not entered upon systematic metaphysical cosmology. The object of the lectures is to indicate those elements in our experience in terms of which such a cosmology should be constructed" (MT 168). Hereby he evidently subsumes his inquiries in MT under the procedure of assemblage. We should not wonder why PR as the earlier work represents a systematic philosophical cosmology, while the later work MT (as well as AI) represents elements of experience providing the basis for that cosmology by means of assemblage. The systematic cosmology and the elements of our experience as the material to be interpreted by the cosmological scheme are complementary procedures of one and the same unifying enterprise, namely the renewal of speculation.

5. Systematic aim as historical aim

Initially I stated that Whitehead's *systematic aim* can also be regarded as a *historical aim*, which should be understood as follows: When Whitehead refers critically to other philosophers—and he does so very often—this criticism usually means that their conceptions fail when checked against the analysed criteria, or that they correspond to them in only a restricted and deficient manner. So his set of criteria represents a standard of comparison for speculative schemes of the past. Almost all historical references in Whitehead's writings are connected with assertion or negation of accordance with one or several of those criteria. The most famous example of an offence against the criterion of coherence is the philosophy of Descartes and its two (or three, if God is included) kinds of substance, corporeal and mental, a distinction that makes up a disconnection of first principles. To Whitehead this means incoherence: "There is, in Descartes' philosophy, no reason why there should not be a one-substance world, only corporeal, or a one-substance world, only mental" (PR 6). The distinction of mental and corporeal substances, which make up the so called 'bifurcation of nature', is, as Whitehead maintains, modified by Spinoza "into greater coherence" (ibid.) by starting with *one* substance, *causa sui*, and considering its essential attributes and its individualized modes, the *affectiones substantiae*. Furthermore, "[t]he merit of Locke's *Essay Concerning Human Understanding* is its adequacy, and not its consistency" (PR 51). Whitehead generally reproaches the cosmologies of the past with being "inadequate, vague, and push special notions beyond the proper limits of their application" (FR 88).

The notion of a speculative scheme with its criteria considered historically does not only represent a checklist of evaluation for the philosophical tradition, but is also itself a product of history. Whitehead traces the idea of such a scheme back to the Greeks and makes the discovery "that the speculative Reason was itself subject to orderly method" (FR 66), a merit that he

recognizes. In FR, however, he does not give any concrete information about a first realization or at least an indication of those criteria that, according to him, make up the "logic of discovery". This "logic of discovery" is explained in more detail in an earlier article on technical education (1917), where Whitehead distinguishes between a "logic of discovery", that he identifies with inductive logic and a "logic of the discovered", that is deduction (AE 51 et seq.). Both items seem to be integrated in one and the same scheme in FR, where the "logic of discovery" is regarded as an enterprise of the Greek.[12]

Looking for a specific identification here, we are most likely to think of Aristotle. Accordingly, Whitehead attributes the strong medieval reliance on Aristotle to the fact that a "coherent scheme of thought" could be reduced from his philosophy. But the (in his terms) "logical coherence" guaranteed by this source could not compensate for the scholastic deficits of "direct observation" as a critical instance for schemes of thought (AI 117).

While Aristotle's philosophy can easily be conceived as a scheme of thought in some accordance with the criteria discussed here, this is much less so in the case of Plato. His philosophy can hardly be regarded as a system guided by underlying criteria, as Whitehead states quite clearly. By saying that "the same philosopher who emphasized the changeless mathematical entities as characteristic components of supreme reality, also elsewhere declared 'life and motion' to belong to the essential character of reality" (MT 82), Whitehead obviously refers to Plato. Accordingly, Plato is "never entirely self-consistent, and rarely explicit and devoid of ambiguity" and is moving in his "fragmentary system like a man dazed by his own penetration" (AI 146 et seq.).

Whitehead praises Plato as the "greatest metaphysician" and at the same time he criticizes him as the "poorest systematic thinker", who "always failed in his attempts at systematization, and always succeeded in displaying depth of metaphysical intuition" (AI 166). This judgement on Plato's systematization is of a general nature but not without qualifications. Whitehead also makes significant remarks on the realization of the particular criteria in Plato:

> [I]n his Seventh Epistle he expressly disclaims the possibility of an adequate philosophic system The moral of his writings is that all points of view, reasonably coherent and in some sense with an application, have something to contribute to our understanding of the universe. (AI 52)

But this does not mean that the criterion of coherence is realized in Plato himself. Attempts at interpretation "providing him [i. e. Plato] with a coherent system" sooner or later find themselves confronted with the fact that Plato "in a series of Dialogues has written up most of the heresies from his own doctrines" (AI 105). The framing of such a coherent system, however, is regarded as the central task of philosophy. Philosophy should start from seven basic

metaphysical elements—called notions by Whitehead—to be found in Plato's late dialogues: "The Ideas, The Physical Elements, The Psyche, The Eros, The Harmony, The Mathematical Relations, The Receptacle." These should be modified and coordinated with the purpose of a "coherent system" not yet realized in Plato (AI 275), but rather emerging in the following tradition characterized as a series of footnotes to Plato.[13]

What remains is to state that Whitehead finds in Plato at least certain slight indications of systematic aims combined with certain criteria. Accordingly, his project provides a contribution to the interpretation of experienced reality, committed to criteria that had already been formulated but not fulfilled. There is no contradiction if Plato (according to Whitehead) contends that an adequate system is impossible to realize, whereas Whitehead lists adequacy as a criterion. A system's adequacy in the Whiteheadian sense is a kind of ideal, gradually realized. The fact that Plato's philosophy represents at best a very early stage of approximation is quite natural and not problematic. The criterion of adequacy is always at the same time a demand and a standard provoking further hypothetical systems.

By tracing the criteria back to Greek thought Whitehead makes clear that his criteria for a speculative scheme or system are not a peculiarity of his own or any other individual methodological feature, as mostly supposed (and often criticized). From Whitehead's point of view, these criteria—maybe just in the form of an unfulfilled requirement—have guided philosophical systematization all along.

6. Conclusion

Reflecting on Whitehead's notion of a philosophical cosmology, I pointed out that this project reaches far beyond the restricted perspective of the natural sciences. Rather, in outlining basic features of his systematic aim, we were led to the complementary perspective: Whitehead's project starts from a metaphysical conception (especially from a set of categoreal assumptions) and is then enlarged towards a scheme of interpretation which includes scientific aspects. Aiming at universal applicability, religious, ethical and aesthetical aspects, his philosophical cosmology integrates all dimensions of human experience. These dimensions dominate works like AI and MT, which insofar should be regarded as supplemental material to the metaphysical construction of PR—as applications, clarifying illustrations, possible responses to hypothetical questions, or smaller differentiations modifying a conception essentially outlined in PR (and partially in FR). Exploring the question of whether Whitehead's system is completed with PR, or if instead his metaphysics only comes fully into view in his later works, we—despite the fact that from a Whiteheadian view a metaphysical system at any rate remains hypothetical and can never be complete in a strict sense—emphasize the fact that among

all his writings only PR, though it is subtitled "An Essay in Cosmology," is constructed in a systematic manner. Actually, it is PR, where Whitehead's cosmological scheme is established, while the other works more or less supplement this cosmological scheme. The predominant lines of thought that make up PR keep occurring in MT and AI, and Whitehead himself declares in the preface to MT that he is willing to condense features of early lectures delivered between about 1933 and 1938. Similarly SMW, PR, and AI, according to the preface to the latter, "supplement each other's omissions and compressions" (AI vii). In contrast to PR, AI and MT do not provide us with any new systematic framework and not even with a revised version of the framework offered in PR, but with additional aspects and dimensions of application. PR is mainly devoted to systematization, while AI and MT are mainly devoted to assemblage. Nevertheless, the latter do not reject systematization, but—in an admittedly scattered manner—reflect upon systematization including its efforts and limits. While the later works enlarge the areas of application, they do not enlarge or essentially modify the scope of thought in the sense of the metaphysical framework itself or the systematic aim underlying it. This framework—comparable with a paradigm in Kuhn's sense—is fragmentarily prepared in SMW and other earlier writings and then worked out in PR. According to the framework's character of universal applicability, Whitehead's cosmological scheme reaches far beyond all particular disciplines. At the same time, his systematic aim coincides with his historical aim, which culminates in his well-known footnote-thesis and its historiographic message: Methodological self-consciousness includes historical self-consciousness. With his criteria for a cosmological scheme Whitehead intends to update a systematic framework that has been prepared by Greek thought and that has been realized in an elementary and imperfect way by the subsequent philosophical tradition. As the actual cosmological scheme results from a critical discussion of its predecessors, the actually named criteria are not stated *ad hoc*, but arise from a process of Whitehead's historical reflections on his own position and his own systematic aim.

NOTES

1. For a more detailed comment on this item cf. Gandhi (1972, 389-394).
2. Whitehead also anticipates Kuhn's view that scholars who are working on the basis of certain scientific principles are inclined to adhere to them and to ignore stubborn facts for the sake of the established position; cf. SMW 245, PR 6, FR 17 et seq., and AI 159.
3. Some interpretations fail to do justice to Whitehead's cosmological claims, either by assuming that he uses a merely scientific conception of "cosmology" or by regarding his system as comparable or even in competition with modern scientific approaches. Both points of view are obviously shortening Whitehead's comprehensive intention, namely to transcend the level of abstraction of a particular science; cf. Kather (1998, 357-480) and Kann (2001, 86-94).

4. Cf. Rose (2002, 2) who refers to Whitehead's system of metaphysics as "part of a larger ongoing historical project."

5. For a related approach cf. Riffert (2004) who compares Whitehead's methodology with a set of criteria established by Bunge (1973) under the unifying notion of scientific metaphysics.

6. Thus, necessity is not an additional, fifth criterion, as Poser (1986, 123) apparently assumes.

7. For this problem cf. Kasprzik (1988, 30).

8. For a reconstruction of these phases within the overarching context of explanation and interpretation cf. Christian (1962, 4-9).

9. Among the most interesting contributions to this subject are Gandhi (1972, 398-402), Haack (1978), Poser (1986, 115-124), and Lotter (1996, 46-48).

10. Concerning this issue cf. also Vincent Colapietro's chapter in this volume. Colapietro emphasizes the importance of Whitehead's idea of philosophical assemblage, which in MT is accorded a much more prominent place than in earlier works.

11. Cf. Whitehead's criticism of abstraction and specialisation in AI 146 and PR 7 et seq., or, as a related issue, of professionalism in SMW 244-246.

12. Whitehead's notion of a "logic of discovery" seems to be adopted for the notion of a "logic of inquiry" established by Herstein (2006, 31-36). According to Herstein, this notion comes close to John Dewey's conception of a "theory of inquiry" that itself could be traced back to Aristotle or even to the "erotetic methods of philosophy" in Plato.

13. For this famous dictum cf. Kann (2001, especially 25-36, 51-61). Recent research has shown that Whitehead's footnote-thesis is obviously obliged to a quite similar historiographic perspective in R.W. Emerson; cf. Dennis Sölch's chapter in this volume.