

IMPETUS THEORY AND THE HERMENEUTICS OF SCIENCE IN SIMPLICIUS AND PHILOPONUS*

I

It is possible for historians of philosophy to evaluate philosophical texts of the past in a number of different ways. The approach taken depends largely on the kind of philosophy the modern historian or scholar is himself sympathetic to. For example, if he or she happens to be a Kantian, studying the history of philosophy will be regarded as retracing the process of progressive self-recognition of human reason. An objective idealist, on the other hand, tends to construe the sequence of philosophical systems in history as a dialectical unfolding and self-recognition of absolute spirit; logical positivists might reconstruct the history of philosophy as a succession of – at least formally valid – arguments, pragmatists as an ongoing conversation perhaps, and so on.

In the case of the exact sciences, which seem to have progressed far more successfully than philosophy, historians are typically tempted to interpret the development of a science teleologically, retracing, so to speak, from the summit of contemporary scientific achievement the necessary steps that had to be taken in order to get there.

However, there are no doubt historians of either philosophy or science that have no particular ax to grind, or at least not obviously so; historians of that sort may regard the philosophical past as a worthwhile object of research as such, not as an ancilla to systematic philosophy. Although historians of this kind are usually acutely aware of the fact that they will never achieve an entirely accurate account of the past – wie es wirklich gewesen – and although they may well concede that their account never ceases to be a subjective *story*, there still remains a good deal to be said in support of the genuine attempt to become an increasingly competent advocate of the ancient texts. The ideal goal would be to fully understand and describe – today – what a particular work or author was arguing for then, at a particular time in the past. The main

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activity consists in the attempt to delineate a text's content with doxographical accuracy by identifying precisely the tenets proposed, the assumptions that they rest on and the arguments that support them. One might call this historical- doxographical reconstruction just outlined, without any derogatory connotation whatsoever, "doxographical positivism". Doxographical positivism is a position which accounts, as far as possible, for the *context of validity* (or justification) of an ancient scientific or philosophical theory.

Having done that, the historian may take the additional step of inquiring into the *genesis* of a philosophical or scientific idea, its historical origins and roots; this may in fact involve having to tell a quite different story. A number of possible paths that can be pursued spring to mind. For example, the ancient author may seem to be heavily dependent on the influential views of his predecessors so that the text in question is best understood as a specimen of a particular literary genre with a closely knit tradition of intertextuality. Or it may turn out that the theory, although stated in the abstract, has in fact emerged, one way or the other, from concrete sociological, economical or biographical circumstances. Religious beliefs or myths that are subscribed to may be as relevant as hidden motives and interests that function as unacknowledged preconditions of the ideas and theories proposed. Thus, elucidating issues of this kind the historian may succeed in casting light on the *origin* or *discovery* of a text and its content.

It is clear that the business of fully researching the doxography including the context of validity, I mean the theory itself as well as the reasons that were or can be given for it, is quite distinct from the business of researching the context of origin, I mean the causes and conditions that made the theory historically possible and shaped it. Whenever an ancient author justifies a theory by adducing the reasons that support it, it would be quite dogmatic to assume that this necessarily also represents the route by which he discovered it or was persuaded to adopt it. Moreover, I think it is valid to say that a doxographical account dealing with the context of validity will stay within the framework constituted by the text itself, whereas research into the context of origin of a theory may, if that promises to be fruitful, step well outside that framework, for example by inquiring into the author's biography, the social and economic background of the time, or any other supposedly relevant circumstance.

It seems also clear that the distinction just drawn between the context of validity and the context of origin does not necessarily overlap with Kuhn's distinction between an internal and an external historiography of a scientific or philosophical system. Just as there are no grounds for believing that a philosopher's *reasons* are also the *causes* which induced him to hold the view,

there are no grounds for believing that his holding the view is always caused by motives wholly alien and external to the scientific-philosophical context. On the contrary, one should assume that causes and reasons have indeed something to do with each other. It seems to be desirable, therefore, that the historian is able to give an account which plausibly links the causes that conditioned the appearance of a theory and the reasons that were subsequently proposed to justify it.

II

These general remarks show that there are, broadly speaking, two main lines of inquiry a historian of philosophy may pursue; the first one is absolutely necessary and consists in the drawing of a clear picture of the doxography and viability of a philosophical view; the second task, which ideally presupposes that the first task has been carried out well, consists in reconstructing the genesis of a theory, its causes, and the conditions under which it was possible. This second line of inquiry would undoubtedly contribute to our understanding of a past philosophical position. This is not to say that it should always be doing so, but rather that there are some cases in which it would obviously be doing so. A phenomenon such as John Philoponus in the sixth century A. D. is precisely one such case. Why? Because he is so odd, because – unlike all the other philosophers of his day – he alone does not follow the general trend of Neoplatonic-Aristotelian school philosophy so characteristic of Late Antiquity. Philoponus' oddity comes out best when he is contrasted with the undisputed paragon of Neoplatonic orthodoxy, the Athenian Neoplatonist Simplicius.

Simplicius and Philoponus are almost exact contemporaries, both flourishing in the eastern part of the Roman empire during the first half of the sixth century; they were educated at the same school in Alexandria, went through the same Neoplatonic curriculum of Aristotelian treatises and Platonic dialogues, and worked on the exegesis of the same Aristotelian texts. One should expect that so many similarities in the antecedents would lead to similarities in the consequences, that is to say to similar intellectual developments within the framework of a school tradition that strove to be fairly homogeneous; witness for example the commentaries of Ammonius, Asclepius, Olympiodorus, David and Elias. Philoponus, in contrast, steps out of line and decides to repudiate the powerful consensus of the scientific community he grew up in. This is all the more impressive because in so doing he initiated, as we now see it, the eventual demise of a natural philosophy which modeled itself on Aristotle's *Physics*. In addition, unlike the giants of

Renaissance-philosophy, Philoponus did not bring to bear new discoveries or empirical observations; his innovative criticism seems to be driven by something entirely different. If one ever needed a convincing example for the claim once made by Herbert Butterfield that change is brought about in the first instance by transpositions that are taking place inside the minds of the scientists themselves,¹ then John Philoponus, I think, is one of the names one should mention.

Ever since the critical edition of the *Commentaria in Aristotelem Graeca* by the Prussian Academy of Sciences some hundred years ago and the almost simultaneous appearance of two other major works by Philoponus in the Teubner series, an impressive number of scholars have concerned themselves with the doctrinal differences between John Philoponus and the orthodox Neoplatonists of his time.² As the subject-matter is fairly intricate and important evidence often handed down to us only in fragments, the majority of studies in this field has largely been doxographical. Doxography can describe Philoponus' revolutionary ideas, but it will never be able to fully explain their origin. Only very rarely one encounters interpretations which attempt to come to offer an explanation of the origin and genesis of his ideas.

In what follows I propose to muster first three recent incursions into this field in order to give an impression of the current state of affairs. The accounts are arranged not chronologically but in the order of an increasing complexity.

According to the German historian of science Fritz Krafft (in an article published in 1988), the answer we are looking for lies in the plain fact that John Philoponus was a Christian.³ According to Krafft, each individual possesses his personal range of experience which grounds the fundamental beliefs held (54). A scientific community is constituted by an overlap and assent to the same beliefs by a group of scientists. Innovations in science and philosophy are, according to Krafft, the consequence of an extension of the range of experience, be it in virtue of new empirical data that have become available or in virtue of a new perspective the individual scientist adopts. In Late Antiquity, Krafft continues (58), Judao-Christian religious convictions were introduced into the framework of pagan science and philosophy.

¹ Herbert Butterfield, *The Origins of Modern Science* (New York 1957, ²1965) 13.

² A survey of Philoponus's work and achievement, with an extensive bibliography of his works, appeared in the new *Routledge Encyclopedia of Philosophy*, s. v. 'Philoponus'. Cf. also Clemens Scholten's monograph *Antike Naturphilosophie und christliche Kosmologie* (Berlin 1996).

³ Fritz Krafft, "Aristoteles aus christlicher Sicht. Umformungen aristotelischer Bewegungslehren durch Johannes Philoponus", in: J.-F. Bergier (Hg.), *Zwischen Wahn, Glaube und Wissenschaft* (Zürich 1988) 51–85.

Philoponus, being both a Christian and a trained philosopher, possessed, in virtue of this circumstance, an extended range of experience which enabled him to transform the natural philosophy of his day. Krafft calls it ‘Christian Aristotelianism’ (62).

Krafft makes a distinctive biographical feature of Philoponus, viz. the fact he was a Christian, explanatory for his scientific views. At first sight, the idea seems to be persuasive, but this impression vanishes as soon as one realizes that in the history of philosophy there have been other Christian philosophers equally well acquainted with Aristotle who reacted in entirely different ways, think only of Boethius or Thomas Aquinas. Furthermore, Philoponus is always praised, and rightly so, for having kept his religious beliefs well out of his philosophical train of thought. Philoponus, I take it, knew what he was doing, for there is absolutely nothing to bridge the gap between the spiritual content of the scripture and, say, impetus theory or any other worked out cosmological idea (space, matter, time, the celestial bodies). Krafft’s explanation simply glosses over this gap and therefore seems to be guilty of implausible simplification.

Simplification, certainly, is not a criticism one would level at the other two accounts. First, I turn to the Belgian scholar Koenraad Verrycken who published a substantial article entitled “The development of Philoponus’ thought and its chronology”.⁴ This article addresses first the doctrinal issues (“What does the author say?”, 236) and then proposes to “try to ‘project’ the results of the philosophical analysis onto the levels of biography and psychology” (*ibid.*). That is to say, Verrycken tries to make precisely the transition we are concerned with, from mere doxography to the question of a theory’s origin.

Verrycken’s argument is particularly noteworthy because it involves and to some degree relies on his view that there are two quite distinct and incompatible philosophies within Philoponus’ works. Verrycken’s account runs like this: Irreconcilable doctrinal differences within Philoponus’ Physics-commentary (in particular on the issue of the eternity of the world) suggest that the commentary was first composed at an early stage in Philoponus’ career (viz. in 517) and later revised when Philoponus had worked out his critique of Aristotelian-Neoplatonic orthodoxy (244 ff.). Moreover, Verrycken argues that the works attributed to Philoponus fall into two clearly distinct classes, to which he attaches the labels Philoponus 1 and Philoponus 2. The early commentaries on the *Categories*, on *Generation* and

⁴ “The development of Philoponus’ thought and its chronology”, in R. R. K. Sorabji (ed.), *Aristotle Transformed* (London 1990) 233–274.

Corruption, on the *Prior Analytics*, on the *De anima* as well as the first version of the *Physics* commentary, all this is Philoponus 1; the later, critical works, the *contra Proclum*, *contra Aristotelem*, the *Meteorology* commentary and the revised version of the *Physics*-commentary he calls Philoponus 2 (254 ff.). Although Verrycken recognizes a doctrinal development within the second group of treatises, he categorically denies the existence of a gradual transition from Philoponus 1 to Philoponus 2. In consequence, for him the question arises how this dramatic volte-face, this intellectual rupture, as he calls it, which gave rise to the innovations of Philoponus 2 can be explained.

His answer rests upon an anecdote of unknown origin which was current among Arabic philosophers and can be extracted from as-Sijistani and al-Farabi (258 ff.). According to one version of this anecdote, Philoponus “undertook his refutations of both pagan philosophers [viz. Proclus and Aristotle]... ‘in order to pacify the wrath of his fellow Christians, aroused by his preoccupation with the exegesis of Aristotle’s works, and to protect himself against their threats of diverse forms of duress’. According to another version he received money from the Christians for writing the treatises.” (258 f.) The gist of these snide pieces of anti-Christian polemic is that the orthodox commentator on Aristotle is the genuine Philoponus, whereas the critic of Aristotle is just a paid or intimidated impostor.

Now curiously, Verrycken at first finds considerable plausibility in the suggestion that the Christian authorities forced Philoponus to turn against Neoplatonism. He goes so far as to suggest several forms of intimidation: “serious threats, moral pressure, promise of remuneration etc.” and he states that Philoponus was “cooperative” (260). However, since the insinuation has to be avoided that Philoponus 2, our hero of western science, were merely a fake, Verrycken proceeds to tacitly turn the Arabic anecdote upside down, suggesting that Philoponus in fact *wanted* to set himself up as a Christian philosopher in Alexandria. In order to build up credibility among his Christian peers, Philoponus must have explicitly justified this move in some part of his work, now unfortunately lost,⁵ where, according to Verrycken, he expressed his feelings of guilt about his Neoplatonic past and excused himself with having been threatened – this time not by Christian but by pagan fanatics (262).

In this story, which is entirely built on anecdote and conjecture, Philoponus appears still as the scientific genius, but he is at the same time half victim, half opportunist. What has been accomplished with regard to

⁵ Verrycken conjectures that this happened in the lost Introduction to the polemic against Proclus (261).

explaining the emergence of Philoponus' philosophy? Evidently this account pushes aside the quest for a philosophical elucidation of the origin of Philoponus' novel theories and replaces it with biographical anecdote, which, of course, explains next to nothing: Philoponus changed his views because he was both forced to change them and did so voluntarily. Surely, this cannot be the answer we were looking for.

So let us turn to a third account offered by the German scholar Michael Wolff, whose pioneering work on Philoponus has been extremely influential. It needs to be said that Wolff confines his researches to Philoponus' celebrated theory of the impetus, and his painstaking efforts at casting light on the history of this particular scientific theory are admirable indeed.⁶ Let me begin with a brief outline of what impetus theory is: it is perhaps best understood when contrasted with Aristotle's dynamical principles. In the *Physics*, Aristotle holds that whenever there is motion there must be an active mover which imparts the *motion* onto the moved object. Mover and moved are continually in contact, so that the motion of both is in fact one single phenomenon. According to Philoponus, on the other hand the mover imparts an *immaterial force*, an impetus, as it was called in Renaissance philosophy, onto the moved body, which continues its motion precisely in virtue of this force now residing in it and gradually exhausting itself.

According to Wolff's view of the matter, the origin of this theory is to be found in a change of the social and economic status of slaves which took place in Late Antiquity. Wolff writes: "Impetus theory is not at all the result of exclusively philosophical and cosmological speculation. In fact, it belongs to a specific ideology of emancipation in the Justinian era which demanded the abolition of the difference between person and human being as a difference of status. This demand, coloured by monophysite ideas on the equality of all men with god..., was directed against the difference of status between the simple producer [i. e. the slave] and the market subject competent to negotiate an agreement [i. e. the free citizen]" (133; my translation).

This claim and its exact relation to impetus theory obviously requires some explaining. First of all, the argument rests on the distinction between two very different ideas which together constitute impetus theory. The first idea is that whenever an agent generates a motion, a *force* is being parted with. This idea, Wolff says, springs from the common experience of physical labour being exhausting. The other component of the theory is the idea that a *force* is transmitted onto the moved object and subsequently resides in it for the rest of the motion. In contrast to the first idea, this tenet is, according

⁶ *Geschichte der Impetustheorie* (Frankfurt 1978) 67–160.

to Wolff, quite fantastic and can not at all be derived from the context of common experience (134). According to him, it is exclusively conditioned by its economical counterpart, viz. the notion that the value and price of a product is dependent upon the amount of work needed to produce it.

In a final step Wolff argues that once someone has become aware of these two pre-theoretical ingredients, all that is needed is “just some reflection, generalization and theoretical foundation in order to turn these ingredients into impetus theory” (138).

To my mind, a fair number of minor objections could be raised in order to erode the basis of Wolff’s argument; generally speaking, one gets the recurrent impression that he is over interpreting isolated and carefully preselected passages in the texts. However, if one is prepared to follow him so far, one may indeed have to concede that there are some interesting and striking similarities, certain structures or patterns which recur on such diverse levels as economics, physics, and theology. A more serious weakness, which Wolff himself acknowledges, is that he cannot, after all, point to a chain of arguments showing exactly how the *physical* impetus theory emerged from the *economical* circumstances and concerns of the time. As long as this is so, it remains contentious to believe that the abstract and theoretical must needs be derivative and the concrete social and economical concerns necessarily prior – unless, of course, one is already firmly committed to historical-economical determinism.

In view of these two weaknesses, Wolff’s interpretation is dissatisfactory. But worse than that, the theory is not even tenable if its Marxist assumptions are being granted. One can easily show – although this shall not be done here because it would lead us to far afield – that the monophysite views on the equality of all men with god, the sporadic remarks on economics and the rejection of angelic slave labourers moving the celestial bodies, all this, which is so crucial to Wolff’s argument, begins to appear in Philoponus’ theological works that belong to the last 20 years of his life. Impetus theory, however, was fully worked out long before that in the *Physics* commentary published some 30–40 years earlier. If one accepts this wholly uncontroversial chronology as well as Wolff’s materialistic reconstruction of the theory’s genesis, one is required to hold that Philoponus worked out his impetus theory and its philosophical justification long before he articulated social and economical concerns which allegedly caused him to hold the theory in the first place. Clearly, an order of genesis running contrary to the order of time is wholly untenable. Rather than casting light on the issue, this account seems to have obscured it.

Just as a matter of fairness I have to concede that in a more recent

publication Michael Wolff seems to have distanced himself from his own view published in the late seventies. He now⁷ gives an even more complicated although perhaps less objectionable account which locates the roots of Philoponus' physical ideas in moral philosophy or ethics. "Philoponus' impetus theory originates from a certain idea of spontaneity, i. e. from convictions concerning the freedom of action and will" (118). He finds the evidence he needs for this claim in the *De anima* commentary, which is no doubt an early work, so early in fact, that it probably contains more ideas of Philoponus' teacher Ammonius than of Philoponus himself.

III

The examples discussed show, I take it, that exploring the context of origin of a theory can be a perilous undertaking. Nevertheless, in what follows I should like to propose and to outline the view that important elements for a more satisfactory account of a theory's context of origin can be gathered from studying an author's scientific method. As is well known, in late antiquity as much as in the middle ages, to be a scientist meant to be a competent commentator. Scientific theories stood and fell with the solidity of their foundation in literary exegesis, and philosophers of nature put their intellectual energy into the interpretation of venerable textbooks, mainly Plato and Aristotle. Taking this fact into account, what has to be studied are the hermeneutic methods and presuppositions of the authors in question.

Hence, in what follows I am going to look more closely at Philoponus' scientific method insofar as it differs from the method current in orthodox Neoplatonism; here Simplicius will have to serve as an example. In my account, I am drawing attention to three fundamental concepts which seem to me to lie at the heart of the Neoplatonic hermeneutics of the time; these three concepts are harmony, authority, and soteriology.

Anyone reading a commentary by Simplicius is struck by the immense quantity of learning that constantly flows into his exegesis. Quite clearly, an enormous collection of philosophical and literary texts filled his library. However, what is even more striking than that is Simplicius' way of dealing with this bulk of Greek philosophy, for he is arguing strongly that the views of an extremely broad canon of philosophers do in fact conform. Simplicius' canon is held together by the postulate that there necessarily exists *harmony* among all serious philosophers, and that it is the duty of a commentator to

⁷ "Philoponus and the Rise of Preclassical Dynamics", in R. R. K. Sorabji (ed.), *Philoponus and the Rejection of Aristotelian Science* (London 1987) 84-120.

display this harmony (*In cat.* 7, 23–32). In this respect Simplicius accepts and even broadens a stipulation that can be found in Porphyry, Iamblichus, Plutarch of Athens, and Hierocles of Alexandria.⁸

Now, every student of philosophy knows for a fact that as a rule philosophers do not all say the same. How does Simplicius deal with this obvious difficulty? His answer is that whenever there seems to be a disagreement, it can be shown to exist on a superficial level only; beneath the surface the proper commentator will always find the consensus of truth, which has been expounded, above all, by Plato, the expounder of truth par excellence, ὁ ἐξηγητῆς τῆς ἀληθείας (*In cael.* 131. 1). In this way even Empedocles turns out to be a proto-Neoplatonist, and the Aristotelian critique of Presocratic philosophy is brushed aside by Simplicius like this, *In phys.* 36. 25–31: “Since we shall hear of Aristotle that he is rejecting the opinions of the earlier philosophers, and since before Aristotle Plato has clearly done the same, and before these two Parmenides and Xenophanes, one has to understand that they concerned themselves with things superficially heard – and they rejected only the apparently absurd in their arguments; this is because the ancient <philosophers> used to reveal their tenets in enigmatic form (ἀινιγματωδῶς)”.

Thus, only after the writings of the venerable predecessors have been divested of their enigmatic cloak, one in fact discovers the hidden Neoplatonic truth underneath. It is a matter of curiosity, merely, that even Plato and Aristotle deceived themselves and failed to recognize this harmony. The disputes of these two giants is explained away by suggesting that they were really getting at the same thing, but in different ways: the one often argued from sense perception, whereas the other relied on intellectual theory (*In phys.* 1249, 13–17).

This hermeneutic presupposition of harmony pervades Simplicius' commentary; nevertheless, he does not go so far as to suggest that all philosophers should in fact be placed on the same level. On the contrary, in Simplicius one encounters numerous value judgments as well as an array of epithets which indicate that to him there exists some kind of hierarchy of *authority*. First on his list is the triad of Plato, the most divine philosopher of all, the divine Aristotle, and the divine Iamblichus; on the next level down

⁸ Cf. R. R. K. Sorabji, “The Ancient Commentators on Aristotle”, in id. (ed.), *Philoponus and the Rejection of Aristotelian Science* (London 1987) 3–5. The roots of this hermeneutical principle can be traced back to Posidonius and Antiochus of Ascalon (Cic. *De fin.* 5. 3). Ammonius Saccas subscribed to it too (cf. Hierocles, *On Providence*; Photius, *Bibl.* 127, 461), but Plotinus and Syrianus take a different view.

we get all those philosophers who deserve an epithet in the superlative: Porphyry, Damascius, Syrianus, and of course Alexander of Aphrodisias. Apparently on a third level we encounter the great Plotinus, the astonishing Ptolemy, the persuasive Themistius, and Proclus, simply, 'the philosopher'. A fair number of ancient thinkers, for example the Presocratics, are not thus honoured with an epithet, even though Simplicius generally approves of them. The materialism of the Stoics is of course eyed with suspicion, their doctrines are usually ἄστορον. Finally, at the far end of the scale, as far removed from Plato as matter is removed from the One, the insolent Christians come into sight, feckless atheists, who understand nothing about philosophy – not even in their wildest dreams. The most obnoxious of them all is – Simplicius leaves no doubt about that – a certain Alexandrian Grammarian (i. e. John Philoponus) who dared to publish polemical treatises against Proclus and Aristotle. Whenever Simplicius deals with Philoponus, there is a dramatic change of tone, full of irony and bitter sarcasm. Why is that?

The answer has something to do with the moral aspect of Greek philosophy, or to be more precise, with the function of Neoplatonism as a means of *salvation*. To be sure, Simplicius' commentaries are clearly a lasting intellectual achievement, but Simplicius himself wanted them to be more than that. As Phillipe Hoffmann has shown, his real intention was a spiritual or religious one.⁹ The commentaries on the *Encheiridion*, on the *Categories*, on the *De caelo* – all these works by Simplicius close with a prayer to the god. To him, writing a philosophical commentary is a way of life which helps the soul return to its proper abode. Studying the venerated texts leads to the ability to partake of knowledge – which leads to philosophy which in turn advances the ὁμοίωσις πρὸς τὸ θεῖον, the assimilation to the godhead, as Simplicius and many other Neoplatonists put it, borrowing a Platonic phrase (*In cael.* 483, 18 f.). The common view that philosophy prepares the soul for its mystical destiny stems, of course, from the *Phaedo* (82–84) and appears fully developed in Iamblichus, Simplicius, Damascius, Olympiodorus and even in the commentaries attributed to David and Elias.¹⁰

Simplicius makes it perfectly clear that according to him the one and only route towards a liberation of the human soul – learning and philosophy – is being obliterated by the ignorant Christians and their peculiar soteriology,

⁹ "Simplicius' Polemics", in R. R. K. Sorabji (ed.), *Philoponus and the Rejection of Aristotelian Science* (London 1987) 57–83.

¹⁰ On the pagan character of the writings attributed to David and Elias see C. Wildberg, "Three Neoplatonic Introductions to Philosophy: Ammonius, David, and Elias", *Hermathena* 149 (1991) 33–51.

for the Christians believe not in the ascent of man, but in the descent of god. This is nothing less than a blasphemous negation of divine superiority (*In phys.* 29. 3). Simplicius therefore writes his commentaries with the explicit interest to open the eyes of educated contemporaries, to show them the absurdity of the Christian faith, and to confront them with the truth found in the consensus of the greatest philosophers (*In phys.* 28. 32–29. 5). It is partly this anti-Christian zeal that is responsible for the fact that Simplicius quotes so much Presocratic material. The ideas of the Presocratics, which Simplicius takes largely to anticipate and conform to Neoplatonism, are grist to his mills. He becomes embittered when he has to deal with Philoponus, because he can see that the Alexandrian Grammarian attempts to further the Christian cause by an unprecedented attack on the very foundations of Aristotelian-Platonic orthodoxy. What infuriates Simplicius is not some kind of unacknowledged personal enmity, but rather the fact that Philoponus' informed critique cannot be brushed aside as easily as he may have liked. Philoponus clearly does not pull the cheap tricks of an ordinary Christian apologist, but employs philosophical argument with a view to refuting the pagan opponents on the basis of their own assumptions.

In comparison with old style Neoplatonism, no doubt some transformation – to pick up Herbert Butterfield's phrase –, has taken place in Philoponus' mind. It is this transformation which has to be explained first and foremost. Following Simplicius' hints we may focus one more time on the Christian version of salvation. At the heart of the new doctrine, to which in particular the Alexandrian monophysites subscribed, there lay the conviction that Jesus Christ was not simply a tremendously inspired human being (Antiochene dyophysites); rather, according to the monophysites his life and death amounted to a cosmic event in which the pre-existent Logos assumed the form of a man and through his death saved mankind once and for all. On their view, salvation does not depend on piety or righteousness or on any spiritual quality – let alone philosophy. It has *already* been accomplished: the Logos has become man so that we may become god, as Athanasius put it succinctly.¹¹

Philoponus was educated in the Neoplatonic tradition; but he was also a monophysite Christian. Although it would be quite wrong to state that any one of his philosophical or scientific innovations has been arrived at by direct inference from theological premises, it does seem valid to say that the detachment of soteriology from philosophy, which his Christian conviction entailed, allowed him to assume a different relationship towards the pagan

¹¹ Περὶ ἐνανθρωπήσεως τοῦ λόγου, § 21, 3.

philosophical heritage. His methodological starting point could be at once philosophical and critical, a stance that was not viable for Simplicius because he had, by his own admission, so much more to lose – ultimately his very assimilation to the godhead and the soul's return. Thus, although it is largely irrelevant for any particular doctrine, the Christian concept of salvation may well have been an important point of departure for Philoponus' intellectual development, as it provided the merely formal condition for the possibility of criticism.

Now, this important mental shift with respect to salvation had consequences for Philoponus' scientific method. It is possible to show in the texts that in Philoponus the two requirements of authority and harmony gradually lose their function as heuristic principles – as they must once they are no longer backed up by salvation. For example, the early *De anima* commentary still endorses the Neoplatonist function of philosophy, and there is indeed hardly any criticism to be found in this commentary. Here, as in other early works, Proclus, the sharp critic of Christian cosmogony and the teacher of Ammonius, is passed over in silence. But in 529, Philoponus publishes a meticulous reply to Proclus, a reply in which Proclus' arguments in favour of the world's eternal existence are systematically dismantled. The treatise is more than just an impressive invective *ad hominem*; in spirit, it is the exact opposite of a commentary. Above all it is a signal act of emancipation from the weight of philosophical authority. Just like Aristotle once claimed in the *Nicomachean Ethics* (1096 a 11–17), so claims Philoponus now to value truth higher than the reputation of philosophers.¹² He openly admits that in his view not only Proclus erred, but also Plato himself – on innumerable counts (330, 24 f.).¹³ A detailed criticism of Aristotle's cosmology is announced and published a few years later, entitled *On the Eternity of the World against Aristotle*. The tenor of both these works reveals the confidence of a mind who no longer accepts blind deference to authority. "One must not, as he puts it in the *contra Aristotelem*, accept undemonstrated assertions as if one were an irrational creature."¹⁴

In a similar vein, the idea of doctrinal unison is being dropped in its entirety. It is no longer of any significance, that philosophers should harmonize with each other; what matters is the truth wherever it may be found.

¹² Aet. 30, 25 ff. Philoponus may have learned this from Ammonius, cf. Ammonius *In cat.* 8, 15–18, or indeed from Aristotle himself.

¹³ Philoponus goes out of his way to repudiate, for example, Plato's utopic idea of treating women and children as common, even though this is not at all relevant to Proclus' argument.

¹⁴ Fr. 124 = Simpl. *In phys.* 1165, 2 f.

How far Philoponus has been able to detach himself from the chorus of orthodoxy is evident in one succinct rhetorical question: Who does not know that the best philosophers disagreed over the problem of ideas? (*Aet.* 26. 24–26) Aristotle clearly criticizes Plato's *doctrines*, not just the occasional odd and unhappy turn of phrase, and those who are embarrassed by philosophical disagreement should, according to Philoponus, stop repeating the myth of philosophic harmony (29. 2–8). Far from employing the term *harmonia*, he now characterizes the relationship between individual philosophers with words like μάχη and διαφωνία.

Once philosophic harmony has been deposed, the sharpened eye can easily detect discordant notes and contradictions within the work of a single author as well. It is this strategy that Philoponus frequently and quite successfully employs in his refutation of Aristotle's cosmology. As compared to Simplicius, Philoponus can muster a text in an entirely different manner: he can reject where Simplicius was compelled to accept; he can leave the text aside and compare its tenets with observation; and he can embrace ideas that have no firm roots in the Neoplatonic tradition whatsoever.

It is fascinating to see how the new approach gradually transforms the character of what is supposed to be a proper commentary written for classroom instruction. In the *Meteorology* commentary, his last, Philoponus presents his lectures with an air of aloofness and, at times, deliberate vagueness. In several places, especially when he has to comment on the nature and movement of the heavens, Philoponus breaks off and refers the student to previously published work: what Philoponus *really* has to say about the text seems no longer appropriate for a seminar.¹⁵ After having successfully shaken off the weight of Aristotle's or anyone else's authority, Philoponus is far from demonstrating the harmony among philosophers; he chooses to contribute to their dissent. The commentator has turned into a critic.

IV

This rough outline of the two philosophers' hermeneutics of science along the lines of such concepts as soteriology, harmony, and authority suffices to emphasize the fact that the deep trench separating one from the other was not just a doctrinal one. Philoponus, with his clear rejection of these concepts, should appear to us as a more acceptable thinker, a freer

¹⁵ See C. Wildberg, "Prolegomena to the study of Philoponus' contra Aristotelem", in R. R. K. Sorabji (ed.), *Philoponus and the Rejection of Aristotelian Science* (London 1987) 197–209.

spirit, critical and enlightened perhaps, just as his doctrines, though unsuccessful at the time, were revived in and influenced much later scientific developments. Simplicius, on the other hand, firmly wedded to the presupposition of harmony, authority, and salvation through philosophy, should appear to be considerably more outlandish. However, more often than not, the sympathies of historians of philosophy are distributed just the other way round. Should one suspect therefore that faint echoes of Simplicius' methodological presuppositions are still very much en vogue today? Perhaps so.

Instead of pursuing this sensitive question, I would like to pick up the problem set out at the beginning, that is to say: In which sense does this analysis of the two philosopher's hermeneutics contribute to our understanding of the emergence of their doctrines? Now in the case of Simplicius, the answer seems to be straightforward enough; one can see fairly clearly how someone educated in that tradition and subscribing to the hermeneutic presuppositions of salvation, authority and harmony should end up promoting the views of a very traditional and conservative philosopher indeed. Simplicius is subtle, lucid and informative, but rarely original. In the case of Philoponus, on the other hand, there is a problem. As I have pointed out, Philoponus does *not* set his hopes on salvation through philosophy, he does *not* accept authority without critical reflection, and he does *not* believe in the harmony of the philosophers. Thus, my characterization of his methodology has been purely negative, and the problem with negative premises is that nothing definite follows; you may infer whatever you like. Hence, Philoponus' negative methodology does not seem to connect to, let alone entail, any specific and identifiable philosophical doctrine. Does that mean that I have arrived at exactly the same point of irrelevance where I thought I left Krafft, Verrycken and Wolff behind? I think not. All I have to do is to show that the emergence of at least *one* new Philoponian theory can be adequately understood as the result of mere critical reflection on the subject matter in hand. Thus, the problem is an empirical one and would require a detailed look at the discussions in the commentaries and polemical treatises. This cannot be done in the present context; it suffices anyhow to point out that Wolff himself has shown that Philoponus' theory of matter can be so understood;¹⁶ others have done the same with regard to his theory of space,¹⁷

¹⁶ *Fallgesetz und Massebegriff* (Berlin - New York 1971).

¹⁷ See D. Sedley, "Philoponus' Conception of Space", in R. R. K. Sorabji (ed.), *Philoponus and the Rejection of Aristotelian Science* (London 1987) 140-153.

his disposal of the fifth element.¹⁸ So I think it is in fact uncontentious to say that what I need to show has *already* been shown for some of Philoponus' original theories – but can it be shown for his most crucial innovation, impetus theory? Wolff had argued that it could not because, although the first tenet, that forces are being parted with, was empirical, the other tenet, that an immaterial force is being transmitted, does not, in his view, properly belong to the context of natural science at all.

Now impetus theory appears in Philoponus for the first time in a passage which critically discusses Aristotle's antiperistasis theory. Aristotle himself was less than satisfied with this idea, but he had to endorse it because it followed directly from the two fundamental premises of his dynamics, namely 1) whenever there is motion there is a mover, and 2) the mover is a substance. So if a javelin is thrown across the field of a gymnasium, an Aristotelian would hold that it is in fact the medium air, a substance, which keeps the javelin moving along. Philoponus tells us right at the beginning of his discussion (*In phys.* 639. 3–642. 26; cf. 457, 18–20) that antiperistasis theory is completely absurd and can be ridiculed by a simple thought experiment: imagine a powerful wind-machine placed behind a javelin; surely it would not be able to propel the javelin the distance of even one foot. Having criticized the theory, Philoponus sets out to look for an alternative explanation. He knew from Aristotle's *Organon* that if the conclusion of a valid argument is false, at least one of its premises must be false. Newton's classical dynamical theory in fact disposes of both premises at once; Philoponus rejects merely the second premise that the mover must be a substance. He proposes that it is in fact not the substance air which moves the javelin along, but an incorporeal motive ἐνέργεια, as he calls it, which resides in the moved object. One does not have to be terribly acute to guess that it is actually the same ἐνέργεια that the mover has parted with.

But here comes the important point: in support of his claim that an incorporeal ἐνέργεια is involved Philoponus refers the reader to an earlier idea put to the fore in the *De anima* commentary – an idea not concerned with economics, psychology or religion, but indeed with physics, viz. the problem of the nature of light (in *De anima* 330 ff.). Aristotle's theory of light and vision in the *De anima* is notoriously obscure; on his account it is difficult to explain how, through the influence of light, colouration and heat come to be in the medium air. Philoponus proposes the solution that light is not the "actuality of the transparent", as Aristotle defined it, but rather an incorporeal

¹⁸ See C. Wildberg, *John Philoponus' Criticism of Aristotle's Theory of Aether*, Peripatoi 16 (Berlin – New York 1986).

motive energy (ἐνέργεια). It is here that the idea of an incorporeal ἐνέργεια appears for the first time in Philoponus. It is important to recognize that he regarded his criticism as part of a helpful exegesis of Aristotle, and in the *De anima* commentary his modification of Aristotle's theory therefore seems perfectly innocuous. However, once the idea of an incorporeal force is put to use for an explanation of projectile motion, the whole of Aristotle's dynamical theory begins to crumble.¹⁹

This minimalist account of the origin of impetus theory pivots around the idea of an extremely fruitful methodology employed by Philoponus: one could call it "constructive criticism". Criticism properly carried out can and will be constructive if the critic accepts the moral obligation to propose an alternative and more viable solution. Philoponus was such a constructive critic; that, at any rate, is manifest in his entire work.

Let me come to a conclusion: In the first part of this paper I claimed that historians of science do and should inquire into the context of origin of past philosophical theories, not only into the context of the validity (I). Three different attempts to explain the innovative character of John Philoponus' philosophy were discussed; all were flawed by the fact that they sought an explanation by means of external historiography: in religion, biography and economic circumstances (II). In the main part of this paper attention was

¹⁹ Cf. in *De anima* 329, 35–37: ὡσπερ οὖν ἐπὶ τούτων, οὕτω καὶ ἐπὶ τοῦ φωτός λέγομεν ἐνέργειάν τινα ἀσώματον ἐκπέμπεσθαι ἐκ τοῦ φωτιστικοῦ σώματος εἰς τὰ διαφανῆ πεφυκότα ταύτην ὑποδέχεσθαι

and esp. 332, 6 ff.: πῶς γὰρ ἢ τοῦ μὴ θερμοῦ ἐνέργεια θερμανεῖ; πῶς δὲ ὑπὸ τοῦ ἀσωμάτου παράτριψις ἂν γένοιτο; λέγω οὖν πρὸς ταῦτα ὅτι, ὡσπερ ὑπὸ τῆς ψυχῆς θερμῆς οὐκ οὐσης ζωτικῆ τις ἐνέργεια ἐγγίνεται ἐν τῷ σώματι, ἥτις τὸ ἔμφυτον θερμὸν ἀνακινούσα ζωογονεῖ τὸ ζῶον, ἐπειδὴν δ' ἀποστῆ ἡ ψυχὴ, εὐθὺς καὶ τὸ ἔμφυτον ἀποσβέννυται θερμόν, οὕτω καὶ ἐκ τοῦ ἡλίου ζωτικὴν τινα ἐνέργειάν φημι ἐγγίνεσθαι διὰ τοῦ φωτός ἐν ἀέρι, καὶ ταύτην κινούσαν τὸ ἔμφυτον τοῦ ἀέρος θερμὸν ἐκθερμαίνειν αὐτόν. καὶ ὡσπερ ἡ θυμοειδῆς τῆς ψυχῆς δύναμις αὐτῆ θερμῆ μὴ οὐσα, ἐπειδὴν κινήθῃ, ἐκθερμαίνει τὸ περικάρδιον αἷμα, ὁμοίως δὲ καὶ ἡ φροντίς θερμαίνει ἀσώματος οὐσα ψυχῆς ἐνέργεια, οὕτω καὶ τὸν ἥλιον οὐδὲν ἀπεικὸς μὴ ὄντα θερμὸν τῆ ζωτικῆ αὐτοῦ ἐνέργεια, ἥτις ἐστὶ τὸ φῶς, κινούντα τὴν ἐν τῷ ἀέρι θερμότητα ἐκθερμαίνειν αὐτόν with *In phys.* 642, 9 ff.: καὶ οὐ δῆπου ἀπωρότερος ἔσται οὗτος ὁ λόγος ὑπὸ τῆς ἐναργείας μαρτυρούμενος (λέγω δὲ ὅτι ἐνέργειά τις ἀσώματος κινήτικῆ ἐνδίδεται ὑπὸ τοῦ ῥιπτοῦντος τῷ ῥιπτομένῳ, ὅθεν δεῖ τὸν ῥιπτοῦντα ἄπτεσθαι τοῦ ῥιπτομένου) τοῦ ἐνέργειας τινὰς ἀφικνεῖσθαι τῶν ὀρατῶν πρὸς τὰς ὄψεις, ὡς Ἀριστοτέλει δοκεῖ. ὀρώμεν γὰρ καὶ ἐκ τῶν χρωμάτων ἐνέργειας τινὰς ἀσώματος ἀφικνουμένας καὶ χρωνοῦσας τὰ προκείμενα στερεὰ σώματα, ὅταν ἀκτὶς ἡλίου διὰ τῶν χρωμάτων προσβάλλῃ, ὡσπερ ἔστιν ἐναργῶς ἰδεῖν, ὅταν διὰ τῶν κεχρωματισμένων σπέκλων προσβάλλῃ ἀκτὶς ἡλιακῆ· ᾧ γὰρ ἂν στερεῷ σώματι προσπέσῃ ἡ διὰ τοῦ σπέκλου προσπίπτουσα ἀκτὶς, τοῦτο χρωνοῦσιν ὁμοίως τῷ δι' οὗ προσέπεσε χρώματι.

drawn to the striking difference between the presuppositions at work in Simplicius' and Philoponus' respective hermeneutics of science (III). I have argued that Philoponus was able to liberate his mind in an unprecedented way from the constraints of the Neoplatonists' commitment to harmony, authority and salvation through philosophy. Philoponus' alternative heuristic method, termed constructive criticism, was then identified as perhaps the most important driving force behind his scientific innovations (IV). I should like to conclude with the general recommendation that anyone who is interested in elucidating the origin of philosophical-scientific ideas and controversies, be it of the sixth century or at any other time, might find it more fruitful to study carefully the methodological presuppositions involved, be they hermeneutic, empirical, or speculative, rather than to gesture all too readily to external parameters like religion, anecdotes, or the socio-economics of the market place.

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Статья посвящена теории импетуса Иоанна Филопона и прежде всего вопросу о том, что вызвало эту теорию к жизни. Ключ к ответу на этот вопрос следует искать, по мнению автора, не в обстоятельствах биографического, религиозного или общественного характера, а в специфике научного метода Филопона.