COSMIC AND HUMAN COGNITION IN THE *TIMAEUS*[1]

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Cosmic Intellects

Many early Greek philosophers thought that higher level cognitive functions are not the prerogatives of human beings and the gods of the traditional pantheon. The orderly functioning of the cosmos, the regularity and constancy of its cyclical processes, were in need of explanation. Where does this order stem from and how is it maintained, if not for eternity, at least for immensely long periods of time? One possibility was to refer to some form of cosmic law or necessity. Another was to posit a cosmic intelligence, which is in some way akin to human intelligence, yet immensely more powerful, capable of governing and steering the entire cosmos and rendering physical processes regulated and orderly. We find different expressions of this latter model, possibly in combination with the first model, in the fragments of Xenophanes, Heraclitus, Parmenides' ***Doxa***, Anaxagoras, Diogenes of Apollonia, and Archelaus of Athens. There is good evidence that such ideas were current also in Athens around the time of Socrates. Hecuba in her prayer in Euripides' ***Trojan Women*** (884-7) lists human intelligence, alongside necessity and Zeus, as one possible identification of the supreme cosmic god. More important for our present topic, Xenophon presents Socrates approvingly giving voice to such a theory (***Mem***. 1.4.8).

Earlier Platonic dialogues, which are supposed to more closely reflect the ideas of the historical Socrates, do not elaborate on the idea of a cosmic intelligence — overall, the Socrates of these dialogues shows little concern for cosmological questions. There are, moreover, good reasons why such an immanent cosmic intelligence is absent from the dialogues of Plato's middle period as well. In these texts the physical world is presented as possessing very limited orderliness and inherent rationality; if there is any order and rationality in it, it comes not from an immanent cosmic intellect, but from its relation to the transcendent Forms, even if the precise nature of this relation, as Plato candidly acknowledges, remains an open question.

In his later period, and most prominently in the ***Timaeus***, Plato appears to allow more intrinsic value and orderliness to the physical world, and, correspondingly, shows more interest in the source of these features. Yet even in the ***Timaeus***, Plato remains committed to the idea that the ultimate origin of anything that is rational and orderly in the corporeal world must be transcendent to it. In order to account for the relationship between the physical world and the eternal and

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changeless, and hence inactive, transcendent realities, he posits a similarly transcendent yet active divine craftsman who creates order in the inherently disorderly corporeal realm by moulding it, as far as possible, on the model of eternal, perfect, and intelligible transcendent entities. With the introduction of the divine craftsman, we get a partial answer to the question concerning the ordered structure of the cosmos.

Yet, even if he is the ultimate origin of rationality and structure in the physical world, the divine craftsman does not seem to be directly involved in maintaining the everyday functioning of the cosmos. Timaeus, the spokesman of the dialogue, calls the cosmos itself a living god, constituted of a rational soul and a physical body, both created from preexisting stuffs by the divine craftsman (34b).[2] The orderly motions of the heavenly bodies, which in turn guarantee the regularity of other physical processes, are described as being only the visible manifestations of the regular motions of the soul of the cosmos. The rational soul of the world, similarly to the Presocratic cosmologies mentioned above, is at the same time the cosmic counterpart of the individual rational human souls.

Interestingly enough, the transcendent divinity – as his job title, 'craftsman', also indicates – is the divine paradigm of practical rationality. His activity in creating the orderly cosmos exemplifies how a rational agent can achieve the best results given certain initial limiting conditions and constraints inherent in the features of the raw material one has to work with.[3] On the other hand, as we shall see in a moment, the immanent soul of the cosmos is the paradigm of higher, and indeed the highest, forms of cognitive activities, which include not only forming correct opinions about the physical world, but also gaining genuine knowledge about eternal realities. This is a new development not only compared to Plato's previous dialogues. Timaeus' description of the cognitive functioning of the soul of the cosmos, and its relation to the highest cognitive functions of human beings, contains significantly novel elements compared to the Presocratic accounts as well. For beyond some rather vague pronouncements about the supreme cognitive abilities of their respective cosmic gods and intelligences, the Presocratics – as far as we can judge from their extant fragments – said next to nothing about the actual cognitive processes that characterise these cosmic intelligences and, just as important, how their cognitive processes are related to the cognitive functions of human beings.

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[2] I use 'stuff' here in the loosest possible sense, without any metaphysical specification, to capture both the three-dimensionally extended disorderly ***khôra***, in which, or out of which, the body of the world is formed, and the incorporeal ingredients of the world soul, the two kinds of Being, Same, and Different, on which see below. On Timaeus' cosmos as a corporeal god, see Broadie (2016).

[3] On the point that the Demiurge's reasoning is (primarily) practical and not theoretical, see Burnyeat (2003). Obviously, the Demiurge's activity in creating the cosmos presupposes the knowledge of the intelligible paradigm, which in turn involves theoretical knowledge.

In what follows, I shall approach Plato's account of the relationship between cosmic and human rational soul not by comparing it to its Presocratic predecessors, but by showing how the views put forward in the ***Timaeus*** can be conceived as offering solutions to a number of problems raised, but left unanswered, in Plato's earlier dialogues.

The Affinity Argument of the Phaedo

There are many ways in which the ***Timaeus*** appears to be directly related to the ***Phaedo***, which on a standard chronology was written considerably earlier, around the beginning of Plato's middle period. It is in the ***Phaedo*** that Socrates expresses the most explicitly his discontent with the explanatory accounts of those of his predecessors who engaged in 'inquiry into nature', and it is in this context that he formulates the need for a cosmology that explains the structure and functioning of the cosmos with reference to a cosmic rationality aiming at the best (96a–99c). In important respects, the ***Timaeus*** fulfils precisely this project.[4] This much seems to be relatively obvious and uncontested. I would like to maintain, however, that in developing his conception of the cosmic soul and its relation to individual human souls in the ***Timaeus*** Plato was also reflecting on a number of problems of great consequence that remained unresolved in the ***Phaedo***, and. in particular, in that part of the dialogue which is customarily called the Affinity Argument (77a–84b).

The Affinity Argument, the last of the three initial arguments for the immortality of the soul, has received bad press. In his classic commentary on the ***Phaedo***, Kenneth Dorter maintained that we should appreciate it not for its logical consistency, but rather for its emotive value and elevated massage (Dorter 1982: 76). One recent interpreter even claimed that Plato introduced it 'precisely in order to illustrate how not to argue the case for immortality, and, more generally, how not to argue the case for any thesis. The affinity remarks, then, form part of an object lesson in how not to do good philosophy' (Elton, 1997: 313). It seems to me however that we arrive at a significantly different assessment of this section of the ***Phaedo*** if we recognise that it has a somewhat different agenda than simply arguing for the immortality of the soul. After all, Socrates himself acknowledges in the conclusion of the argument that he hasn't in fact presented a watertight proof. As he says, 'If all this is the case, isn't the body the sort of thing to be quickly disintegrated, but soul, on the other hand, the sort to be altogether incapable of being disintegrated, ***or nearly so***?'[5] (80b; my emphasis). Indeed, what does it mean that the soul is 'nearly' incapable of being disintegrated?

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[4] On the criticism of the physicists, see Menn 2010. On the relationship between the desideratum of a teleological cosmology in the ***Phaedo*** and its relation to the ***Timaeus***, see Sedley 1988–9 and Betegh 2009.

[5] Translations from the ***Phaedo*** are from Sedley–Long 2014 with occasional modifications.

On the face of it, the Affinity Argument purports to show that the soul is indestructible because it shares more features with the transcendent immutable Forms than with the ever-changing composite physical bodies. Yet, as we have just seen, it is able to do so only with some serious caveats. So what is the function of the Affinity Argument, if it avowedly does not provide a cogent proof for the immortality of the soul? I would like to maintain that the primary purpose of this section of the text is to return to a previous part of the dialogue, customarily called Socrates' Defence (61b–69e), and to give a new formulation of the Defence with the help of the metaphysical framework developed in the intervening section of the dialogue, and in particular in the Recollection Argument (72e–77b). In the Defence, Socrates tries to convince his friends that in so far as death is the separation of soul and body, and the philosophical life consists in separating the soul from the body as far as it is possible in our earthly life, the philosopher is practicing for death already during his embodied existence, and has therefore nothing to fear when biological death approaches. The Recollection Argument in turn argues for and solidifies the fundamental metaphysical division between transcendent and intelligible Forms on the one hand and perceptible physical bodies on the other, and presents the theses about the immortality of the soul and the existence of the Forms as standing or falling together (76d–77a).[6] Then, the Affinity Argument picks up the central themes of the Defence, such as the relationship between body and soul, and the normative ideal of the purification of the soul from the body, and provides a new formulation of these theses, already equipped with the much more robust and philosophically well-articulated dualist metaphysical framework as developed in the Recollection Argument.

Accordingly, at the outset of the Affinity Argument Socrates distinguishes between these two kinds, and gives them the following characterisation. Members of the first kind are 'divine, immortal, intelligible, uniform, and incapable of being disintegrated, and [...] always stay in the same condition and state' (80b). Moreover, being divine, they are 'naturally the kind to rule and lead' (80a). The clearest examples of this kind are the Forms (78d), even though it is not explained in exactly what the ruling and leading function of the Forms consists. Members of the other kind are 'mortal, resistant to intelligence, multiform, able to disintegrate, and never in the same state' (80b). It is to this latter kind that everything bodily, and consequently the human body itself, belongs.

Interestingly, although he has his interlocutors' consent that they will assume that only these two kinds of beings exist (79a), Socrates never actually says that the human soul squarely belongs in the first kind. Or, for that matter, that it belongs in the second kind. The soul shares certain key features with members of the first kind, whereas there are other features in respect of which it is unlike them, and more like members of the second kind. For instance, it is surely not true of the soul that it would always be in the same state as the members of the first kind emphatically are.

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[6] Cf. Dimas 2003.

Bodily pleasures and pains, as well as perceptions stemming from bodies, can affect the soul – and as we have learnt in the Defence they can affect it very negatively – whereas ***bona fide*** members of the first kind are completely immune to any such deleterious influences from the bodily. Indeed, death, as the ultimate separation of the soul from the body is beneficial precisely because as long as the soul is attached to the body, the body keeps disturbing the soul. Referring back to his earlier claims made in the Defence, Socrates explains in the Affinity Argument that whenever the soul uses sense perception through the body 'it is dragged by the body into things that never stay in the same state, and the soul itself wanders and is disturbed and giddy as if drunk, because the things it is grasping have the same kind of instability' (79c). Sense perception causes disorder, instability, and confusion in the soul.

What is more, the souls of those who are constantly preoccupied with bodies and bodily desires and pleasures, can even become tainted with the physical characteristics of the body such as heaviness and visibility (81c). Socrates however adds that

> on the other hand, when the soul focuses on the divine, immutable Forms, and considers them alone by itself, it gets away into that which is pure, always in existence, and immortal, and which stays in the same condition; that the soul because it is akin to this, always comes to be with it whenever alone by itself and able to do so; that the soul is then in the same state and condition, because the things it is grasping have the same kind of stability; and that this state of the soul is called 'wisdom' (79d).

Thus, even though the soul does not squarely belong in the first kind, it is similar and akin (συγγενής 79d; 79e) to the members of the first kind. By concentrating on these divine beings, the soul avoids and rectifies, as far as possible, the confusion, wandering, and giddiness caused by perception and corporeal desires and pleasures, and becomes more stable. These disturbing desires are not restricted to drink, food, and sex, but include the love of money, power, and honour (82c). Giving a new formulation to the central tenet of the Defence, Socrates expresses his normative ideal in the Affinity Argument in the following terms: we can achieve the best life during our embodied, earthly existence when we focus on those beings which our soul is akin to, or συγγενής with, and thereby approximate the stable state that characterises the Forms. In this way, we distance our souls from the confusion and instability that characterises bodies, and at the same time secure for ourselves the best possible post-mortem existence in which we can continue our quest for truth.

Notably, this characterisation of the relationship between soul and the Forms, and the normative ideal this relationship bestows on the human beings, is not limited to the ***Phaedo***. Plato's language is strikingly similar when he describes the characteristic activities and natural motivations of the philosophical nature in Book 6 of the ***Republic***. Socrates explains that such a nature has a passionate love for that kind of study which reveals to it the Forms, and those features which have complete stability, not being subject to becoming and destruction (485a–b). In addition to

possessing a set of natural cognitive endowments including good memory and quickness of mind, the philosophical nature is akin (συγγενής) to 'truth, justice, courage, and moderation' (487a). For this reason,

> the genuine lover of learning naturally strives for what is. He does not linger over each of the many particulars that are subject of opinion, but keeps on striving towards it [i.e. what is], without losing or lessening his passion, until he grasps what the nature of each thing itself is with the part of his soul that is fitted to grasp a thing of that sort because of its kinship (συγγενεῖ) with it (490a–b, trans. Reeve, modified).

Moreover, through an enduring study of the rational order of these realities, the soul of the philosopher gets assimilated to them, and becomes orderly (κόσμιος) and divine, as far as possible:

> as he looks at and contemplates things that are orderly and always the same, that neither do injustice to one another nor suffer it, being all in a rational order, he imitates them and tries to become as like them as he can. Or do you think there is any way to prevent someone from associating with something he admires without imitating it? (…) Then the philosopher, by associating with what is orderly and divine, becomes as divine and orderly as a human being can (500c, trans. Reeve, modified).

This last passage further emphasises that the most important feature in respect of which the soul gets assimilated to the Forms is rational order – the 'cosmos' of the Forms – without however detailing what that order is. Moreover, having introduced the thesis of the tripartite soul in Book 4, Socrates now intimates that it is not the entire soul that is akin to the Forms, but only a part or aspect of it – in all probability only the rational part.[7]

In sum, although we do learn a great deal about the soul's relationship to the Forms in these texts, at the end of the day it remains unexplained what it means exactly that the soul is akin to the divine Forms. Moreover, we do not get a straightforward answer to the question concerning the soul's place in the twofold metaphysical framework. It remains unclear how the soul can have this dynamic middle status and become more like the divine and stable Forms or the disorderly always-changing bodies depending on which of the two it focuses on. It remains unclear whether the soul constitutes a third kind that is ultimately irreducible to the two other kinds, or whether it occupies this intermediary position between the two realms by some other way. And, further, it remains unexplained how the body can affect the soul, whereas it cannot affect the ***bona fide*** members of the first kind. For although the disturbances and negative effects caused by the body are central to

[7] Reeve's translation of 490a3–4 ('the part of his soul that is fitted to grasp a thing of that sort') is more explicit than the Greek, which only uses a genitive, which would literally translate 'that of it which is fitted'.

Socrates' claim that it is the greatest benefit for the philosopher to die, we do not in the end hear anything about the actual way in which the body can exert all its harmful effects on the soul.[8]

The Kinship of Individual and Cosmic Soul in the Timaeus

As stated at the outset, I would like to suggest that the ***Timaeus*** picks up and answers some of these issues left open in the ***Phaedo***.[9] Let us start with the question of the middle position of the soul. By the description of the ingredients out of which the divine craftsman formed both the soul of the cosmos and the rational souls of individual human beings, Timaeus finds a way to state very clearly that although the soul does not belong in either of the two kinds, it is not a third independent kind either. For he relates that the soul is a mixture of the two kinds, or more precisely of the Being, Same, and Different pertaining to the two kinds:

> In between the Being that is indivisible and always changeless, and the one that is divisible and comes to be in the corporeal realm, he [i.e. the divine craftsman] mixed a third, intermediate form of being, derived from the other two. Similarly, he made a mixture of the Same, and then one of the Different, in between their indivisible and their corporeal, divisible counterparts. And he took the three mixtures and mixed them together to make a uniform mixture, forcing the Different, which was hard to mix, into conformity with the Same. Now when he had mixed these two together with Being, and from the three had made a single mixture, he redivided the whole mixture into as many parts as his task required, each part remaining a mixture of the Same, the Different, and of Being (35a).[10]

This chunk of text, constituting a single syntactically very complex sentence in the Greek, presents a great number of interpretative puzzles that I cannot discuss in the present context. What is nonetheless clear is that the two types of Being, Same, and Different are characterised by the centrally important oppositions of the two kinds that we find in the ***Phaedo***: indivisibility and changelessness on the one hand, and divisibility and corporeality on the other. These contrasting characteristics are thus in some way inherent to soul, both cosmic and human. Admittedly, one would still

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[8] Cf. Dillon 2009: 350: 'In general, I think we may agree that, while the body is seen as a serious problem for the soul in the ***Phaedo***, the problem of just how the one entity acts on the other is not even raised.'

[9] In establishing the connection between these two texts, I owe much to the inspiring discussions I have had with Máté Herner.

[10] Translations from the ***Timaeus*** are from Zeyl (2000) with occasional modifications.

have many questions to ask from Timaeus at this point; yet his description at least goes some way to account for the fact that the soul cannot be classified in either of the ***Phaedo***'s two kinds.[11]

Just as important, Timaeus agrees with the Socrates of the ***Phaedo*** and the ***Republic*** that the soul is a dynamic entity that gets assimilated to what it is primarily concerned with:

> Now, if someone got absorbed in his appetites or his ambitions and takes great pains to further them, all his thoughts are bound to become mortal. And so fas as it is possible for a human being to thoroughly become mortal, he will not fall short of it, since it is this aspect of himself that he has strengthened all along. On the other hand, if a man has seriously devoted himself to the love of learning and to true wisdom, if he has exercised these aspects of himself above all, then there is absolutely no way that his thoughts can fail to be immortal and divine, should truth come within his grasp. And to the extent that human nature can partake of immortality, he can in no way fail to achieve this: constantly caring for his divine part as he does, keeping well-ordered the guiding spirit that dwells within him, he must indeed be supremely happy (90b–c).

What is more, just a few sentences earlier, Timaeus had made clear that the divine, on which the soul should focus, is akin (συγγενής) to the soul (90a). So far we are stunningly close to what we have seen in the ***Phaedo*** and the ***Republic***. Yet, in Timeaus' account – and this is the first momentous difference compared to the earlier texts – the divine counterpart of the individual human soul on which it should focus, and to which it is akin, is not the Forms, but rather the soul of the cosmos. Indeed, in his description of the happiest human life, which constitutes the crescendo of his long speech, Timaeus explicitly calls the relationship between the individual human soul and its divine heavenly counterpart it ought to emulate 'kinship' (συγγένεια 90a). Moreover, he uses the same term when he states that the teleological cause of eye-sight is to observe the heavenly motions, which are akin (ξυγγεῖς, 47d) to the motions of our rational soul.

The nature of the kinship that remained unexplained in the earlier texts becomes entirely obvious in the ***Timaeus***. The cosmic soul and the individual rational soul are made by the same maker – the divine craftsman – of the same, although less pure, ingredients, mixed in the same way (41d), divided according to the same complex mathematical and harmonic ratios, and finally fash-

[11] While I agree with Fronterotta 2007a that the soul does not become a body in the ***Timaeus*** as Carone 2005 claims, I don't agree with him that the soul according to the ***Timaeus*** would be a third distinct kind. To my mind, the point is precisely that Plato has not become a trialist, but retains his Form–body dualism, while allowing that the soul can share certain properties with both kinds. Importantly, when and in so far as Timaeus distinguishes three kinds, he lists the Forms, their generated (and destructible) copies, and the ***khôra*** (52a–c**).**

ioned into concentric circles in the same manner (43d). The spherical human rational souls housed in our skulls are isomorphic miniature replicas of the spherical cosmic soul.[12]

All this however means a considerable shift from the original framework as formulated in the Affinity Argument and echoed in the ***Republic***. For it turns out that what the human soul is akin to, and what it has to emulate by making it the object of cognition, are no longer the eternal, immutable, uniform Forms, but rather the generated, moving, composite cosmic soul.

This shift might seem fatal to the core of the Affinity Argument conceived as an argument for the indestructibility of the soul. If both the soul and its divine counterpart turn out to be generated composites – indeed composed by the divine craftsman of very different and contrasting ingredients that are hard to combine – it would follow that just like any other generated composite entity, the soul can be subject to destruction. In fact, Timaeus fully acknowledges that anything that has been generated and composed is not immune to destruction and decomposition (41b). However, Timaeus at this point introduces a consideration which is entirely lacking from the Affinity Argument, but is introduced as the ultimate explanatory desideratum at a later point of the ***Phaedo:*** the reference to the best. Qua composites, both the cosmic soul and the individual human souls are prone to disintegrate, just like any bodily composite. Nonetheless, they will ***not*** disintegrate because the demiurge made them good – indeed to be the best possible – so it is ***good*** that they remain in existence, and the demiurge will therefore not let them disintegrate. By introducing teleology into the picture, Timaeus can thus maintain both the principal premises of the Affinity Argument, i.e. (i) that generated composites are destructible, and (ii) that the human soul is like its divine counterpart in terms of indestructibility, while still maintaining that both the human soul and its divine counterpart will never in fact disintegrate because they are protected by the good will of the Demiurge.[13] In this new framework, even the puzzling expression of the ***Phaedo*** makes

[12] Timaeus does not make explicit how far the isomorphism goes. It is clear that the major structural parts of both the cosmic soul and the human rational soul are the circles of the Same and the Different (on which see below). It is equally clear that the circle of the Different in the cosmos is further divided into seven concentric circles which are responsible for the revolutions of the Sun and the Moon and the planets, attached to their respective circles at a later stage of the creation. Timaeus never mentions that the circle of the Different in the rational human soul also has a corresponding sevenfold division. However, the teleologic role of the observation of heavenly motions and astronomical phenomena at 47a–b, which emphatically includes the motions of Sun and Moon, strongly suggests that the circle of the Different in our rational soul has the same structure as its cosmic counterpart, including the division into seven concentric circles.

[13] Commentators usually do not sufficiently appreciate this aspect of the Timaeus (see, e.g., Lorenz (2008: 253)).

much better sense: 'soul [is] the sort to be altogether incapable of being disintegrated, ***or nearly so***'.[14]

Note also that the cosmic soul is a much better role model for the individual soul than the Forms. After all, the Forms are immobile and devoid of any activity, whereas the soul, as Plato emphasises in his later works, has an essential, inherent relationship to motion, or can even be characterised as motion as such (***Phaedrus*** 245c–246e; ***Laws*** 10 895c–896c). However, the cosmic soul, created as the moving image of eternity, can provide us with a paradigm of a motion that is as orderly as possible, and shows as much constancy as possible. Moreover, as we shall see in the final section of this paper, the cosmic soul is not only intelligible like the Forms but – as is appropriate for a divine soul – also performs cognitive activity at the highest level. It is active, in constant motion, and due to its constant and fully regular motion, keeps cognising both the Forms and physical particulars.[15] According to the new framework introduced in the ***Timaeus***, it is the constant and orderly divine cognitive activity, expressed in terms of regular circular motions, that we ought to replicate in our individual rational souls, and not the frozen perfection of the Forms.[16]

Soul–Body Interaction

On the list of issues raised but left unanswered in the ***Phaedo*** there is a centrally important item that I haven't broached as yet: how can corporeal processes, perception, pleasure and pain, cause all the confusion that we ought to counter by focusing on the divine counterpart of our soul? Can the new way of conceiving the individual human rational soul and its divine kin as introduced in the ***Timaeus*** help us to understand better how the body can exert its effects on the soul? In other words, to what extent can the psychology and physics of the ***Timaeus*** deal with the question of body–soul interaction – an issue that has been almost completely left unexplained in the ***Phaedo***,

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[14] Socrates in his Final Argument in the ***Phaedo*** (99d–102a) argues that the soul is ***essentially*** indestructible and immortal. The conception of the (rational) soul as a generated composite, and the concomitant recognition that at least in principle it could disintegrate, is obviously incompatible with the core tenet of the Final Argument. The fact that the ***Timaeus*** effectively invalidates the Final Argument of the ***Phaedo***, and offers a completely new explanation for the immortality of the soul, cannot in itself decide the vexed question whether Plato at the time of composing the ***Phaedo*** meant the Final Argument to be recognisably invalid.

[15] On the point that we do not need to choose between what he calls the cognitive and the kinetic readings of the cosmic soul, see the cogent arguments in Johansen (2004: 139). Cf. also Lee 1976.

[16] The Friends of Forms in the ***Sophist*** seem to be pressed to accept that what really is cannot be devoid of soul and motion (248e–249a). Nonetheless, neither the ***Phaedo***, nor the ***Republic***, nor again the ***Timaeus*** appear to subscribe to the view that the Forms would perform cognitive functions.

or for that matter in other dialogues. Indeed, it might very well be that Plato simply did not think that the interaction between body and soul is problematic. In the *Timaeus*, however he does seem to consider this relationship worthy of consideration, and provided at least the outlines of an account of it. Of course, I will not suggest that Plato in this dialogue solved the problem of body–soul interaction. Nonetheless, I think it is worthwhile to try to identify, as precisely as possible, the limits of this new explanatory framework, and to see at which point, and for what reasons, the explanation breaks down.

Prima facie, the ***Timaeus*** offers a strikingly simple answer to this question: the soul can interact with, and be affected by the bodily, because of its ontological constitution. As we have seen, the soul has a share of the bodily in so far as the 'stuff' out of which the soul is constituted contains not only indivisible being, difference, and same, but also divisible being, difference, and same, which belong in the realm of the bodily.[17] By virtue of its ontological makeup, the soul can have cognitive access to both realms; but it can also interact with, and be affected by entities belonging to both realms. Surely, this goes some way towards answering the puzzle of body–soul interaction. Nonetheless, this is still not a causal explanatory account of how exactly the body can affect the soul. In fact, we can formulate this question in another way as well: What does it actually mean that the soul contains something of the bodily? What are the properties that the soul acquires by virtue of having a share of the bodily in its ontological makeup? What are the properties that it shares with bodies, without however becoming a body?

In so far as divisibility is singled out by Timaeus as the most important characteristics of the bodily components of the soul (35a), it is reasonable to think that it is the very divisibility of soul that stems from its bodily aspect. The divine craftsman can divide up the mixture of soul-ingredients by mathematical and harmonic proportions, and can construct out of them a complex structure, precisely because the mixture contains something of the bodily and is hence divisible. Nonetheless, although divisibility and internal complexity are certainly crucial features in Timaeus' account of the soul, these will still not account for the soul's ability to be affected by the body. It is not by being divisible, or by having a complex internal structure, that the soul can interact with the body.

We might get one step closer to an answer by concentrating on another feature of the rational soul which appears to be a novelty of the ***Timaeus***, and which might very well be connected to the bodily. For one might argue that the cosmic soul and the individual human souls can have spatial extension, whether in one, two, or three dimensions, precisely because they have a share in the nature of the bodily. In this vein, Thomas Johansen has suggested that by making the soul spatially

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[17] Commentators and translators often seem to take too lightly Timaeus' circumspect formulation περὶ τὰ σώματα by translating it as 'in bodies' as e.g. Cornford does. Clearly, Timaeus does not want to ascribe being, even divisible being – as opposed to becoming – to bodies.

extended and in motion, Timaeus can consider the problem of body–soul interaction solved.[18] At the same time, Johansen argues that, in contrast to bodies, the circles of the soul do not have depth and solidity.[19]

Although I find Johansen's solution highly attractive, I would like to question this last contention. Solidity, as we shall shortly see, means in this context precisely that entities show resistance to each other, so that when they get into contact spatially, there is some mechanical, causal interaction between them. It is exactly in this sense that we need to attribute at least some type of solidity at least to the circle of the Different. When it comes into contact with bodily particles it can be affected by them, precisely because it shows some resistance to them, so that these particles cannot simply travel through it.[20]

It will be worthwhile to have a close look at Timaeus' description of the way in which sense perception reaches and affects the soul of human beings, and the way in which the cosmic soul comes into contact with perceptible bodies so as to formulate true opinions about them.

Let us start with Timaeus' account of human perception.[21] In brief, we become aware of a sensation when a motion originated by an external object reaches the human body, and then this motion gets propagated through the body by the corporeal particles of the body moving one another in a chain, so that the last particles at the end of the chain exert some effect on the circles of

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[18] Johansen 2004: 141: 'we can understand why Timaeus seems to see no ontological problem in soul–body interaction. Both soul and body are spatially extended and move in space. Because both body and soul move in space we can see how the motions of the soul may affect the motions of the body and vice versa. Body and soul may have different spatial properties [...], but there is no fundamental ontological difference between the two.'

[19] Johansen 2004: 141: 'In contrast [to the three-dimensional bodies showing solidity], there is no indication that the material out of which the soul is made itself has depth or solidity. ... [T]he important point is that for Timaeus body is differentiated from soul by having *specific* spatial attributes (such as depth and solidity) rather than by the possession of spatial attributes as such.'

[20] Aristotle in *Met.* 3.2 998a11-15 claims that the Platonic theory involves the absurdity that ontologically separable geometrical solids can spatially coincide with physical bodies. ('Further, it follows from this theory that there are two solids (*sterea*) in the same place, and that the intermediates [i.e. geometrical solids] are not immovable, since they are in the moving perceptible things'; cf. *Met.* 13.2 1076a38-b3.) What Aristotle attributes to Plato amounts to saying that spatial extension in itself is not sufficient to bridging the metaphysical gap, and that it is possible for two extended entities to occupy the same place, or be in contact in space, without (a physical type of) causal interaction between them. I am of course not suggesting that we need to accept Aristotle's interpretation of Plato. Yet the fact that Aristotle can even formulate such an interpretation shows that such a scenario is not inconceivable within the Platonic framework.

[21] This topic has been dealt with in considerable detail in the literature. See in particular Brisson 1997 and 1999; Johansen 2004 ch. 8 and Lautner 2005. In the confines of the present paper I cannot provide either a detailed analysis of the relevant passages or a fully argued defence of what I take to be the most likely interpretation.

the rational soul, and more specifically on the circle of the Different.[22] This is how Timaeus gives his preliminary description of this process:

> For mighty as the nourishment bearing billow was in its ebb and flow, mightier still was the turbulence produced by the disturbances caused by the things that struck against the living things (προσπιπτόντων παθήματα ἑκάστοις). Such disturbances would occur when the body encountered and collided with external fire (i.e., fire other than the body's own) or for that matter with a hard lump of earth or with the flow of gliding waters, or when it was caught up by a surge of air-driven winds. The motions produced by all these encounters would then be conducted through the body to the soul, and strike against it (διὰ τοῦ σώματος αἱ κινήσεις ἐπὶ τὴν ψυχὴν φερόμεναι προσπίπτοιεν). That is no doubt why these motions as a group came afterward to be called 'sensations' (αἰσθήσεις), as they are still called today (43b-c).

What is particularly noteworthy in this paragraph is that Timaeus uses the very same verb, προσπίπτω, to describe the way in which external bodies reaching the human body cause affections (παθήματα) in it, and the way in which the motions transmitted through the organism finally affect the soul. We find the same verbal stem, this time with a different prefix, in the concluding general description of how external impacts reach the soul:

> When even a minor disturbance affects (ἐμπίπτῃ) that which is easily moved by nature, the disturbance is passed on in a chain reaction with some parts affecting others in the same way as they were affected, until it reaches the mind (τὸ φρόνιμον) and reports what produced the reaction (64b).

The general picture we get from these passages is confirmed, even at the level of vocabulary, by the more detailed description of vision:

> Now whenever daylight surrounds the visual stream, like makes contact with like (τότε ἐκπῖπτον ὅμοιον πρὸς ὅμοιον) and coalesces with it to make up a single homogeneous body aligned with the direction of the eyes. This happens whenever the internal fire strikes and presses against an external object it has connected with (τὸ προσπῖπτον ἔνδοθεν πρὸς ὃ τῶν ἔξω συνέπεσεν). And because this body of fire has become uniform throughout and thus uniformly affected, it transmits the motions of whatever it comes in contact with (ἐφάπτηται) as well as of whatever comes in contact with it, to and through the whole body until they reach the soul (45c-d).

All physical processes leading to perceptions, in all sense modalities, are thus ultimately explainable by, and reducible to, the mechanical interactions of the elementary particles. Physical bodies

[22] For a defence of this latter point, see Lautner 2005.

are perceptible in so far as their component elements can causally affect the particles composing the body by dislocating them and thereby triggering off a chain of motions.[23] At the end of the day, perception depends on, and is explained by, the fact that when two particles meet they don't travel through one another but hit one another like two billiard balls. In other words, all these interactions are dependent on the fact that elementary particles are impenetrable to one another; they have solidity in the sense of showing resistance to one another.[24]

It is worthwhile to compare this account of the mechanical basis of sense perception with the way in which Timaeus first characterises the bodily towards the beginning of his speech:

> Now that which comes to be must have a bodily form, and be both visible and tangible, but nothing could ever become visible apart from fire, nor tangible without something solid, nor solid without earth (31b).

Visibility and tangibility, and their dependence on fire and earth, constitute the premises from which Timaeus deduces his theory of four elements. We need fire and earth to account for visibility and tangibility, and we will need another two, air and water, to create bonds between fire and earth. Yet the account of perception, and in particular the description of vision, necessitates a reinterpretation, and in fact some significant modifications, of these initial assumptions. When one first reads the sentence quoted above, one could easily have the impression that fire makes things visible in so far as these things contain some measure of fire. Yet later parts of the text rectify this assumption. Timaeus explicitly says that all four bodies are visible in and of themselves, even if individual particles of them are not visible due to their smallness (46e; 56b-c). On the other hand, the description of the physics and physiology of vision makes clear in what sense fire is indeed a necessary condition for seeing. There would be no vision if the eye did not contain fire and if the sun did not emit the fire of daylight, so that the two can jointly form the cone-shaped visual body stemming from the eye, and which can then be effected by external bodies and can transmit to the soul the motions triggered by them (45b–46a). This is, by they way, also why individual particles of the elements are not visible: individually they do not possess sufficient power to induce motion in the visual body.

Even more interesting for us is Timeaus' claim about tangibility and solidity being dependent on earth. Once again, a first reading of the sentence might suggest that only those objects which have some measure of earth in them can possess solidity. All we have seen so far about the me-

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[23] In rare cases, the affection coming from the outside not only triggers of a chain of motions, but also brings about a transformation of the elementary bodies composing the tissues of the organism. Certain substances, such as soda, instantiating the perceptible quality of acridity, have the power to dissolve some particles composing the tongue (65d).

[24] For a more developed defense of this interpretation and the broader historical context of the emerging view, see Betegh (2016).

chanics of perception – and more generally about solidity being the criterion of any mechanical causal interaction – shows clearly that earth has no role in providing solidity to elementary particles or composite bodies. All four elements, and in fact every individual particle of all four elements, have to possess solidity, i.e. be resistant to other particles, in order to participate in any kind of physical interaction.

In so far as all the bodily interactions, and in particular the transmission of motion, depend on touch and solidity, we could expect that the bodily motions can be transmitted to the motions of the circles of the soul on the basis of the very same property. This assumption is further reinforced by the fact that, as we have seen, Timaeus uses the same language of 'striking against' to describe the interaction among elementary bodily particles within the chain of transmission of motion on the one hand, and the interaction between the elementary particles at the end of the chain and the circles of the soul on the other. The emerging picture is that the rational soul is not only spatially extended and moving but, by the bodily element in its ontological make-up can interact with bodily particles, by showing some measure of resistance to them.

There is further evidence to substantiate this conclusion. The younger gods, who had the task of creating the human body, started their work by fashioning the spherical skull – similar in its shape to the spherical cosmos – to house the circles of the rational soul (44d). This hard shell provides precious protection for the rational soul in so far as bodily motions can reach it not from every direction, but only through the sense organs and the appropriately narrow tube of the neck.[25] However, the skull not only envelopes the soul, but is also affected by it. For as Timaeus explains, the sutures on the skull are produced in the early stages of human life by the struggle between the circular motions of the soul and the linear motions due to nutrition:

> the sutures varied considerably, owing to the power of the revolutions and of the nutriment: the greater the conflict among these powers, the more numerous the sutures – the lesser the conflict, the less numerous they were (76a–b).

This admittedly curious account of the observable fact that different people have different sutures shows that the circles of the soul are powerful enough to carve even the hard bone of the skull. This description of the physical effects of the circles of the soul on the hard bodily structure of the skull once again suggest that the circles of the soul possess some sort of solidity; they need to push and rub the skull to be able to mould it and carve sutures in it. Together with divisibility, spatial extension and motion, this might then be a property that the soul receives by having a share of the bodily.[26] Indeed, because soul has something of the bodily, it cannot avoid causally interact with bodies

[25] Cf. also the explanation of bones providing protection to marrow at 73e–74b.

[26] Timeaus specifies that the gods created a special type of body, the brain-marrow, which is particularly refined and can therefore interact with the revolutions of the soul without disturbing them.

when it gets into contact with them spatially. It is on the basis of this feature that bodies can affect the soul, and the soul can affect bodies.

The Cosmic Soul as a Role Model

Up until now, I have focused on the way in which Timaeus describes body–soul interaction in the case of the human soul. Yet, as we can see from Timaeus' account about the cognitive operations of the cosmic soul, such interactions occur at that level as well:

> Because the soul [of the cosmos] is a mixture of the Same, the Different, and Being, these three components, and because it was divided up and bound together in various proportions, and because it circles round upon itself, whenever it comes into contact (ἐφάπτηται) with something whose being is scatterable or else with something whose being is indivisible, it is moved throughout its whole self and tells what exactly that thing is the same as, or what it is different from, and in what respect and in what manner, as well as when, it turns out that they are the same or different and are characterised as such, this applying both to the things that come to be, and to those that are always changeless. And when the account (λόγος) that is equally true whether it is about what is different or about what is the same, and is borne along without utterance or sound within the self-moving thing, then, whenever the account concerns anything that is perceptible, the circle of the Different goes correctly and proclaims it throughout its whole soul, and this is how firm and true opinions and convictions come about, whenever on the other hand, the account concerns any object of reasoning, and the circle of the Same, running smoothly, reveals it, the necessary result is understanding and knowledge; and if anyone should ever call that in which these two arise not soul, but something else, what he says will be anything but true (37a–c).

The construction, translation, and interpretation of these two long sentences are open to debate.[27] To some extent, the passage can be illuminated by the account of false sentences and beliefs in the ***Sophist*** (260a–263e), even if that account itself is vexed. According to the ***Sophist***, formulating a sentence (λόγος) that is capable of being true or false consists of three operations. (1) The speaker has to pick out an object by 'naming' it; in order for the sentence to be truth-apt, the speaker has to pick out a real entity.[28] (2) The speaker also has to pick out a 'verb', which can either consist of a

[27] These difficulties notwithstanding, there has been surprisingly little written on this passage. Apart from some rather trivial remarks in the systematic commentaries by Taylor 1928 and Cornford 1935 ***ad loc***, see Mohr 1985: 43–48 and Fronterotta (2007b), who, however, offers a markedly different grammatical construal and interpretation of the text.

[28] Cf. e.g., Frede (1992: 417).

single verb or of a predicate phrase. (3) The speaker has to 'weave' the 'name' and the 'verb' together determining the relation between the two. False sentences are then defined as 'different things said as being the same' (263d), i.e. such combinations of 'names' and 'verbs' which say about the object thus picked out that it is same as something which in reality it is different from.[29] Finally, thought (διάνοια) is characterised as the soul's inner conversation with itself, and belief (δόξα) as affirmation or denial resulting from that inner conversation, which may also involve perceptual data (263d-264b). The successive steps of this discussion can be mapped on the elements of the passage above.[30] In particular, we can see that sentences produced in the cosmic soul are never false in so far as the soul never mistakes difference for sameness or difference for sameness.

While the ***Sophist*** primarily focuses on the general logical conditions of forming true declarative sentences, the ***Timaeus*** concentrates on the processes in the soul that lead to the formation of such sentences. The core of the account in the ***Timaeus*** is at the same time analogous to what we have seen in the description of sense perception in the human rational soul: the soul gets into contact with an object which causes some motion in the circles of the soul – or more precisely, which causes a modification of the motions of the circles of the soul – and this motion has a mental correlate. In the case of sense perception, the mental correlate is the awareness of the sense object, whereas in the case of the cognitive process described in the sentences above, the mental correlate is the formation of a statement about the cognised object, establishing the different respects in which it is the same as, and the different respects in which it is different from, any other given entity. Even if this much appears relatively clear, a great deal is still in need of explanation.

First, it is far from evident how we are to conceive the contact between the circles of the soul and the objects cognised. It is surely not by accident that Timaeus uses the same verb, ἐφάπτηται, that he will use in a later part of the text to describe the way in which the external visual body composed of the fire of daylight and the fire pouring out of the eye comes into contact with an external visual object (40d, see the text quoted above on p. **000**). In that context, the verb refers to the mechanical contact and interaction between two bodies. In our passage, however, the same term covers the ways in which the circles of the soul come into contact with both physical bodies and Forms. Even if, as I have suggested above, the soul is capable of interacting with physical bodies in so far as it has some measure of solidity, and hence is capable of some sort of corporeal contact, this feature of the soul is certainly not relevant for its interaction with incorporeal entities such as Forms. We should therefore construe the verb generously enough so that it encompasses both types of encounters. Moreover, it is crucial to note that although the customary English rendering

[29] For a vindication of this interpretation, and an systematic discussion of alternative interpretations, see Crivelli (2012 ch. 6).

[30] It is undisputed that the list of the ingredients of the soul in the ***Timaeus*** is derived from the discussion of the 'largest kinds' in the ***Sophist***; thus a comparison recommends itself. Nonetheless, I haven't been able to find a sustained comparative analysis of the two passages.

of the verb in this passage is 'to come into contact with', this translation conceals an important aspect of the meaning of the Greek verb, which has a clearly active connotation, including senses such as 'reach' and 'lay hold of'. In fact the verb ἅπτω, with or without the prefix, occurs in a number of Platonic dialogues to describe the way in which the soul reaches and grasps the truth as a result of a conscious and systematic engagement with intelligible objects.[31] This strongly suggests that the soul in our passage does not passively and randomly happen to get into contact with these entities, but actively seeks them out. The cosmic soul constantly searches for and explores the relationships among these corporeal and incorporeal entities. This reading is fully borne out by the use of the same verb in the account of vision: we don't only happen to see things, but we also actively and purposefully scan and monitor our environment.

One intriguing further outcome is that the cognitive activity of the cosmic soul appears to show variation. The description strongly suggests that it is not the case that the soul would constantly be cognising, and formulating statements about, the same objects, nor even simultaneously cognising, and formulating statements about, all the entities belonging to both ontological realms. Note also that the soul is formulating statements about the temporal aspects of the relations obtaining about changing corporeal entities ('***when*** it turns out that they are the same or different'). If the cosmic soul were also to simultaneously entertain all true sentences about changing objects, it would possesses complete foreknowledge of all future events. This view would commit Timaeus to fatalism about all events, including the ethically relevant actions of humans. Besides the fact that Timaeus' formulations do not recommend this reading, there are strong philosophical reasons why he – and Plato – would reject fatalism. It is better to conclude then that even though the cosmic soul is a divine intellect and its mental life shows high level constancy, it does show temporal variation.

Prima facie, this conclusion might create some tension with the emphatic orderliness and the closely related astronomical function of the world soul as the cause and guarantor of the regular revolutions of the celestial bodies. For, the contacts with the objects cognised cause motions in the soul, and, as I have argued, such contacts and the concomitant motions are temporally distinct events. Thus, if the contacts with different entities and the concomitant motions are temporarily distinct events, shouldn't these events disrupt the orderliness of the revolutions, in such a way that the perturbations might even become visible through the motions of the heavenly bodies?[32] I wish to suggest that the active connotation of the verb ἐφάπτηται becomes crucial at this point as well. As I have argued above, it is not the case that the soul would encounter, and be affected by, all kinds of entities in a haphazard way; rather, it seeks out the objects of its cognition in an active

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[31] See. e.g. ***Symp***. 212a4–5; ***Phaedo*** 65a9; ***Rep***. 572a7–b1; ***Rep***. 608a6–b2; ***Tht***. 186d2–3.

[32] Zeyl's translates the verb κινουμένη, describing causal effect of the contacts, as 'is stirred'. It seems to me however that the more neutral 'is moved by' is not only closer to the Greek, but is also philosophically preferable.

manner. To this, we can now add that the soul makes these various entities the objects of its cognition, and formulate thoughts about them, in a systematic and orderly manner. Although in our passage Timaeus only emphasises that the statements formulated by the cosmic soul are true whether they are about eternal changeless entities or about changing bodies, we must realise that, just as importantly, these true statements are not unconnected, but are formulated in a systematic and methodical way. The mark of a good thinker is not merely to formulate true statements randomly and independently of each other, but to formula them in a well-ordered, systematic way.

Timaeus explains that after the birth of human beings their rational souls get bombarded and overwhelmed by the irregular motions stemming from perception and nutrition. The circles of the soul become deformed and their motions irregular and sometimes even reversed, which results in severe cognitive deficiency:

> Whenever they happen to encounter (περιτύχωσιν) something outside of them characterisable as same or different, they speak of it as 'the same as' something, or as 'different from' something else when the truth is just the opposite, so proving themselves to be misled and unintelligent (44a).

We can recognise here the echoes of both the ***Phaedo***'s description of how, through perception, the bodily drags about and disturbs the soul, and the ***Sophist***'s account of false statements as mistaking difference for identity. Moreover, the verb that is used in this sentence to describe how the soul comes into contact with external objects emphasises the haphazard way in which these encounters occur, creating a meaningful contrast with the methodical and orderly way in which, as I have suggested, the cosmic soul encounters the objects of its cognition. So, it is starting from this disorderly state that the human soul should reorganise itself by assimilating itself to its divine kin, first of all by observing and understanding the complex, but regular motions of the celestial bodies. Through advanced studies in astronomy and mathematics, the motions of the soul become increasingly orderly, and as a result, will formulate true statements more and more reliably. Just as important, it will conduct its enquiry more and more methodically, so that it will not merely 'happen to encounter' the objects of its cognition, but it will examine them, and analyse what they are the same as and what they are different from in a more and more systematic manner.

The Socrates of the ***Phaedo*** argued that we should separate our souls, as far as possible, from the body by concentrating exclusively on eternal and changeless objects, and thereby preparing ourselves to an unimpeded search for the truth, which will be available to us in a post-mortem disincarnate existence. For Timaeus, the primary objective will still be to acquire 'understanding and knowledge' of eternal objects, similarly to the cosmic soul. Yet, in his account both the divine cosmic soul and its miniature replicas are forever attached to a body – the cosmic soul to the same body, and its replicas to a succession of different bodies. If so, both the divine cosmic soul and the human souls are, and will remain to be, in constant contact with changing bodies, and these en-

counters inevitably have an impact on their motions. As we have seen, for the cosmic god, these encounters unfailingly result in true beliefs, and do not disrupt the orderliness of the revolutions of its soul. Contacts with bodies do not 'drag about' the cosmic soul, and do not cause any 'giddiness' in it.

This is surely unachievable for human beings. Their souls are not only inherently inferior by being composed of second- and third-rate leftover ingredients, but they are also constantly subject to bodily affections coming from the outside. By contrast, the divine craftsman made sure that there is nothing left outside of the cosmos, so that the cosmic god, and its soul, will never have to deal with such hostile external impacts. Given that contact with the bodily is inevitable, the best human souls can do is to try to minimise the negative, disruptive effects of the bodily. Fortunately, the cosmic soul can serve as a role model in that as well. But for this, humans have to emulate not only the way in which the cosmic soul formulates true statements about the eternal and changeless Forms, but also the way in which 'firm and true opinions and convictions' about changing bodies emerge in it as a result of a systematic examination of corporeal entities and their interrelations. This is the best way for the soul not to be 'dragged about' by the bodily motions triggered by encounters with bodies, but regulate and make these contacts orderly, as far as possible.

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