Chapter 2
Plato: Interaction Between the External Body and the Perceiver in the *Timaeus*

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2.1 Introduction

To put it very crudely, history of philosophy provides us with two options concerning perception. The perhaps most common alternative, deriving originally from Aristotle, is the receptive model. According to that model, the perceiver receives the form from an external body or an object of perception. If everything goes well, that is, if the transmission from the external body to the perceptible organ and the organ itself function as they should, the form of the body is actualised in the mind fully and correctly, although without the matter of the body, in some kind of sensible mode. From this idea derives, one could claim, the whole empirical tradition, with its close connection between perception and knowledge.

The alternative model is perhaps even less unified. Some kind of common denominator within the approaches in that group is emphasis, in different ways, on the activity on the part of the perceiver. Typically, this is connected to nativist theories of the mind, in which aspects of knowledge or certain of our mental abilities are considered to exceed what can be given in perception. Thereby the mind becomes understood in possession either of innate knowledge or, as is more common, of innate abilities that contribute to the way that our concepts and knowledge are formed. This latter nativism goes well with the idea that perception is not mere reception. When I look, I tend to focus on things that mean something to me in my environment, on objects that I recognise, that respond to some of my needs and expectations, that interest me. I go to the world grasping and reaching for things, searching and probing my environment, and focusing on its familiar, salient or personally significant features.

Of course, very few "reception" view holders would deny that the mind has some kind of a role to play in perceiving, and particularly in forming conceptual content out of what is perceived. The difference is a difference of degree: which one is more crucial for the understanding of the content of perception, the external object or the

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J. F. Silva, M. Yrjönsuuri (eds.), *Active Perception in the History of Philosophy,*
Studies in the History of Philosophy of Mind 14, DOI 10.1007/978-3-319-04361-6_2,

activity of the perceiving mind? What are the respective roles of each? How organised is perceptual information and what organises it?

This presentation targets the one text that people most often mention as a source for the notion of active perception, namely the account given in Plato's *Timaeus,* and particularly its description of a ray of vision proceeding from the eye towards the object (42e–47e, 64d–69a).[1] My intention here is to try and give a reading of the relevant three passages, contextualised within the overall theory of the *Timaeus*.

In general expositions, Plato is treated as the ur-nativist,[2] but also sometimes the ancestor of the idea of perception as a force that is not merely receptive, but an active power of grasping the world. Yet is it not entirely clear what Plato contributes to this discussion. The schoolbook Plato presents a challenge to any study on Plato on perception. According to it—correctly although by no means exhaustively—Plato thought of perception as unreliable, and its objects as changing and unreal, unfit for proper objects of knowledge. All knowledge is of innate forms, while perception, rather, deceives.[3] Scholarship has showed that the picture is much more subtle and complicated. Not all the dialogues would seem to suggest that knowledge itself is innate—rather, what is innate are some abilities or propensities. As regards perception, in some places in the dialogues it seems, for instance, that Plato assumes that direct acquaintance is better than second hand reports. This kind of assumption is at the background of the famous example of knowing the road to Larissa in the *Meno* (97a–c).[4] Some kind of veracity would thereby be connected to direct perceptual acquaintance, even though this falls short of proper knowledge, for reasons having to do, presumably, with the holistic and systematic nature of knowledge in Plato.

Connectedly, interpreters have given perception either a meager or a significant role in knowledge acquisition. By the readers of Plato inclined to emphasise the separation and dissimilarity of the objects of knowledge with the objects of sense-perception, only a highly limited role can be given to sense-perception in cognitive development towards knowledge.[5] Others see the question involving two kinds of cognitive powers rather than, so much, the dissimilarity of their objects, and the interconnections of these powers as much more closely related.[6] Some give a proper place for sense-perception in triggering reasoning.[7]

For the interpretation of the *Timaeus*, it seems significant that the connection between nativism and activity is not necessary. Insofar as a nativist sees perception as insufficiently organised to yield any proper knowledge, she might locate all proper activity in a temporally later and cognitively more important and distinct phase of

[1] Whether there is any activity involved in this materialistic account has been challenged in some recent scholarship; Grönroos (2001, p. 46) contends that the perceptual qualities are mind-independent, at least in the case of vision.

[2] See, e.g. Simpson et al. (2005, p. 4).

[3] See, e.g. Scott (1995).

[4] Cf. Modrak (2006).

[5] See, e.g., Cornford (1957); Scott (1995).

[6] See, e.g., Cooper (1970, pp. 123–126); Frede (1997, 1999).

[7] See, e.g., Johansen (2004); Modrak (2006).

cognition, such as reasoning, treating perception as mainly passive.[8] According to the interpretation defended here, the *Timaeus* does not, however, separate perception and reasoning as two entirely distinct cognitive functions.[9] The theory under inspection combines, we shall argue, active perception with the emphasis on the role of reason, and defends some input of learning through perceiving. Perception is very closely tied to the rational abilities of the soul. We might even call perception a kind of intellection. It is a power intermingled with intellectual cognitive capacities, but with its own directionality and purpose. It is a power that ensures our access to the world and its intelligible order, and a power that can be developed and habituated by continuous perceiving and by rationally developing on what is perceived. It is a power through which human beings learn some of the most basic things in the world.

There are a number of outstanding, detailed studies on Plato on perception.[10] The purpose of the article at hand is not to challenge the readings, for example, of Luc Brisson, Thomas Johansen or Katerina Ierodiakonou of the *Timaeus*.[11] Rather, we shall be building on these seminal studies. The interpretation given will differ in some details, but more in its having a specific focus and question in mind. Has Plato merited the role given to him in history of philosophy, namely as someone providing, or launching, an alternative to what later became known as Aristotelian, receptive accounts of perception? What, if anything, is active in perception, according to Plato?

2.2 The Anthropological Context, Sensation and Perception

The overall explanatory framework we get in Plato's *Timaeus* is one that combines materialistic accounts of the cosmos and its phenomena with emphasis on intelligence and purpose in nature. This it does in a very distinctive way. The *Timaeus* separates between (at least) two kinds of causes, Reason and Necessity. While these, broadly, coincide with teleological and material cause, some features particular for the Timean account need to be emphasised. The material elements are, in a sense, naturalized: they are soulless and purposeless, although with certain characteristics that possibly affect their interaction. This is a description of, as Plato says, auxiliary causes (*sunaitiai*; 46c7, *summetaitiai*, e6). The material cosmos gets its structure

[8] As regards Plato, there is a question as to whether he thought it possible to distinguish such a thing as "bare" perception, i.e. a non-cognitive power. Frede (1987); Burnyeat (1976) seem to find such a notion of perception, but mainly in the *Theaetetus*.

[9] Both Brisson (1999, pp. 147–176); Carpenter (2010, pp. 281–303), in reading the *Timaeus*, take it that some kind of intelligising belongs to the perceptual process.

[10] Most discussed is, surely, the *Theaetetus*. See, e.g., Cornford (1957); Cooper (1970); Burnyeat (1990).

[11] Brisson (1999); Johansen (2004); Ierodiakonou (2005). Grönroos (2001) discusses both the *Theaetetus* and the *Timaeus*.

not just, nor primarily, from the basic elements, but from a separate or transcendent principle of order and purpose, the Demiurge or Divine Craftsman.[12] What the Craftsman brings into the universe is a matter of interpretation and some controversy. Readings differ from attributing all recognisable order to him to limiting the Craftsman's role to wisdom and greater purpose, while attributing basic regularities to the auxiliary or material causes. The question would seem to turn on which basic regularities we think of as serving a certain purpose, for such teleological ordering would already seem to require something more than mere auxiliary causes (46e3–5). According to a reasonable interpretation by Steven Strange,[13] while Reason, the demiurgic cause, is always needed for good order and purposeful outcome, Necessity is not the mere cause of chaos, disorder or evil, but contains both elements that disturb the good order as well as elements that in themselves are neither good nor bad, but which condition the way in which Reason functions. By and large, it is impossible to distinguish sharply the kind of items in nature that we should explain through one or another framework: most items and phenomena can and have to be approached from both perspectives.[14]

This, as we shall see, is precisely what happens with perception. As a predominantly material process, perception could perhaps be looked from the perspective of necessity alone. However, as we shall see, even the material side described is governed by mathematical ratios, thus delivering a process with distinct intelligible order. Moreover, to understand perception in full, its purpose within human life and cognition has to be included in the explanation. Thereby this causal framework already blurs any clear line between, on the one hand, anything that we might think of as bare, passive reception, and, on the other, active power of judgement.[15] In *Timaeus*, purpose and beauty of the outcome are interwoven with physical elements or bodies and their material organisation. The whole of cosmology becomes, as

[12] Also, whether the story about the creation or generation story involving the Craftsman is intended as a mere presentational device, a way of explicating nature's laws and features, or whether it involves some kind of real proto-historical scheme, is a matter of scholarly dispute. Broadie (2012, Chap. 1) for instance, holds that the proto-historical structure is needed to ensure that the authorship of the Demiurge is distinct from its product. As regards perception, this question is not central. What will be of some interest is to which extent the account of perception is intended as an account of the development of this capacity in human beings.

[13] Strange (1998).

[14] Strange (1998) suggests that such a division is possible: Reasons' creation of elements, soul and other things that happens entirely unimpeded; the entirely mechanistic elements, like random motions, elemental transformations etc. that are due to Necessity; and finally that which comes out of interaction between these, namely human body, plants, animals and their functions and dysfunctions. However, in making this division, Strange is sometimes at pains in saying where a given phenomenon belongs to. The account of vision, as he notes, is not an easy case: it is discussed within the first account, that of Reason, yet most of the description is highly mechanical in tone.

[15] This means that any results of studies that concentrate on the *Theaetetus* cannot be applied to the *Timaeus* without much further work. This goes, for instance, to the view of Frede (1987), who distinguished perception as a passive power and all judgements, even those of perceptual kind, due to another, active power of reason. While this division is inapplicable to the *Timaeus*, the flavour of the theory is nonetheless similar: even the simplest perceptual judgements display the presence of reason.

Sarah Broadie[16] puts it, infused with human values of formal beauty and intellectual fitness. This is a universe with aesthetic, rational and moral significance.

As regards human nature, the dialogue "weaves mortal into immortal" (41d1–2). The cosmos only becomes perfect through the existence of mortal rational beings (41b).[17] While the Craftsman moulds the immortal part of this rational-mortal-being to be, he gives the creation of its mortal part to ancillary gods (41c–43a). The bodies of human beings are made out of the same ingredients as the cosmos: fire, air, water and earth. The bodies thus composed are further united with the immortal orbits of the Same and the Different, the soul's basic motions. Out of necessity, there are things flowing into these bodies and things flowing out of them. To cut a long story extremely short, human souls are placed in bodies and thereby subjected to the influx and efflux within the material universe. As we shall see, the material fluxes cannot change the basic nature of the soul, but they seriously affect the motions of the orbits. The results of the influx and efflux are the phenomena of nutrition, sensation (*aisthêsis*),[18] desires and emotions. (Esp. *Tim*. 42a3–b1.)

What can be read out of this story is a broad meaning of *aisthêsis* as an encounter or a relationship of the soul with something external to it, and with something external to the body that the soul embodies. I will call this sensation.[19] In the story, we shall later be given two different causal accounts of perception, one primary and the other secondary, according to the overall causal distinction between material causes and the divine purpose for which this power was created.

It becomes soon clear that *aisthêsis* should not be understood merely as a material thing. Before handing over the task of moulding the mortal bodies to the ancillary gods, the Demiurge makes himself some preparatory ordering towards an innate capacity that will actualise itself once the soul is connected to the body and subjected to influx and efflux. *Aisthêsis* is the first capacity mentioned, belonging to all human beings, in a list of innate capacities, followed by "love mingled with pleasure and pain", as well as fear and spiritedness (42a). Perception appears here as an innate (*sumphuton*) capacity or tendency of the soul, distinct from such phenomena as passions, but like them insofar as it can only be actualised once it undergoes the material flux in the body.

Plato goes on to tell how the lesser gods continued the work of the Demiurge, binding the bodies of human beings out of the bits of the four elements, and investing

[16] Broadie (2012, p. 279).

[17] An oddity of the account is that there may not be animal souls at all—see e.g. Carpenter (2010).

[18] The word is challenging in itself: it has been argued that the verb, *aisthanesthai*, has still in Classical antiquity a broad rather than fixed meaning; Frede (1987).

[19] Whether or not we should or could read into the text a distinction made explicit much more later, namely the one between sensation as qualitative experiences and perception as something that goes beyond thus given, perhaps as the ways we take the external objects to be, is a question I cannot really go in here. I shall simply stipulate a broad and a narrow usage of *aisthêsis*: by "sensation" I denote the broad category of any encounter that the body has with the external world that is neither nutrition nor desire, but connected to sensing. I shall use the translation "perception" for those of the encounters that will reach the soul and its rational orbits.

this body in the orbits of the soul. The soul thus finds itself in the mighty "river" of influx and efflux, unable to control it and being thus tossed in different directions:

> For mightly as the nourishment-bearing billow was in its ebb and flow, mightier still was the turbulence produced by the disturbances (*pathêmata*) caused by the things that struck against the living things. Such disturbances would occur when the body encountered and collided with external fire (i.e. the fire other than the body's own) or for that matter with the hard lump of earth 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. *That is no doubt why these motions as a group afterwards came to be called 'perceptions'* (*aisthêseis)*, *as they still are called today*. It was just then, at that very instant, that they produced a very long and intense commotion. They cooperated with the continual flowing channel to stir and violently shake the orbits of the soul... (43b5–d2)

A couple of things are worth noting here: first, the kind of approach that dominates the *Timaeus* is here fully visible. The account given is in a broad sense materialist, done in the vocabulary of the elements that make up the material universe. *Aisthêsis* is, and partially has to be, explained through the motions, properties and collisions of the primary elements.[20]

Second, the quote starts again from a broad phenomenon of encounter with external world, here specified as particles of fire, earth, water and air. These encounters give rise to "disturbances", *pathêmata*, which are a necessary condition for there to be a sensation. However, of interest are a specific group of disturbances, namely the encounters that ultimately reach, or "strike" the soul. Later it is attested that to be perceptible, the affections in question have to reach the rational soul/brain (*phronimon*; 64a6–b6).[21] For clarity, I shall call these perceptions. Perception seems thus subsumed under the broader category of sensation, a *pathêma* caused by a collision with the external world, but one which reaches, further, to the soul.

Third, as we shall later see in more detail, some kind of principle of direct acquaintance seems to be in use. For something to be a perception, it has to involve a direct acquaintance with the external body (or as in a slightly later quote, material fire coming from the object). Given the wider class of encounters it belongs to, it is, as we might put it, a tactile colliding, and not, for instance, a movement of immaterial form or information.

Fourth, this phenomenon disrupts the soul. After the passage quoted, the way that the orbits are disturbed in this encounter is immediately further explicated: these motions are apparently both so many, so forceful and so unorganised that they have the power of hindering the most perfect circular motion, that of the Same,

[20] Even the soul is not defined as something non-material or non-physical. The soul, while not constituted of the four elements, is made of its own proper "materials", that of the "same" and the "different", in complicated pastry of mathematical relations (*Timaeus* 35–36). As this "soul-matter" is moulded into orbits that can be shaken by a flow of mass, it seems that the soul, too, is described as something with nearly physical properties and some kind of extension, and thus not purely as an abstract entity. Perhaps it is best described as geometrical, as having a possible but not necessary orientation and location in space.

[21] Brisson (1999, p. 152). What this means for perception will be discussed more below; see also Carpenter (2010). A similar point is made at *Philebus*, 33d.

from moving, and shake the rations of the orbit of the Different, and "mutilated and disfigured the motions in every possible way". (43d–e, esp. at 43e1–2.) Thereby the account is already related to a teleological account: sensations are considered something violent and problematic, in need of calming down.

2.3 Interaction I: Fire Meets Fire

Having established this overall model, Plato goes on to give an account of one of the sense modalities, namely vision. It is divided into two parts, the materialistic and the teleological, the former coming in two lengthy passages (45b–d; 61c–69a). In the first part, what is suggested is the interplay or relationship between three things the eyes, the object and of light:

> They [the gods] contrived that such fire as was not for burning but for providing a gentle light should become a body, proper to each day. Now the pure fire inside us, cousin to that fire, they made to flow through the eyes: so they made the eyes—the eye as a whole but its middle in particular—close-textured, smooth and dense, to enable them to keep out all the other, coarser stuff, and let that kind of fire pass through pure by itself. Now, whenever daylight surrounds the visual stream (*hotan oun methêmerinon ê phôs peri to tês opseôs reuma*), like makes contact with like, and coalesces with it to make up a single homogeneous body (*hen sôma*) aligned with the direction (*euthuôria*) of the eyes. This happens wherever the internal fire strikes and presses against an external object it has connected with. 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 as well as whatever comes in contact with it, to and through the whole body until they reach the soul. This brings about the sensation we call seeing. (45b4–d2)

Here perception of this specific kind, of vision, is given three conditions.

> I *"A stream of vision" or a "visual stream"* (to tês opseôs reuma) *coming from an eye*. This is a body of pure fire extending from the eye towards the external body, akin to the fire of day-light.
> II *A particular material for the stream to dwell in and unite with*. What is needed is a body of same kind of material—the pure fire of day-light. The transmission of motions from the external body happens only when, by a principle of attraction of like by the like, the stream coalesces with the fire of day-light. The thus formed body of light being, in all its parts, of like nature, it is capable of distributing the movements in encounters through itself all the way to the soul.[22]

[22] An alternative reading is provided by Taylor (1928, pp. 277–278), according to whom the day-light here refers to the sunlight that the external bodies reflect, and there would thus not be any separate medium needed, only the fire coming from the object and that coming from the eye. Taylor's interpretation suits better to the second account of the physics of perception given later in the dialogue (67c4–7; see below), where no day-light is mentioned, but where the bodies emit some light themselves. There are, however, three reasons to object to this view: first, the text itself suggests the medium picture, with its "*peri*", "around". The fire coming from the object, rather than surrounding the stream of vision, encounters and penetrates it. Second, the fires emitted from the bodies in the later passage are what constitute, or rather, as we shall see, give rise to colours, and it would be odd if Plato would here merely refer to them as daylight. Third, what is underlined in this first encounter is the likeness between the stream from the eyes and the fire of day-light.

> III *An external body encountered*. For the stream to "report" or distribute something back to its source, it has to be halted by an external body. The body of the stream adopts or copies the movements coming from the external body, and, because of the homoiogeneous nature of the stream as a whole, is capable of transmitting these motions all the way to the soul.

In the absence of any of these three conditions there is no perception. Trying to look in either complete darkness, or while one's eyelids are closed (45d-e), does not produce perception, for in both cases one condition, the external fire of day-light, is absent. Presumably Plato is here interested in giving an account that would fit together with the every-day empirical experience that to see something some light is needed.[23] In the case of dreams we are dealing with after-images or (in the purely mechanistic vocabulary of Plato) after-motions. In this case, none of the three conditions is met: the present (instead of past) existence of an external object; the present (instead of past) existence of the stream of the inner fire directing itself to the external object; as well as the actual (instead of past) presence of day-light. These are not perceptual errors or failures, but, rather, non-visions.

To which extent does this model, then, differ from a straightforwardly receptive model? At the purely material level it can be noted that the ray or stream is not from the object to the eye—as it is in some ancient theories—but, at least initially, from the eye to the object. However, when this ray meets the external body in right light conditions, it seems that a transmission of the movements that cause the conscious vision in the soul happens in the opposite direction, from the external body, through the ray and the organ, to the soul. Moreover, we should not forget that Plato has earlier called all these encounters *pathêmata*: something external affects the stream rather than vice versa. But why is there, then, the stream from the eyes to the external body? Why could not the transmission of the motions in the fire coming from the external body, in suitable light conditions, to the eye, be enough? If the eye is of the same kind of body as the light in between the external body and the organ, could not these motions move through this kind of body without any need of the stream coming from the eyes, merely through the fire that exists in between the perceiver and the object?

Staying purely on the "mechanistic" or materialistic level of the story: in such a model, the external object, presumably, would transmit its motions to each of the directions surrounding it that were properly lit. Thereby the air & fire surrounding all external bodies would be full of "half-sensations"—these motions travelling in

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In the second encounter with the object there has to be, presumably, some similarity as well, but what is underlined there (see below) is the dissimilarity of proportions. Now, as to whether Plato thought that the colour-fire originates in daylight which the bodies reflect is another matter, for or against of which I do not see evidence in the passage. The interpretation involving a medium is also chosen by, e.g., Modrak (2006, p. 137); Broadie (2012, pp. 173–174); Grönroos (2001, pp. 32–34); Brisson (1999, p. 155).

[23] Grönroos (2001, p. 34) argues that the dependency of the visual stream on the day-light is not one of existence—the stream is composed and originated even without it-but one of strength: without the day-light the body of the stream is not strong enough to reach far from the eyes, or far enough to many external bodies.

the air—waiting to collide with an eye, but existing quite independently of the existence of the eye. The role of the eyes would be to offer a proper kind of receptacle for these motions. Thereby the perception itself would, of course, be dependent upon the receiving eye and soul, but the travelling of the motions through the distance in between would not. Perception would take place when one or more of the floating half-perceptions happens upon a suitable receptacle, a perceptual organ. Plato's model is different by giving a larger role to the looking eye: only the paths or streams from the eyes in the air & fire between us and the external bodies transmit these movements. Not only is perception dependent upon the existence of the eye, the transmission of the movements coming from the external bodies in the air is also so dependent.

As to why the originator of the ray is given this emphasis, there is a small but significant detail: the perceiver does more than just emit a ray or body of fire: this ray has always a straight direction (*euthuôria*). This is a direction "according to the eyes" (*kata tên tôn ommatôn euthuôrian*, 45c5) i.e. to the direction that the eyes point towards. A deflationist reading could say that this simply means that the ray comes from the eyes, rather, than say, from the ear or the back of my head.[24] I find this insufficient to explain the text in its context. Plato has just explained how the fire coming from the eyes coalesces with the fire that surrounds it, that of daylight. Thereby the addition of the direction would seem to limit the ray of vision from everything else in the visual field: without this direction, the fire of the eyes would be dispersed everywhere in the surrounding fire of daylight. What keeps the ray together is this internally originated direction. I take it, further, that besides blocking the physical problem of dispersion of the ray everywhere in the surrounding fire, this suits extremely well in a very common-sensical experience of it being very hard, if not impossible, to look everywhere inside the perceptual field with equal concentration, without concentrating on something particular. Looking is directional.

But what is it that makes the eyes turn to a certain direction? What makes us perceptually focus on a certain thing? Do the external bodies attract our vision, or does the looking follow from an internally originated interest or determination? I.e. is this direction endogenously (from within) or exogenously (from without) determined? It seems that both internal and external determinations are accommodated in the account. Note how two subclasses of the encounter between the stream and the body are mentioned: "[the ray transmits] the motions of whatever it has come into contact with as well as of whatever comes in contact with it" (45c7–d1). These two cases could well present the two possible ways that we come to perceive something: in one the visual stream comes into contact with something, say, Peter turning

[24] As suggested to me in a seminar by Miira Tuominen. I also differ from Grönroos (2001) who translates the lines 45c4–6: …"is united in one single body in straight course from the eyes; this happens whenever the stream issuing forth from within stands firm against that of the things outside with which it meets". Grönroos wants to connect this passage with the idea that the day-light makes the stream from the eyes stronger. While the passage is compatible with such a view, I connect the passage with the line 45c7–d1, and consider the translation "direction" more plausible also because it is used by Plato in that meaning in *Rep*. 436e4.

to look towards a tree, which body then blocks the visual stream coming from the eyes. In the other the external body, rather, comes into contact with the stream, as in Peter's dog running in between Peter and the tree, and thus entering Peter's vision. The "direction" that the stream of vision has is not elaborated into anything like the later notion of "attention" by Plato,[25] but it is well compatible with this idea. What we can safely say is that it is a direction that can perhaps be attracted from without, but *originated* only by the perceiver, not by an external body.

All in all, the account is preparatory before the later explication of the perceivable qualities and the connected, detailed account of the material encounter of the ray and the external body. This second account of the mechanistics of vision given in the *Timaeus* both clarifies and complicates the picture formed so far.

In the cosmology of the *Timaeus*, sensible particulars consist of Empedoclean elements of fire, water, earth and air. But importantly for Plato, these elements are linked to polyhedra: fire to tetrahedron (pyramid), air to octahedron, water to icosahedron and earth to cube (54c–56a). This means that, as Luc Brisson puts it, particulars can be translated to mathematical formulai.[26] Each of the regular solids further exists in different sizes, thus rendering more flexibility to the explanation of particular bodies and the phenomena connected with them. What is perceived, however, are perceptual qualities: hot, cold, soft, hard, heavy, light, sweet, acid, pungent, salty, as well as the colours of the colour spectrum.

To take, again, the case of vision:

> Color is a flame which flows forth from bodies of all sorts, with its parts proportional to our sight so as to produce perception. … Now the parts that move from the other objects and impinge on the ray of sight are in some cases smaller, in others larger than, and still in others cases equal in size to, the parts of the ray of sight itself. Those that are equal are imperceptible (*anaisthêta*), and these we naturally call transparent. Those that are larger contract (*sunkrinonta*) the ray of sight while those that are smaller, on the other hand, dilate (*diakrinonta*) it, and so are 'cousin' to what is cold or hot in the case of the flesh, and, in the case of the tongue, with what is sour, or with all those things that generate heat and that we therefore call pungent. So black and white, it turns out, are properties of contraction and dilation (*ekeinôn pathêmata*), and are really the same as these other properties, though in a different class which is why they present a different appearance (*phantazomena de alla*). This, then, is how we should speak of them: white is what dilates the ray of sight, and black is what does the opposite. (67c6–7; d2–e6)

Again, apart from references to how human beings experience these things, the account given is materialistic: we are looking at two material things, and their material encounter. Visual perception is described as a material change in the stream of vision, caused by the kind of fire particles that it encounters.

As has been noted by both A.E. Taylor and Katerina Ierodiakonou,[27] Plato borrows not merely the idea of the four elements, but also the basic picture of the material encounter with the perceiver and the external body from Empedocles. Empedocles defined colour as "an effluence from things which is commensurate with

[25] That this distinction is at work as early, already, as Augustine, see Brown (2007).

[26] Brisson (1999, p. 149).

[27] Taylor (1928, pp. 278–282); Ierodiakonou (2005, p 221, 223).

the organ of vision and is perceptible" (*Meno* 76d4–5), contending, further, that what is pivotal is the size of the particles that the effluence consists of, and how these particles fit in the pores (of certain sizes) in the perceiving organ. The novelty in the Platonic picture lies in the stream or ray already underlined—the material body extending from the eyes towards the object.

The account given earlier is not only supplemented by the account of perceptible qualities, it also contains some deviating aspects. Most notably, the object no longer seems straightforwardly the material sensible object with which the stream of vision collides. Each external object seems to emit fire particles of its own, and vision results from the stream's encounter with these particles. This brings with itself certain repercussions. While it is not made explicit, the new account may be motivated by the problem of perceiving objects at distances, given that Plato has in between these two accounts talked about the perfect orbits of the heavenly bodies, and their effect upon the soul. For if the homogeneous stream from the eyes were the only material causal factor to consider, then it could be difficult to explain why stars, while being huge heavenly bodies, merely seem twinkling spots in our vision. The account that leaves a role both for the stream as well as for the fire coming from the object has more room to manoeuvre when explaining why, as in a children's story, the cow can be seen to jump over the moon. Note, also, that Plato here allows for potentially perceptible fire particles in the air, originated in the external body. What we have in the new account, continues, however with the asymmetry of the directionality: presumably the objects do not emit fire particles only to the direction of a possible perceiver, but everywhere, or at the very least broadly, around them. Even though the encounter is now an interaction between two fires, these are different to the extent that only one has a direction originated by the body emitting it.

A reappearing feature of the whole discussion is talk about proportions. Nature consists of different regulaties, the primary elements occurring in certain conglomerations and proportions. The same applies to the human body and the stream of vision coming from the eyes. An encounter between two different proportions results in a change in the proportion of the ray coming from the perceiver. As analysed by Ierodiakonou,[28] one possibility is that the account reminds the one given of the transmission of the elements into one another at 56e7–57b7. Here the fire from the external body cuts, however, conglomerations of mere fire. If smaller than the fire pyramids it encounters, it cuts them into a larger number of smaller geometrical bodies of the same shape, that is, to pyramids. If larger, it forces the smaller pyramids into combining numerically fewer but larger pyramids. It is these changes in the proportions that constitute the stream of body emitted from the perceiver which then, in liver, are turned into a (re)presentation of the thing intelligible for the soul, and ultimately reported to the *phronimon*. Hence Luc Brisson's fitting label for the whole process: perception is a measuring operation.[29] As such, it is an activity of the soul, but an activity which heavily relies on the material process described. But

[28] Ierodiakonou (2005, pp. 225–226).

[29] Brisson (1999, p. 155).

it is a very particular material process, involving the geometrical bodies as the intelligible matter that the cosmos is made of.

This brings us to the question of how much activity in the encounter described seems to be posited in the soul, and what possible relevance the perceiver's activity has for the content of perception. Earlier, it has been stated that for the results of the encounter to reach the rational center, the material constitution of the thing affected must be of certain kind. It must be of easily moved by nature (*kata phusin eukinêton*), otherwise the movements are not transmitted further to the soul (64b–c). This could remind one of the passage in the other dialogue where Plato deals extensively with perception, namely the *Theaetetus*. The famous simile of the soul, a lump of wax, is used by Plato, among other things, to explain how some people are forgetful (their wax being too fluid) while others thick-headed (their wax being too hard). In here, Plato differs not merely in proposing a much more active account of the soul. Here he is not explaining individual differences in perception, but how a constitution of a certain kind is needed for perception to take place. There are relevant qualitative differences: Things made mostly of earth, like hair and bones, do not transmit motions very well or at all (we do not sense nails being cut), while in sight and hearing the material is air or fire (*Timaeus* 64b1–c7). That is why the transmission in their case is effortless and quick. All these differences are, however, of *kind*, rather than individual, of type rather than token. Yet in this general manner, the material nature of the recipient has a role to play.

The other relevant discussion for the recipient's role in perception is that of the ontological status of colours. Are they mind-independent or mind-dependent? Is Plato a realist or an irrealist about perceptible qualities? Together with Ierodiakonou[30] I contend that it seems not easy to put Plato straightforwardly to either of these camps. In the end, I will, however, go a step further than she does, and claim that perceptual qualities are perceiver-dependent. The case of sounds seems telling of the subtleties involved. Plato defines sounds as "the percussion of air by way of the ears upon the brain and the blood and transmitted to the soul" (67b1–4). That is, the description is not of anything entirely external to the perceiving agent and his or her body. Rather, sounds are the mutual material effect of both the percussion and what encounters it. However, Plato distinguishes hearing from that of a mere sound, for he goes on to say: "hearing is the motion caused by the percussion that begins in the head and ends in the place where the liver is situated" (67b4–5). This latter thing originates, again, in the percussion, but is not be identified with it, but with the internal effects of it in the body. It would thereby seem that sounds are real in the sense of having, as we moderns might put it, a spatio-temporal location and being identifiable as changes in that location. But while they have a materially objective nature different from any subjective intepretation of them (a property, perhaps, of hearing rather than sound?), they are not perceiver-independent: there is no percussion without a thing, an ear, being hit upon.

In the case of vision, much depends upon the interpretation of a single sentence, the one we started with, that of 67c6–7. Here it is again, in context: "The fourth

[30] Ierodiakonou (2005).

and remaining kind of perception (*genos aisthêtikon*) is one that includes a vast number of variations within it, and hence it requires subdivision. Collectively we call these variations colors. Color is a flame which flows forth from the bodies of all sorts (*floga tôn sômatôn hekastôn aporreusan*), with its parts proportional to our sight so as to produce perception (*opsei summetra moria ekhousan pros aisthêsin*)." This passage can be read in two ways. Either colour is only the flame originating in bodies, or it is the flame "proportioned" according to the stream of vision. The passage itself is not conclusive, but many readers have concluded that the theory is realist.[31] It is realist because the colours can be identified as material structures and proportions of the fire flowing from the external bodies. They are not a result of any individual interpretation on behalf of the perceiver's soul, as suggested by a passage in the *Theaetetus* (153e5–154a4).

According to the reading proposed here, Plato's position in the *Timaeus* lies sligtly differently in between realism and irrealism: while being realist about the proportions in the external bodies and in the fire emitted from them, Plato does not think that colours are perceiver-independent *as colours*. A couple of things support a reading according to which, colours, while having a perfectly real ontology, are perceiver-dependent: First, colours are here discussed under the general heading of perceptual genus (as against qualities of the external bodies). Plato's interest is, therefore, on qualities within the activity of perceiving rather than on the make-up of the objective world, that of the primary elements and their geometrical nature which he has presented earlier. This gives us a context, but does not, of course, force either of the interpretations on Plato. Second, treating colours on a par with sounds would make the account of perceptible qualities unified: while vision is not conclusively defined as the material encounter of the two fires, it can be so interpreted, and thus brought into unison with the account of sounds. This, however, can be a dangerous path—it is possible to turn the table and say that it is a virtue of the theory if it does not impose unity on the account of different sense modalities, but respects, rather, their particularity.

Third, and for me conclusively, when the parts of the encountering flames were said to be of the same size (the longer quote above) as the ones in the stream of vision, the result was "transparent", or, rather, a non-perception (*anaisthêton*).[32] Thus, there is strictly speaking only something to see and to perceive when the two kinds of flames that encounter one another have fire-particles of different size, and hence their consistency a different proportion. Consider a thought-experiment in which it was possible to penetrate the material and geometrical construction of the world to the extent that we could actually perceive or grasp the details of the proportions and sizes of the particles both in the perceiver and in the external body. We could,

[31] E.g., Grönroos (2001); Ierodiakonou (2005).

[32] It is interesting that the *Philebus* 34a introduces *anaisthesia* as a technical term for such bodily *pathêmata* that do not affect the soul. The point in the *Timaeus* seems different—it is about the mechanical encounter of two kinds of flames, and nothing is here said about the soul. The accounts are compatible, however, to the extent that an encounter between two fires the proportions of which were the same would not result in any transmission towards the soul, and can thereby similarly be called non-perceptions.

indeed, track different colours merely by looking at the sizes and proportions of the flames interacting with one another. We could, also, tell which proportions were non-perceivable. But consider a case where a researcher of colours could only access the proportion of the external body and fire emitted from it, and had no access to any rays coming from the eyes. This person could not say which proportions stood for colours and which gave rise to an experience of something transparent. It is further unclear whether she could tell how many colours there are, not being able to tell how a multitude of proportions affects the other part of the interaction. As far as I can see, this epistemological thought-experiment suggests an ontological dependence: colours are ontologically dependent upon both the body seen and the body of fire coming from the eye. This, however, does not mean that there would be anything subjectively random in their occurrence. The proportions are what they are, perfectly real.

In accordance with this, I interpret the longer quote above as saying that white and black are not called merely the different kinds of flame flowing from the object, but, rather, the whole encounter. What is called white and black is, actually, the affections (*pathêmata*) of the contractions and dilations caused in and by the encounter.[33]

2.4 Interaction II: Habituating Vision

The account given so far is concentrated on the material or mechanistic side, and we must turn to other passages to get some leads as to what significance the perceiving soul on the one hand, and the external world and the vision of it, on the other, have within perception. Question concerns their role in the generation and determination of the content of perception, as well as the origins of cognitive development within the recipient. In the *Timaeus*, it will be argued here, Plato shows how the soul is not just the innate power of perceiving and thinking, but also deeply affected by perceptions. Significantly for our theme, these affections have a significance for what and how well the soul perceives in the future, that is, for the development of our cognitive capacities. Both the processes of deterioration and development are explicated.

The innate nature of the soul lies surely in its given orbits of the same and the different. Plato describes what happens to these revolutions in the encounter with the external world. At the "very instant" of the collision, he says, the motions produce a long and intense commotion, shaking violently the orbits of the soul (43d1–3). The circles now move without "rhyme or reason", sometimes to opposite directions and upside down. The ensuing situation is likened to:

[33] Finally, one could say that this reading has a further benefit of bringing some unity to the interpretation of Plato on perception as a whole. The reading given is closer to that of the *Theaetetus* than a more securely realist, perceiver-independent reading. In both dialogues, perceptual qualities have an aspect which is perceiver-dependent. While Plato's interest in the *Timaeus* is general, it is in kinds, in perceivable qualities and sense-modalities rather than in individual differences, in the *Theaetetus* he goes a step further. Perceiver-dependency leaves, as it were, the door open for individual or token differences, rather than merely those of type.

> … a man upside down, head propped against the ground, and holding his feet up against something. In that position his right side will present itself both to him and to those looking at him as left, and his left side as right. It is this very thing—and others like it—that had such a dramatic effect upon the revolutions of the soul. Whenever they encounter something outside (*tôn exôthen*) of them characterizable as same or different, they will speak (*prosagoreusai*) 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. Also, at this stage souls do not have a ruling orbit taking the lead. And so when certain sensations come in from outside and attack them, they sweep the soul's entire vessel along with them. (43e4–44a6.)

There are two main phases of the perceiving soul's encounter with the external world. The original cause of the disarrangement within the orbit's motions is the external world. This, it seems, is particularly the case with children, who are thrown to the disturbing encounters with the external bodies, but who do not yet have a ruling element developed to "calm down" the effects of this encounter, that is, who cannot rationally assess what they perceive. The explanation is not limited, however, to children. Rather, it is one of gradation: the effects of the collisions can be present in an adult person, even to the extent that they do not reach their purpose and remain unintelligent (*atelês kai anoêtos*; 44c2). At the next phase further perceptions are formed as a result of, on the one hand, something external perceived, and, on the other, something internal, namely the acquired disposition of the soul. It is now due to the new condition that the soul interprets wrongly what it encounters in the external world.

The soul, then, is made such that it is far from invulnerable to its surroundings. *Aisthêsis* of an external object is a result of two things, both having a role to play in the content of that sensation. It is an encounter between (1) a soul *in a given state* and (2) an external body. Importantly, the impact of the state of the soul to the sensation has to do with its veracity. A shaken soul gets things the wrong way.

But how much is this, one may ask, an account of perception? The discussed passage comes before the account of the material ray or stream of vision. It is far from clear that we should connect the two passages to the effect that the constitution of the actual stream of vision, for instance, would be affected, and would thus function differently when the orbits of the soul are shaken. On the contrary, we have several reasons to think that this is not an account of the pure perceptual power but of perception that already involves reason to some extent. First, the orbits mentioned are, of course, orbits that elsewhere are said to belong to the immortal rational soul. Second, in the example, the man upside down imagines or is presented to (*phantazitetai*) with the left being right and right left, and the people with a soul equally shaken are said identify, or even to speak, to call (all are meanings of the *prosagoreuousai*) same different and different same. The soul shaken is a soul with a faculty of appearance or imagination, and a soul that makes perceptual judgments or identifications.[34] However, this does not need to mean that Plato describes here a process separable from or temporally posterior to the actual perception. As already mentioned, it seems to be highly difficult to separate a purely materialistic account

[34] As Johansen (2004, p. 168) points out, there are further places where the role of reason is underlined: e.g. 47d3.

of vision from an account of its purpose and good order. The two go hand in hand. What Plato is discussing is a complete process of perception with its origins and materialistic side as well as the ending point of the motions so delivered in the soul, inclusive of the purpose for which these motions occur. Moreover, the example of a man up side down is suggestive of errors within perception. What the man judges falsely is something directly about his surroundings, about the external world. The phenomenon is perceptual but, in Plato's view, perception is also a form of cognition, always ending in the processing by the circles of the same and the different.[35]

As regards the formation of the content of perception, both the external body as well as the condition of the perceiving soul have a role to play. Our judgements about our environment are dependent not exclusively on external bodies, or even on the material transmission of information, but, crucially, also upon the disposition of the soul. Moreover, the affecting relations are never one-way: this state, in turn, is receptive of external affections and disturbances.

This developmentalist-receptive picture is strengthened when Plato goes on to explicate the *telos* for which perception exists:

> As my account has it, our sight has indeed proved to be a source of supreme benefit to us, in that none of our present statements about the universe could ever have been made if we had never seen any stars, sun or heaven. As it is, however, our ability to see the periods of day-and-night, of months and of years, of equinoxes and solstices, has led to the invention of number, and has given us the idea of time, and opened the part to inquiry into the nature of the universe. … … the god invented sight and gave it to us so that we migth observe the orbits of intelligence in the universe and apply them to the revolutions of our own understanding. For there is a kinship between them, even though our revolutions are disturbed whereas the universal orbits are undistrubed. So once we have come to know them and to share in the ability to make correct calculations according to nature, we should stabilize the straying revolutions within ourselves by imitating the completely unstraying revolutions of the god. (47a1–7; b6–c4)

The ultimate telos for which sight exists is two things, one cognitive, another therapeutic: the philosophical study (among others the philosophical study of nature such as the one conducted in the *Timaeus*), as well as the concurrent calming down of the revolutions of our soul and bringing them into imitation of the perfect revolutions of the perfect, divine soul.

Interestingly, looking at vision from the point of view of the most primary cause gives us, again, a two way story of the relationship of perception to the external world. The soul receptive of encounters with the external bodies perceives something that affects the revolutions of its central motions. But this time the external object of perception is such that it does not upset these motions—rather, it strengthens or reintroduces their harmony. And again, the soul seems both receptive and active: It is receptive because the beneficial impact is something that is transmitted from the external, heavenly bodies into the soul. It must be this kind of process that was referred to earlier, when Plato ensured that proper nurture and education may be able to set the revolutions of the orbits straight, so that the person is able to

[35] For an argument to the effect that the same and the different are used both in talking about forms, and about sensible objects, and in connecting perceptions to forms, see Frede (1997).

"correctly identify/say what is the same and what is different" (*to te thateron kai to tauton prosagoreuousai kat' orthon*; 44b6–7).

The impact of the circular motions of the stars is, however, more than calming: it leads into formation of certain concepts, at least those of numbers. Without perceptions of the regular movements of the heavenly bodies people would never have been capable of, for example, thinking in numbers. We would, thereby, have been severly handicapped in both natural philosophy as well as arts such as commerce or architecture. At the next level of activity, the soul thus enlightened can draw further benefit from perceiving those same regularities, advancing its knowledge of the universe. This time the perception of the external objects encounters a philosophically attuned perceiver. For such a perceiver, vision triggers not merely such basic concepts as numbers, but leads into arithmetic and astronomy proper, the teleological fullfilment of the soul—the understanding of good proportion, harmony and concord that promote unity.[36]

Again, the whole process testifies of complex interaction. The benefits to be gained are available through looking at—and for—the right kind of objects, namely concentrating on astronomy rather than on, say, bird-watching, wine-tasting, or, worse yet, on nothing particular or nothing organised by and within nature. Presumably Plato thinks that the soul has an innate inclination for this: it is probably a natural striving of the soul to try and understand its surrounding cosmos, to seek beauty and structure in it, since it is itself alike such beauty and orderliness. In its doing this, it has as an aid another innate feature of the soul, its capacity for sense-perception. The account is both teleological and honorary: An ideal kind of soul imitates the harmony of the orbits in an ideal way. This it can do because it is naturally directed at seeking regularity and beauty. But only *through* perceiving it can it develop a state which is akin to the harmony of the perfect orbits.

In analogy to the previous section, we must again ask to which extent the activity or the passivity involved are perceptual. In choosing to do astronomy, I am not merely looking, I have decided to look for certain things, I classify, using reason, the perceptual (or empirical) information, and infer the things which I cannot directly perceive. Since what is called perception is the whole process inclusive of the material ray and the effects it has on the rational part of the soul, separating pure perception from all intelligising seems harder and harder. Thereby the question of what perception can do entirely independently of reason is misplaced in the case of the *Timaeus*—there simply is no such independent power. The deep mathematical nature of the physical world would seem to prevent perception from being entirely distinct from intelligising: the whole process of perception depends upon the proportions of the basic particles, and is, besides the physical encounter between them, a kind of measuring operation of these proportions. Thereby it is from the very beginning an operation infused, just like the cosmos, with intelligence. Furthermore, a certain asymmetry in favour of reason can be detected: while perception exists in virtue of the intelligent soul, the reverse is not true. Mind is not essentially sensitive,

[36] Burnyeat (2000) provides a most thorough discussion of why mathematics is so central for Plato. His emphasis is on the *Republic*.

while perception is, as Amber Carpenter phrases it, essentially minded.[37] What we have is reason exercising governing power through certain mechanisms, perception being one of those mechanisms.

This does not, however, prevent us from asking, together with Thomas Johansen,[38] whether we can learn anything about the role of the external world and its objects in the formation of content of perception. That is, we are not interested in what a pure perception gives to the soul—for there is no such thing—but on whether the mind finds and imports, as it were, itself in the world, or whether for Plato the affections of the external world can have some contentful significance that is open for analysis. Johansen points out that the passage according to which the use of vision in the observation of the motions of reason in the universe results in a beneficial effect on the circles of our own reasoning (47b6–8) can be interpreted in two radically different ways. One can either think that perception is a power capable of yielding some kind of epistemic input, such as the concepts of numbers, for instance. According to this reading perception involves (1) some information and a kind of judgement ("this is two"), although this information is perhaps pre-conceptual by nature. Yet it is contentful, or "epistemic", as Johansen puts it. Or one can read the text conveying a much more meagre role for perception, namely one that is (2) purely causal: perception triggers or causes reasoning that leads into mathematical and astronomical thinking, and ultimately knowledge. What the external world cannot deliver is proper content.

Johansen's opts, finally, for the purely causal option. His example is a person listening to a clock ticking: "there is nothing in the auditory input of tick-tock, tick-tock in itself that tells me the time. However, these changes, by their frequency and regularity, may make me think that a minute or an hour has passed. Here it is the frequency and regularity by which I am causally affected by the sounds that matters, rather than the information provided by the input as such. I might equally well be able to tell the time by feeling the pulse on my wrist or seeing the light from a lighthouse as long as these affect me with certain regularity."[39] Johansen has a point: observing a mere regularity does not get us very far. One might spend quite some time in a room with the clock without learning anything new, apart from the harmoniously regular repetition. Plato is not, however, committed to a simplest form of regularity of the tick-tock, or to put it in numbers that stand for geometrical proportions, of 1.2.1.2.1.2.1.2.1.2…. Plato's cosmos can be, and is, full of *different kinds of regularities*, their proportions or distances, and the ways these mathematically or geometrically relate to one another. At its bottom, it is a world of 4 different geometrical bodies, appearing, further, in different sizes. It is for this reason that Plato in the quote mentions five different things: the periods of day-and-night, of months and of years, of equinoxes and solstices (47a4–5). All these happen at regular intervals, but they all also have a different interval, and hence, when considered together,

[37] Carpenter (2007, 2010).

[38] Johansen (2004, pp. 168–175).

[39] Ibid., 175.

a different proportion vis-à-vis one another. What the perceptual input contains is, hence, something much richer than the mere regularity of tick-tock.

Where Johansen is, of course, right, is that all these regularities mean something only to a soul that can interpret or measure them—to a soul made up of the basic materials of "sameness" and "difference". Peter's dog will make no inferences about the regularities in question. What the perception takes from outside is not a ready concept or a full-fledged intelligible notion of number, or of proportion, for that matter. But neither is the role of the external world limited to a causal triggering. Through providing basic mathematical proportions that comprise different natural regularities, it renders us a world that has the beginnings of appearing both variegated and structured. For us to see and understand this structured variety in those cognitive, let alone conceptual, terms that we do requires a machinery of a certain kind—a rational soul.

This raises two connected questions, one philosophical, the other concerning interpreting Plato. First, vision is some kind of measurement of proportions, leading to perception of perceptible qualities. But how are unities, whole human beings, trees and dogs, perceived?[40] This is a problem of depth in vision. Second, what is the status of the so-called ordinary Forms of Plato in the *Timaeus*? Are these innate for the soul in the *Timaeus*, and how exactly does the soul come to understand them? This complicated cluster of problems would call for an investigation of its own. Here is must suffice to say that people have rather different takes on this issue. Brisson[41] states that perception's final phase, its reaching the *phronimon*, equals *anamnêsis*: the soul comes to remember the forms it has seen in a previous life separate from the body. We have already seen that Johansen[42] sees the role of perception as triggering something that the soul is already in possession of. Platonic forms seem here to be used as a solution for the first question, that of the problem about depth. It seems to me that while we cannot—nor is there any reason to—deny that the soul possesses a richness of innate powers that goes beyond the circles of the same and the different, it is far from clear whether every instance of correctly seeing something is an instance of recollection. It remains to be studied whether every instance of recognition has to be one in which the seer organises a vision of an external body under some innate species, or whether sameness and difference are enough to "establish an order from a multitude of dispersed occurrences by discovering identities and differences".[43]

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[40] I am grateful to Deborah Brown for posing this question. It is a question that may be especially problematic for Plato, given that often his metaphysics seems to run into similar problems: what makes a collection of things like yellow, like, and just, a recognisable unity that we are used to perceiving and thinking about?

[41] Brisson (1999, p. 162).

[42] Johansen (2004, Chap. 8).

[43] Frede (1997, p. 46). The area is very complicated: on the one hand we have the question of the origin of the informational content (how much and what comes from the soul itself and what from the perceptibles?); on the other hand we have a question of whether general or universal thinking always presupposes recollection *of a Form* in Plato. In a study of recollection in the *Pheado*, Dimas (2003) makes space for a kind of thought of, say, the "equal" which is general, retrieved

2.5 Conclusion

In the *Timaeus*, what is called a perception is a process that has a purely material side (stream of vision and the resulting *pathêmata*), but which, in order to be conscious and intelligible, ends in the rational power of the soul. We have, further, seen that Plato thinks that perception is a two-way link to the external world: there would be no perception of the external world without a perceiver of a suitable nature. Properly speaking, perceptual properties would seem to arise out of this encounter—while perfectly real, they are not perception-independent qualities of the external objects. Moreover, the state of the soul has to be of a certain kind for the rational soul to be able to judge perceptual information correctly. But the external world encountered has its own effect on the recipient: it can come to have both a negative and a positive effect on the powers of the soul, shaping the motions of the revolutions of the soul's orbits that form the locus of its intelligence. The soul that has undergone such shaping further apprehends the perceptual information it is presented with according to its disposition, either falsely or correctly. Perception is also the origin of certain of our central notions, such as numbers, in delivering different proportionalities for these orbits to chew or work on.

The modern notions of saliency or attention are not directly discussed. However, what has been established is that perception, as a power that is, from the very beginning, "minded", does both seek and interpret things differently depending upon its state and previous encounters with the external world. Furthermore, the material account involves the idea of the stream of vision that always has a direction. This gives the perceiver a more important and an active role in the asymmetric interaction between it and the external body. It is not too far fetched to suggests that in a philosophic soul this perceptual direction is partly governed by its previous encounters of the regularities of the heavenly bodies, and yields a different result than in a soul that has been exposed to very few such regularities, and that has not drawn further inferences as to what these regularities tell us about nature and the structure of cosmos. Thus the discussion leads into something like attention and capacity of concentrating on what is salient, although such notions are not on Plato's proper agenda.

There is a further interesting area of perceptual activity in the *Timaeus* entirely neglected here: what would be needed is a study on the role of pain and pleasure in sensation. It is noteworthy that Plato thinks that nearly all sensation, besides the case vision, is accompanied by some pain or pleasure (64a). The teleological direction here is a striving towards a normal state: disrupting a normal state is painful, while restoring it yields an experience of pleasure. This probably also guides what people seek in their encounters with the perceptual world. With this idea Plato opens a possibility for further, subtle two-way relation between grasping the world and the world affecting the subject of that grasping. It is not just that perception opens the world for our actions—it seems that we always perceive things under a certain

from within the soul itself, but does not presuppose a definite view or proper knowledge of what equal or equality is.

aspect, as either attractive or repulsive to us, as already suggestive of some course of action. These speculations I will need, however, to leave for another occasion.

The theory proposed is one in which mental activities are heavily innately specified (the circles of the same and the different enabling recognition of similarities and differences; as well as, possibly, in addition, innate contents, Platonic forms), yet also capable of richly developing in response to interaction with environment (learning from the regularities and proportions visible within the cosmos).[44]

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[44] I wish to express my gratitude for the audiences of the history of philosophy research seminars both in Helsinki and in Uppsala, of the Finnish and Norwegian Institutes at Athens (October 2012), of the Persons and Passions -workshop in the University of Jyväskylä (December 2012) and of the Yorkshire Ancient Philosophy Network (April 2013). As usual, I have received too many crucial comments to be able to record them here. In addition, I am grateful for the comments of Amber Carpenter, Eyjólfur Emilsson, Katerina Ierodiakonou, Tua Korhonen, José Filipe Silva, and Holger Thesleff on earlier written versions of the paper.

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