Studies in the History of Philosophy of Mind 14

José Filipe Silva
Mikko Yrjönsuuri *Editors*

Active Perception in the History of Philosophy

From Plato to Modern Philosophy

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Active Perception in the History of Philosophy

STUDIES IN THE HISTORY OF PHILOSOPHY OF MIND

Volume 14

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The aim of the series *Studies in the History of Philosophy of Mind* is to foster historical research into the nature of thinking and the workings of the mind. The volumes address topics of intellectual history that would nowadays fall into different disciplines like philosophy of mind, philosophical psychology, artificial intelligence, cognitive science, etc. The monographs and collections of articles in the series are historically reliable as well as congenial to the contemporary reader. They provide original insights into central contemporary problems by looking at them in historical contexts, addressing issues like consciousness, representation and intentionality, mind and body, the self and the emotions. In this way, the books open up new perspectives for research on these topics.

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From Plato to Modern Philosophy

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Helsinki and Jyväskylä,
October 2013

José Filipe Silva and Mikko Yrjönsuuri

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Chapter 1
Introduction: The World as a Stereogram

José Filipe Silva and Mikko Yrjönsuuri

1.1 Activity

Contemporary accounts of perception generally share the intuition that the perception of the external world is not the simple result of external things acting causally on the sense organs. It is rather a process conditioned by at least two factors that are internal to the perceiving system:

i. The set of beliefs and knowledge prior to any individual perceptual experience and
ii. The psychological and physiological systems of information processing with which beings of a certain species are naturally equipped.

In other words, we do not just passively perceive what is in front of our eyes, we also actively engage in procedures through which we get perceptual information about the world. In addition, it is commonly agreed that our access to the external world is heavily mediated by systems of representations, and that only in a restricted way can we say that we perceive things as they are.

Investigation into how these intuitions developed into the form they have today and how extensively they inform the fields of philosophy of mind and cognitive science remains, for the most part inadequate. The purpose of this book is to tell the story of how Platonic and Aristotelian accounts of perception have developed and changed over the two millennia following their first appearance to form a specifically modern understanding of what happens in perception. The aim of the book is to give historical depth to contemporary understanding of perception, and to allow critical re-evaluation of the intuitions and theories shaping contemporary accounts.

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The chapters of the book follow a rough historical order and thus allow the reader to grasp lines of development within the discussion.

Our contemporary understanding of perception places great emphasis on the activity of the perceiver, whose role is not merely to be at the receiving end of sensory information coming from without. On the other hand, contemporary philosophy of perception stresses that all acquisition of new knowledge is, in a way, a translation into an existent system of information, and previous knowledge has an essential role in the process of obtaining new information about particular objects in the world outside us. Information is not simply received and processed, however: the kind of information that is received as well as what and how it is received and processed are considered an integral part of how perception is possible. The perceiver seems to have ceased being the one who does the perceiving and has become the one who makes the world that is perceived. There is, of course, some exaggeration in this portrait, but it is not completely off track.

The way perceivers unlock the "secrets" of a stereogram is a good example: the visual system—a *specific* visual system—has to learn how to see the virtual image.[1] This is possible only when the mind/brain produces the feeling of depth from the sensory information received in each of the eyes. The "feeling of depth" is a product of the active mind/brain rather than something merely received by the sensory system. Once perceivers are able to see the virtual figure in their first stereogram, the process becomes easier—the system has learned how to see this image whether or not the perceiver is consciously aware of how it happens.

As a result of that evolution, active perception has evolved to become one of the central notions in the fields of philosophy of mind, cognitive psychology, and robotics, and even in studies on computer vision. In order to make these aspects fully understandable, the study of perception has, for a long time, proceeded to model human information-processing systems as computers. Machines are built to have—and living organisms to operate with—the capacity to map the environment. Through this mapping they learn how to learn, not only adjusting their systems to incorporate new information (that is the learning part) but also changing the way their systems work in order to become more efficient in processing the information that is acquired (that is the learning to learn part).[2] A system that is misadjusted to the specific environment is a waste of resources that are, in all enclosed systems, limited. On the other hand, systems that process the same information to the same end are redundant and thus a waste of resources.

Having stated that this book is about *active* perception, we should first of all, explain the qualification "active", in other words, justify the distinction from perception tout court. It may well seem strange to introduce this distinction in contemporary philosophy because all perception is active in the post-Kantian mind. Herein resides our justification: the contemporary discussion appears to lack a historical understanding about how such conception came about. We will argue that such a conception is largely the result of a long historical and philosophical process of development. It did not spring forth from Kantian originality, nor is it even specifically modern.

[1] The invention of stereograms can be traced back to Wheatstone (1838).

[2] See e.g., Thompson et al. (1992).

For those dedicated to the history of philosophy the originality of such a contemporary conception of activity in perception seems overstated. In fact, it is easy for any of us upon reflecting on the historical periods of our choice and expertise to identify possible sources of such a conception, as well to suggest possible connections between historical sources. Upon close scrutiny however, these threads seem to disappear at some point close to the chronological limits of our expertise. The major problem in this kind of historical investigation is not even the lack of continuity of the thread, but the fact that within the same concept philosophers from different historical periods meant disparate things.

As has now become clear to many historians of philosophy, there is no single connected and continuous intellectual history. What we have, in practice, are large libraries of books of different kinds containing different kinds of discussion. What intellectual historians do is explore and organize the intellectual material in these books into a form that is approachable to the modern mind. The construction of a thread of causally connected development may be a useful tool for such a purpose, but it is necessarily very limited. Instead of trying to bind all the threads tightly together, it may well be more useful to allow the richness of the historical materials to come out. Contemporary ways of thinking do not stem from one single history, but from multiple disparate developments during the course of which intellectuals have worked on single topics, but have often spoken past one another, defending their own theories that, in fact, concerned different issues.

Active perception is a clear-cut case of this problem. For this book, we collected detailed studies on historical authors discussing the issue. How, then, do we define "active perception"? To start with an exhaustive definition to be applied to all authors in different historical periods simply seems wrong. On the other hand, having no definition seems equally problematic. For the purposes of this project, therefore, we used the following tentative definition:

> Active perception is to be understood in a wide sense as to include any account that takes perception to be the result of the soul's own agency, with or without the reception of sensory stimuli, whether such stimuli are causally relevant or not in the explanation of perception.

Many general definitions certainly overreach themselves. Our aim in the above is not only to describe different phenomena through an array of epistemological and metaphysical theories, but also to cover several disciplinary fields. Although we see the need for very many qualifications to each of its aspects, we still think that it neatly frames the *philosophical questions* implied in considering perception as an active process, which any theory of active perception must address. Thus, we still find some use in this tentative definition as the starting point for the different chapters of this book.

As we observed at the inception of our project, specific accounts of perception assign the activeness inherent in it differently:

1. To the nature of the means by which information is acquired (the making of an internal representation—image, species, idea—of an external object), or
2. To the processing of acquired sensory information (the interpretation and organization of sensory data).

In other words, the perceiver can be active in the perception either in the acquisition of the information, or in processing the acquired information further before it can be called perception. In both cases it is necessary to explain the roles a certain account gives to the mechanisms—physiological and psychological—of perception, as well as the structure of beliefs and knowledge that work as preconditions for perception.

For example, inherent in many Platonic theories of vision is the idea that the visual ray reaches outwards to the object rather than inwards from it, and many recent theories of vision emphasize pupillary movements in gathering visual information. These theories can be classified as theories of active visual perception of type (1) because the gathering of the visual information requires significant active engagement by the subject. Similarly, Augustine was of the view that seeing or hearing a text was not enough to make it perceived (at least as a text), and that it must be actively entered into and engaged in the memory to become really perceived. For this reason, Augustine's theory of perception is active in accordance with criterion (2). On the other hand, if one takes, as Silva does in his chapter, the active nature of the soul as its mode of being in the body and that pre-experiential intentionality as being what makes perception possible, then, Augustine's theory should be understood as being active in accordance with criterion (1).

Perceiving external objects is one of the most basic processes in which living beings are engaged. It has historically been taken as the starting point for all knowledge in the sense that all knowledge is either the direct result of perception, or is made accessible to higher cognitive powers by means of perception. Thomas Aquinas's Aristotelian principle puts this nicely: "There is nothing in the mind that has not first been in the senses" (*Nihil est in intellectu quod prius non fuerit in sensu*). Nevertheless, the majority of philosophers throughout history have understood sense perception as a minor form of knowledge. It is often been addressed in a perfunctory manner, as a side issue to other "major" philosophical problems. A (non-inferential) acquaintance with external things that surround us, which we intuitively state, is especially difficult to account for without much of the machinery contemporary science has developed, and with a completely different conception of the physical—and physical interaction—from that we find in the period under consideration in this volume. This is not to say that perception has received no attention throughout the history of philosophy, and there are many studies that show this is not the case. We feel, however, that these overviews of the period overemphasize the passive Aristotelian model and the Cartesian reaction to it, and to a large extent overlook the active elements in these theories. Among the historical studies of theories of perception and its specific types there is no overarching account of how the active aspect is understood. This is the gap this book is intended to fill.

1.2 Complexity

The most simple way for perceivers to be considered active in the process of coming to know the external world is to take on the minimal role of subjects of perception. My perception of, say, this green watch is one in which I am the agent of

perception in that I am doing it rather than, say, you. According to this minimal account, perceivers are agents of perceptual acts because perception is something that happens to them: the subject of perception is that whose sensory apparatus is stimulated by the external thing. We do not count this as active perception because being the (logical) subject of an act does not necessarily qualify the process as active. A stone is not active when the sun heats it.

There is, however, a stronger sense in which I am the agent of perception when I look at the watch. Something in the epistemic relation established between me and the external thing ensures that the agency of the perceptual act is to be found in me rather than in the object, the watch in this case. This stronger sense further implies three essential aspects.

First, the way I perceive the thing is the result of a particular configuration or disposition that not only makes the perception of things possible but also allows those things to be perceived in a certain way, as *green* for instance. My perceiving x as a green watch depends on a number of psycho-physiological conditions or dispositions that are proper to me and define the way I see x. Whereas the causal action of objects is indifferent with respect to what they act upon, the essential principle of my perceiving x is that it is not indifferent because

i. It is intentional (it depends on how the attention is directed, or in the case of vision how the eyes are turned)
ii. The differences in species and in particular perceivers define what each one perceives or sees.

In this sense, perception is active because what is perceived is the result of the capacity of the system to perceive in a way that is not defined (primarily) by the content of the perception. Perception is also defined by being a process that takes place in a limited system—limited in the scope of properties or features of external things that are able to receive, and limited in the capacity to process them (two bottlenecks of the process). Even if some of these limitations evolve with the system—the system can learn how to learn in a different way—others remain the same from the outset. Thus determined, the way the system works determines the content of the perceptual experience and this can be taken as an active feature.

Second, there is something in the way I interpret the sensory information I receive that makes my perception of a very particular sort: I perceive the thing not only as a patch of a certain color but also as a green *watch*. Any given system integrates all new information in a way that is proper to that (type of) system alone. This requires different levels of codification of the information, which only then becomes intelligible and meaningful to the system. By accommodating (in the Piagetian sense) new information the system changes in the way it processes any forthcoming information. This includes its activeness in looking out for certain features and regularities in the environment in order to operate and effectively adjust itself to it. Such adjustment is the result of a set of functions that requires the cooperation of multi-level resources.

Whereas post-Kantian philosophers have, for the most part, spoken of linguistic or conceptual preconditions of human perception the Classical tradition largely adhered to the Platonic-Aristotelian view that in perception the perceived object

is actively associated with an idea, abstracted as a form, or intellectually grasped. To speak of perception proper there needs to be a transformation into a higher level of human cognitive processing, a transformation in which the human mind is active.

Third, not only I am able to perceive the thing as being a watch, I am also able to perceive it as mine, together with other associated elements such as the watch was given to me by my wife. It is arguable whether these last aspects are accessible through perception only or if they even constitute part of a perception. Nevertheless, it is obvious that perception does not give, or only give, a "sense datum" or a value-neutral piece of information that lacks deeper perspectives on the subject.

The trouble is that all perceptions seem direct and at the same time conceptually informed, both culturally and personally—this is *a watch*, *my* watch, a *beautiful* watch, and so on. In other words, the objects around us seem to be given to us in a direct and immediate way in all their totality and simplicity. However,

i. Through the senses we only perceive a certain part or aspect of the thing at each time, although if asked we tend to say, for example, that we saw the whole watch.
ii. We appear always to perceive objects interpreted as watches, tables, and so on, instead of just seeing them.

This is a slightly different aspect of the original investigation that requires the identification of what powers of the perceiver are responsible for which functions, and of whether perception in human beings requires high cognitive resources or whether low-level resources suffice. In other words, it questions whether perception always requires conceptualization (recognition, identification, categorization) upon sensory input—it is not simply seeing x but seeing x as P.[3]

This is simultaneously an epistemological and a metaphysical question, and if the two tend to be taken apart in contemporary discussion, the same is certainly not true for most periods of the history of philosophy. One of the aims in this book is to further understand how these questions were raised and how they often appear in tandem: the way we perceive depends on the way the soul/mind is ontologically defined. The multiplicity of historical answers is very different from their contemporary counterparts, the latter being informed by the dominance of physicalist theories of the mind. At a time when philosophy of mind and perception are beginning to return to metaphysics to resolve certain contemporary stalemates, the historical overview this volume offers may make a contribution. Finding a way to address the problem of perception and its associated phenomena within different conceptual frameworks was the main motive force for editing this book.

[3] See Dretske (2000, pp. 97–112). On the role of categories in the perceptual process, see the cleverly written Cassam (2007). Cassam is among those who take simple seeing to require object differentiation and therefore to require categorization.

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

Pauliina Remes

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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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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Chapter 3
Activity, Passivity, and Perceptual Discrimination in Aristotle

Klaus Corcilius

There is good evidence that Aristotle thinks of sense perception in terms of a passive process. He often describes perception in causal terms as a sort of affection (*paschein*) and he also seems to think that we perceive the world around us such as it objectively is. Now the combination of these two views requires that the objects of perception act on our sensory capacities so as to faithfully preserve the phenomenal features of the external world: the less we interfere with the external input, the more accurately it will present the world around us. On that account, then, the passive nature of our perceptual apparatus is a necessary ingredient of Aristotle's theory of sense perception.[1] But does this make perception a *merely* passive affair for Aristotle? Of course not. For so far there was talk only of the causal input of sense perception. But the matter cannot be decided on the basis of causal input alone. The awareness of the sense objects seems at least an equally important ingredient of sense perception, and awareness is not a part of the causal input. But if perceptual awareness does not impinge on us, it seems that is something that we actively do. So the question seems not *whether* perception is an active doing for Aristotle but in which *way* it is, and, more specifically, how it relates to the undoubtedly passive components of perception.

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[1] That this catches a genuine and important strain in Aristotle's thinking about sense perception is clear from passages such as *DA* 420^{a}911 where it is said that the air in the ears tends to be unmoved (*akinetos*) in order for it not to interfere with the incoming sensual input so as to be capable of perceiving the differences provided by the incoming sensual input accurately (*akribôs*). Similar points about the passive (non-interfering) material structure of the sense-organs can be found in passages like *PA* 652^{b}26sqq., 656^{a}25sqq., 686^{a}6sqq; and by way of a general statement in 672^{b}14sqq. (See also *GA* 780^{b}31–33). For discussions of Aristotle's perceptual realism, see e.g. Broadie (1993); Esfeld (2000).

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These are the questions I would like to address in this chapter. They are by no means easy questions. One obvious reason for this is that "sense perception" can mean quite different things in Aristotle. He was keenly aware of the rich spectrum in which sense perception occurs in the animal realm, ranging from low-level perceivers like, e.g., sea anemones which possess only a rudimentary sense of touch, to human beings, whose perceptual systems are embedded in incomparably more complex and diversified life activities. It thus seems a fair working hypothesis that both quantity and quality of activity in sense perception vary in accordance with the life of the species in question. Presumably, the simple life of a sea anemone will involve a bare minimum, whereas humans are capable of even willfully manipulating their own perceptions. On that hypothesis, then, quantity and quality of activity in sense perception are a matter of *degree* varying along the *scala naturae*:[2] the more sophisticated the life of an animal, the more capable it will be to actively contribute to the way things perceptually appear to it.

Given this broad spectrum, I shall try to address my questions for the largest possible extension of animals. That means that in what follows I will deal only with the most basic form of sense perception in Aristotle's theory. This is the perception of, as he calls them, "special" perceptual qualities (*idia*) like, e.g. single colors or sounds.[3] But the hope is that my treatment will provide a first step towards

[2] Cp. the very general remark in *HA* VII, 588^{b}10–24 "The transition from them [i.e. plants] to animals is continuous, as we said before. (…) And with regard to sensation, some of them [i.e. the very simple animals like razor fish, testacea, and sponges] give no sign at all, others faintly, for example those called tethya, and the sea-anemone kind; but the sponge in every respect resembles the plants. But always, by a small difference at a time, one after another shows more possession of life and movement. And it is the same with the activities of their life" (trans. Balme, slightly altered). See also *GA* 731^{a}30–b5. I do not distinguish between perception and sensation, as Aristotle does not make explicit use of that distinction. It is not entirely clear what the distinction is and whether Aristotle has the resources to draw it, let alone an interest in drawing it.

[3] This method of procedure conforms to Aristotle's own scientific methodology. Generally, the treatment of each subject matter ought to start with the most general features and add the specifics later. More specifically, the *Posterior Analytics* insist that a science should explain (demonstrate) each of its *explananda* on a commensurately universal level (*prôton katholou*, *Anal. Post*. I 4, 73^{b}25–74^{a}3; ^{a}32–^{b}3). This serves not only the end of methodological economy (i.e. minimization of explanatory work and avoidance of repetition, *PA* I 639^{a}15–b5, 644^{a}25–^{b}15, cp. *Phys*. 189^{b}31–32, *DA* 402^{b}8–10), but also ensures the proper hierarchical *sequence* of explanations: within a given science, explanations should stand in the right order such that (ideally) there is only one place where each *explanandum* is dealt with. For Aristotle, only what is known in this commensurably universal way is scientifically, and therefore genuinely, known. His stock example is the knowledge of the proposition that every triangle has a sum of angles equal two right angles (2 R). To know this proposition in a commensurably universal way is to know it as a proposition about triangles *simpliciter* and neither e.g. about figures–since that would include items for which 2 R is not true (squares e.g.)–nor about specific kinds of triangle; so, even though 2 R is true of, e.g., equilateral triangles, it is unscientific to demonstrate 2 R on that level, since it would be false to say that 2 R holds *because*, or *in virtue of* the fact that they are *equilateral* triangles. This is the case only and uniquely because of the fact that they are triangles *simpliciter*. Aristotelian sciences have to comply to this order. This holds also for the science of living beings whose fundaments are laid in the *De Anima*: Aristotle clearly thinks that there is one common and basic account of sense perception across all animal species. And since the basic features of perceptual discrimination are

answering these questions in greater depth. So my goal here is to take a look at the interplay of activity and passivity in episodes of sense perception at the most basic level. For reasons that will become apparent below, I will focus on a central component of Aristotle's account of sense perception, which is his account of perceptual discrimination. I shall address the following questions: what is the role of discrimination in episodes of basic perception? How does perceptual discrimination relate to the causal input of sense perception? Answering these questions will hopefully help us in getting a handle on the initial question about activity and passivity in sense perception.[4]

3.1 Preliminaries: Perception and the Role of Discrimination

For Aristotle the act of sense perception basically consists in the assimilation of the perceptual capacity to a perceptual object such that awareness of that object results. On the most basic level, these perceptual objects are simple perceptual forms. These are single perceptual qualities like, e.g., a certain color, a certain sound, a certain smell etc. Each type of perceptual quality correlates with a different sense-modality, or, as Aristotle calls them, with a different "genus" of perception (i.e. perceptual capacity): colors correlate with sight, sounds with the sense of hearing and so on. Each sense-modality relates to its objects as potentiality relates to actuality: the sense of sight is potentially like colors, the sense of hearing is potentially like sounds etc. During the process of assimilation, the perceptual capacity, which is *potentially* like its object, comes to be *actually* like it. Aristotle thinks of the likeness-relation in strong terms. He repeatedly says that the actuality of the perceptual capacity coincides with the actuality of the perceptual object.[5] They are, he says, one and the same but different "in being" (or "in definition"), the one being the object, the other a subject of perception (*DA* 426^{a}15–17). This entails that a, e.g., red patch of color is *actually* red only when it is perceived by someone and that, before that happens, the red patch is a merely visible, and hence still a potential, object of perception.[6]

At this point we are already in a position to raise a problem: for the claim that the actuality of the object of perception coincides with its being perceived (i), seems

instantiated already in the humblest animals, it should not be irrelevant to the higher forms of perceptual cognition how things work in the simplest case. On the contrary. Since animals differ from plants by the possession of the perceptual capacity (cp. Bonitz, *Index Aristotelicus* s.v. αἴσθησις), it is precisely at the point on the *scala naturae* at which animals differ from plants *minimally* where one should expect the most fundamental expression of their common essence.

[4] Verbally, there is evidence for thinking both: Aristotle calls perception a *pathos* (passive affection, *DA* 403^{a}16–19 and 24–5), whereas the Greek verbal form of "discriminate" is active (*krinein*). Johansen (2002, pp. 175–176) is skeptical about the adequacy of the active grammatical form, see below, fn. 31.

[5] E.g. *DA* 425^{b}26–426^{a}1.

[6] *DA* 426^{a}20–26. See also the discussion of a potential smell *DA* 424^{b}15–18.

to be in tension with the contention that perception consists in the assimilation of the perceptual capacity to the perceptual object (ii). For suppose *a* assimilates *b* to itself. On Aristotle's own analysis of change this requires that *a* be *actually a*, since if it wasn't, it would be *a* only potentially which would prevent it from acting *as a*. That means that it could not, at least not for the time being, act on *b* in the respect in which it is going to cause the changing of *b*. So *a*, in order to assimilate *b* to itself, has to be *actually a*. But now the actuality of *b* is said to coincide with the actuality of *a*. It hence seems that (i) and (ii) cannot both be true about sense perception. But the tension is only apparent. This is so because of the *double role* that Aristotle assigns to the perceptual object in his theory. The perceptual object functions as *both*, the phenomenal content of the act of perceiving—the actually perceived form (green, white etc.)—*and* the causal origin of the process of assimilation. The red color of a tomato, for instance, is not only the phenomenal quality of redness that is fully actualized only once it is perceived; it also causally initiates a motion in its environment that results in its perception.[7] This explains how Aristotle can hold both (i) and (ii): *as efficient cause* the object of perception is fully actualized at the beginning of the process, whereas the actualization of its *formal* features is its result. Both roles coincide in the same object.[8] Perception is, as Caston (2009, p. 323) puts it, "about the very thing that brings it about".

This double role of the perceptual object does important work in the *De Anima*'s treatment of sense perception. The *De Anima* defines the capacity of sense perception by its correlate *objects*, the perceptual forms (*DA* 415^{a}14–22). But it is crucial that he defines these objects not by their phenomenal qualities but by their *causal powers* to initiate qualitative changes (*alloiôseis*) in their environment that (everything going well) will eventually lead to their perception. The content of perception does also not figure in the individuation of the senses and Aristotle is careful not to mention phenomenal qualities in that context. Color, e.g., is defined as that which is capable of moving the surrounding transparent bodies in a way such that the perceptible motion of the sense organ results (*DA* 418^{a}26–^{b}2, 419^{a}13–15). Sound is defined as a motion of the surrounding air such that an acoustic sensation results (420^{a}3–4), and similarly with the other sense modalities.[9] Although it is true that he sometimes talks of the differences (*diaphorai*) and "kinds" (*eidê*) of color, sound, smell, taste and touch,[10] we should not think of this as a treatment of their

[7] In the case of sound, which is *produced* by the striking of two solid objects against each other, the causal story seems slightly more complex.

[8] Aristotle nowhere says how these two functions of the perceptual object are supposed to relate to each other (apart from saying that the one is a perceptual object potentially and the other actually). Silverman (1989, p. 272) suggests accounting for them in terms of essential features and *per se* accidents.

[9] In this connection Aristotle typically uses terms like *kinêtikon* ("capable of setting up motion") or *poiêtikon* ("capable of bringing about") or sometimes both (426^{a}4–5). For color, see 418^{a}31–b2, 419^{a}3, ^{a}9–11, ^{a}13–15; for sound: 419^{a}25–27, 420^{a}3–5; smell: 419^{a}25–27; taste: 422^{a}17–19, ^{b}2–3, ^{b}16–17; touch: 423^{b}12–20, ^{b}31–424^{a}2.

[10] Forms of sound: 420^{a}26–b5; of taste: 422^{b}10–15; of smell: 421^{a}26–b8, of haptic qualities: 423^{b}26–29, and—extremely superficially—the forms of color in 422^{b}24.

phenomenal qualities. Aristotle nowhere *defines* these kinds previously to the definition of sense perception as the capacity to take on perceptual forms without their matter in *De Anima* II 12 (424ª17–24). As will turn out later in that chapter, Aristotle thinks of the phenomenal qualities of perception in terms of proportions (*logoi*, 424ª24–31). Previously to that passage there is no word of proportions and hence also no treatment of the phenomenal qualities of perception *qua* such.[11] This is important because it saves his definition from circularity: had the *De Anima* defined the perceptual objects with reference to their phenomenal content, it would have defined the capacity of sense perception with reference to the actuality of that very capacity.[12]

Accordingly, the bulk of the treatment of sense perception in *De Anima* book II 7–11 is concerned with the causal ancestry of sense perception. The chapters describe how the perceptible motions set up by the external sense objects transmit perceptual qualities to the perceptual apparatus of the perceiver.[13] Here, Aristotle's idea is that of a continuous and uninterrupted causal chain of qualitative change stretching from the perceptual object as *terminus a quo* to the actualization of the perceptual capacity as *terminus ad quem*. The perceptible change productive of actual sound, e.g., consists of air struck in a certain way such that the air is carried to the acoustic capacity. The bodies in which these perceptible changes happen prior to reaching their endpoint are called "media" (*ta metaxu*). The media that extend from the external sense object to the peripheral sense organs are external to the perceiving animal. But since the peripheral sense organs are said to consist of the same kinds of bodies as the external media, the further transmission of the perceptible motion inside the animal body should, at least at first, be very similar to that of the

[11] The distinction between the causal and the phenomenal aspect of the object of perception is made explicit in the case of the object of sight in *DA* 418ª30–31. It is only much later, in his works on the actions and affections common to body and soul, that Aristotle will discuss the phenomenal qualities of the perceptual objects in a more systematic fashion (the discussion in *DA* III 2, 426ª17sqq. is very brief). This is confirmed by the beginning of *De Sensu* 3 where the principles of the division of labor between *De Sensu* and *De Anima* are set out: "Of the objects of perception corresponding to each sensory organ, viz. colour, sound, odour, savour, touch, we have treated in *On the Soul* in general terms, having there determined what their function is, i.e. what their actuality in relation to each of the perceptual *organs* is. We must next consider what account we are to give of any one of them; what, for example, we should say colour is, or sound, or odour, or savour; and so also respecting [the object of] touch. We begin with colour." (*DS* 439ª6–12 trans. Beare, modified). Here, Aristotle describes his general account of the perceptual objects in the *De Anima* as specifying merely the causal effect that they have on the sense *organs* (*ti to ergon autôn kai ti to energein kath' hekaston tôn aisthêtêriôn*), and then goes on to announce his account of their essence (*ti de pote dei legein hotioun autôn, hoion ti khrôma ê ti psophon ê ti osmên ê khumon, homoiôs de kai peri haphês, episkepteon*). That account of the essence of the perceptual objects will be in terms of *logoi*. See below.

[12] Recall: above statement (i) makes the actuality of the perceptual object dependent on their perception. That the kind of circularity at issue is not likely to have escaped Aristotle's notice is clear from passages such as *Met*. 1021ª26–b3 and 1049ᵇ4sqq. See also Silverman (1989, p. 272); Johansen (2002, pp 171–172).

[13] Sometimes addressed as the perceptual organ (*aisthêtêrion*), sometimes as the sense itself (*aisthêsis*).

external media. The visible motion set up by color, e.g., is transmitted in transparent stuff (water or air) as its external medium, and then continues in the inside medium, which is the (likewise watery) eye. From there onwards they are further transmitted inside of the body until they reach the central perceptual organ which is the seat of the perceptual capacity. Again: Aristotle clearly thinks that there is a continuous and uninterrupted causal chain extending from the external perceptual object down to the perceptual capacity. But in the *De Anima* he does not tell us much about the further processing of the incoming perceptual motions once they have reached the peripheral sense organs. Indeed, the *De Anima* says almost nothing about the inner bodily phase of the causal history of perception. So, in spite of the fact that the account in *DA* II is mostly concerned with the causal ancestry of sense perception, it does not give us the whole causal history.[14] But that does not mean that Aristotle did not believe that there *was* such a further, and equally gapless, transmission of perceptible motions inside the body.[15] From other of his writings we know that he thought that there are channels (*poroi*) that run from the peripheral sense organs to the center of the perceptual system (*PA* 656^{b}16–18, *GA* 743^{b}35–744^{a}5). This center, where the incoming perceptible motions arrive, is the heart (*Somn*. 455^{a}33–4, *Juv*. 467^{b}28–30). The heart is the place where the bodily conditions are suitable for the final processing of the perceptible input and where the perceptual capacity is located (*PA* 647^{a}24–31, 665^{a}10–15, 666^{b}32sqq., 672^{b}16–19).[16] However, the many details in connection with the transmission of perceptible motions are of secondary importance for our present concern. They are part of the causal ancestry of perception, comparable to what for us is the transportation of the neural impulses to the brain. All we need to know for now is that at the end of the process a perceptible qualitative motion ("sensory input" in what follows) reaches the place in the heart where the soul is located and the final processing of the input takes place.

What is the output of this final processing? That is the phenomenal content, or, in Aristotle's words, the actually perceived forms. As mentioned above, Aristotle thinks of perceptual forms in terms of proportions (*logoi*).[17] Each sense modality is correlated with a range of values on a continuous scale of perceptible qualities. Each scale is demarcated by the contrariety between the extreme positions on the relevant range. In the case of vision, e.g., that contrariety is constituted by the extremes of the range of color variation, light and dark. All the other colors occupy positions in between light and dark on that scale and are *defined by their relative position to both*. Red, e.g., is a determinate proportion consisting of a portion of light plus a certain portion of dark. Analogously with the other kinds of perceptible qualities:

[14] Although there *is* a description of the whole process in a summary fashion in *DA* 434^{b}27–435^{a}10.

[15] *Phys*. VII 2, e.g., which will be discussed below, even offers a proof for the gaplessness of that chain by way of an inductive argument (244^{b}2–245^{a}11). For the continuity of that causal chain, see also *DA* 419^{a}14, 434^{b}27–435^{a}10; *Insomn*. 2, 459^{b}1–7.

[16] For more details, see Gregoric (2007); Corcilius and Gregoric (2013, pp 57–60).

[17] See *DA* 424^{a}17–24, 426^{b}3–8 and *DS* 440^{b}18–25, cp. 445^{b}20sqq.

each is defined by a proportion (*logos*) of the extreme values on the revant scale of perceptible values[18]. Aristotle says that these qualities, when actually perceived, are separated from matter. This, I take it, means that physically speaking, and in the moment of their actual perception in the central organ, the perceived forms are *not* the qualities of a given material substrate in which they inhere as in their proximate matter: they are separated from their matter and in this sense *isolated qualities*.[19] As such they are *fully* determined by their formal features. That is to say that a single actually perceived color, red, e.g., is *nothing but* a determinate proportion of the extreme values on the scale of visible qualities: a determine portion of light plus a determinate portion of dark.[20] There is no proximate underlying matter or motion *of* which it is an inherent quality.

Aristotle defines the perceptual capacity of the soul as the capacity of receiving the perceptible forms without their matter. I believe that this is best understood as saying that the perceptual capacity is the capacity to receive the isolated qualities just mentioned (*DA* II 12, 424^{a}17–24):

> In general, with regard to all sense-perception we must take it that the (capacity of) perception is that which can receive perceptible forms without their matter, as wax receives the imprint of the ring without the iron or gold, and it takes the imprint which is of gold or bronze, but not *qua* gold or bronze. Similarly too in each case the sense is affected by that which has color or flavor or sound, but by these not in so far as they are what each single of them is spoken of as being [i.e. as that which *has* color, flavor or sound], but in so far as they are things of a certain sort and in accordance with the proportion (*logos*). (trans. Hamlyn, modified)

The receiving of the perceptible form without its matter, I take it, is the perceptual awareness of that form.[21] But receiving the form without its matter presupposes that the form be separated from the matter. This separation, I shall now argue, is the job of perceptual discrimination. If this is correct, perceptual discrimination is a crucial ingredient in Aristotle's theory of sense perception:[22] it accounts for the final bit

[18] Color is a relatively simple case since it seems to involve only one contrariety. Other sense modalities, especially the sense of touch, can be multi-dimensional (*DA* 423a23–33).

[19] See also the definition of the perceptual capacity of the soul in 424^{a}17–24 (quoted below) as "that which can receive perceptible forms *without their matter*" and "in so far as they are things of a certain sort and in accordance with the proportion (*logos*)."

[20] See the discussion in Sorabji (1972); in the case of color, there is an important question as to what these values are (light and dark or white and black), see *De Sensu* 3, and the discussion in Sorabji (1972); the discussion in *Met*. X 7 seems relevant here (1057^{b}4sqq.). But the issue should not affect the present argument. Interpreters agree that the content of perception is defined by proportions (*logos*) of the extreme values on the relevant scales of perceptible values.

[21] *Phys*. VII 2 makes that point by saying that unlike other kinds of alteration perceptual alteration "does not escape notice" (*ou lanthanei*, 244^{b}12–245^{a}1, Ross). For another interpretation of the above *DA*-passage, see below, Fn. 48.

[22] This is presumably why Aristotle classifies perception—along with the intellect—as capacities that are "capable of discriminating" (*kritikon*, *DA* 427^{a}17–21; 429^{b}12–18; 432^{a}15–16; *MA* 700^{b}20;

of internal processing by means of which the affection of the sensory apparatus by sensory input transforms into phenomenal content.[23]

3.2 Perceptual Discrimination

I have suggested that perceptual discrimination is what accounts for the transformation of perceptible input into phenomenal content. But what *is* perceptual discrimination and how does it work? In this Sect. I will discuss an important suggestion that has been made in the literature. It offers an account of perceptual discrimination in Aristotle that is widely accepted by scholars. This is Theo Ebert's treatment of the issue in his 1983 paper "Aristotle on what is done in perceiving".[24] Here, we find the following account:

> 'To discriminate' is a three-place predicate and if we take 'S discriminates x from y' as the canonical formula, the relation expressed by this predicate is symmetrical as to the second and third place: clearly if someone discriminates *a* from *b*, then it is true to say that he discriminates *b* from *a* as well. In the above formula 'S' is a variable ranging over subjects of cognitive activity, 'x' and 'y' are variables ranging over objects of such activities.

The claim that "to discriminate" is a three-place predicate expressing a relation which is symmetrical as to the second and third place seems very plausible. But I should note already at this point that this is so only if we think of the activity of discriminating on a personal level (cp. Ebert's formulation "clearly if *someone* discriminates *a* from *b*"). If we *as persons* discriminate *a* from *b*, then it seems right to say that this entails our awareness of both, of *a* and of *b*. And this easily explains why we thereby also discriminate *b* from *a*. For if we are aware of both, *a* and *b*, it seems that it makes no difference whether we say that we discriminate *a* from *b* or *b* from *a*. This, in many cases, will presumably lead to our becoming aware of the *difference* between *a* and *b as* their difference as well. In such cases, "discrimination" comes very close to "comparing", although this is not implied by Ebert's account. But what his account does seem to imply is that we can, e.g., *decide* to discriminate *a* from *b*. That would make perceptual discrimination something that we intentionally do. But it is far from certain whether basic perceptual discrimination is something we do on an intentional level. To me it is even doubtful whether we *can* decide to perceptually discriminate basic sensory input like "red" or "sweet". It is also uncertain whether the logical three–place structure suggested by Ebert applies to *all* forms of discrimination, including its subpersonal forms. One might find this too complex a mental operation for it adequately to capture more basic forms of

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Anal. Post. 99^{b}35). This classification seems to me to attach great weight to discrimination as an essential feature of cognition.

[23] Some scholars even think that perceptual discrimination and awareness ("receiving") of the perceptual form are one and the same event, see de Haas (2005, p 336). See Fn. 48 below.

[24] Ebert (1983, p. 193). One of the merits of this excellent paper is to have argued conclusively against the old habit of translating *perceptual krinein* with "to judge".

perceptual discrimination as they occur, in, e.g., sea anemones. In short: Ebert's account seems to focus on cognitively more demanding usages of "to discriminate".[25]

Still, a little later in the paper he applies this same account from cognitive subjects to cognitive *faculties*, thereby extending his analysis to subpersonal forms of discrimination:

> It is perhaps worth pointing out that we have hit here upon a central feature in Aristotle's concept of a cognitive faculty. A cognitive faculty is defined not by its correlation to a class of objects of cognition, but by its correlation to types of difference between cognitive objects. (195)

Here it is *all* cognition, including subpersonal cognitive processing, that is said to be concerned with differences between cognitive objects. This goes significantly further than his previous claim, since now the description of discrimination as an intentional act ("S discriminates x from y and thereby also y from x") is said to be the general description of all forms of cognition, including the discriminations of, e.g., sea anemones. Also it seems to me that this generalized account is not compatible with what Aristotle has to say about perception elsewhere. For, on the generalized account, perceptual qualities would not be directly the qualities of external things, but qualities such as they result from the discrimination of differences between a plurality of perceptual qualities. From this it would seem to follow that we do not perceive the perceptual qualities of the external world such as they are in themselves but only the differences that they have in relation to each other. As an interpretation of Aristotle this seems strange. Aristotle nowhere says anything like this about sense perception. On the contrary, he affirms what the above quote denies, namely that cognitive faculties are defined by classes of correlated cognitive objects (rather than by classes of differences between cognitive objects). Moreover, the idea of cognitive capacities relating not to classes of objects of cognition, but to types of differences between such objects, seems not to sit well with Ebert's own characterization of discrimination: If a cognitive object is to be an object of cognition at all, it would seem that it should correspond to some kind of awareness. But it's hard to see how this is possible on Ebert's account. If discriminating a cognitive object *a* from another cognitive object *b* results in a difference, *c*, and *c*, not *a* and *b*, is the content of perception, then this, *prima facie* at least, leaves *a* and *b* without a corresponding cognitive capacity. In other words, Ebert's interpretation does not give us a meaning of "discriminate" that is cognitively *basic*. But for Aristotle sense perception is the most basic from of cognition. And it is not only the most basic form of cognition; it is important for his philosophy as a whole that perception also be correlated to the most basic objects. The haptic qualities warm, cold, dry and moist, for instance, are not only the basic haptic qualities, they are also the most basic physical qualities that make up the elementary ("simple") physical bodies (*DA* 432^{b}26–29), and these basic physical qualities are in turn defined in terms of the basic haptic qualities (*GC* 329^{b}6sqq., cp. *Meteor*. 382^{a}17–21). For Aristotle, basic cognitive objects such as *a* and *b*, therefore, simply *have* to correlate with

[25] It is in line with this tendency that his article does not discuss what seems the most basic account of perceptual *krinein* in *DA* 424^{a}5–6.

some cognitive capacity, and sense perception is the only candidate for this. So even if it is true that Ebert's account of discrimination captures many of our everyday perceptions and judgments, there must be some more basic form of perceptual discrimination in Aristotle that is not captured by his account. It is this form of basic discrimination I am here interested in.[26]

3.3 Interpretation of *De Anima* II 11, 424a2–10

We are searching for an account of discrimination on the most basic level of sense perception. The simplest form of perceptual cognition in Aristotle is awareness of the "special" objects of perception (*ta idia aisthêta*). These are the objects specifically attached to each sense modality such as color for sight, sound for the sense of hearing and so on.

Here is the passage that contains Aristotle's basic account of perceptual discrimination (*DA* II 11, 423^{b}31–424^{a}10):

> For perceiving is a form of being affected; hence, that which acts makes that part, which is potentially as it is, such as it is itself actually. [1] For this reason we do not perceive anything which is equally as hot or cold, or hard or soft, but rather excesses of these, [2] perception (*hê aisthêsis*) being a sort of mean of the opposition present in objects of perception. [3] And that is why it can discriminate (*krinei*) the objects of perception. For the mean is capable of discriminating (*to gar meson kritikon*); for it becomes (*ginetai*) relative to each extreme in turn the other extreme (*akron*). [4] And just as that which is to perceive white and black must be neither of them actually, although both potentially (and similarly too for the other sense-modalities), so in the case of touch that which is to perceive such must be neither hot nor cold. (trans. Hamlyn, modified)

I take the passage to be saying (or to be implying) the following four theses:

> [1] we perceive only those values of perceptible qualities that are both: within the range of perceptible values of a given sense modality (not exceeding the range), and also different from the value of the relevant sense-organ (*qualified difference thesis*).
> [2] the capacity of perception is a sort of mean between the opposition in the objects of perception, i.e. for each sense-modality the capacity of perception occupies an intermediate

[26] That interpretation of discrimination is by no means unique to Ebert. Rather, Ebert's account represents a whole family of interpretations: *see*, e.g., Polansky (2007, p. 343), "comparative assessment"; de Haas (2005, p. 336), "compare"; and many others. The language of "picking out" one among the many possible sense qualities which sometimes can be found in the literature does not settle the issue, see e.g. Bynum (1987, p. 175). Bernard's study (1988), which argues against empiricist readings of Aristotle by emphasizing the active nature of *krinein* as an "active distinguishing" ("aktives Unterscheiden") does not give us the details of the workings of discrimination. If I am not wrong Bernard (1988, p. 268) seems largely to follow Ebert's lead (whom he approvingly cites along with A. Schmitt's similarly broad characterization "to distinguish one definite entity from another"). Welsch (1987) who pursues a similar argumentative goal, offers no detailed account of the act of *krinein* in *DA* II 11 as well. The other family of interpretations is *causal* interpretations of perceptual discrimination. As far as I can see, that family is represented solely by Johansen (2002).

position between the extreme positions on the relevant scale of perceptible qualities (*mean thesis*).
[3] the perceptual mean is responsible for discrimination by providing a corresponding extreme for each perceptual quality (*discrimination thesis*).
[4] the intermediate position on the scale of perceptual qualities is perceptually *neutral*. The capacity of hearing sounds, e.g., is neither sharp nor flat in pitch and therefore soundless, the capacity of seeing is neither dark nor bright and therefore colorless etc. (*neutrality thesis*)

Before I turn to an interpretation of the discrimination thesis in [3], a few explanations are in place. [1] formulates the famous "blind spot" thesis according to which sensory input with perceptible values that match the values occupied by the perceptible capacity is not perceived, the underlying idea being that like is not affected by like. In my above interpretation I go slightly beyond what the text explicitly says by adding a thesis made a little later in the text (434ª28–32) and according to which sensory input which exceeds the extreme limits of perceptible values is also not perceptible (it will either fail to meet the relevant threshold values or lead to a temporary disabling of the sense organ, or even to its destruction). [2] situates the perceptual capacity, i.e. the soul, on the middle position on the scale of perceptible values. There are thus *two* items that occupy that middle position: the perceptual soul and the sense organs mentioned in [1]. This might or might not be a loose way of speaking, since Aristotle might be identifying the middle position of the perceptual capacity with that of the sense organ. Below I will offer an interpretation on which he is not speaking loosely here. The neutrality thesis in [4] is not to be confounded with a nullity thesis to the effect that the neutral position of a sensory organ within a given range of perceptible qualities has no quality at all; it suffices that the neutral position be a non-perceptible quality in virtue of the fact that like cannot be affected by like. That means that if the intermediate position would change (presumably, within certain limits), what previously was a neutral position would now correspond to a perceptible value.[27]

What must happen for sensory input to be discriminated? I shall assume the simplest scenario. Suppose that an incoming perceptible quality, Q_1, which conforms to the qualified difference thesis [1] is taken on by a suitable medium outside the perceiver and reaches a relevant peripheral sense organ. The organ consists of the same medium as the outside medium. As soon as contact is established, the internal medium, by assimilating, changes from its previous mean state, Q_0, to Q_1. Suppose further that inside the animal, via appropriate channels etc., Q_1 is transported until it reaches the heart where animal's perceptual capacity is located. When the incoming motion carrying Q_1 reaches the perceptual capacity, which according to [2] is in state Q_0, what should happen is that Q_1 and Q_0 somehow *meet*.

This already allows us an interpretation of the discrimination thesis in [3]: unlike the inner medium, the perceptual capacity itself cannot change, given that the perceptual capacity is a part of the soul and the soul is not a possible subject of

[27] Johansen makes the interesting suggestion that we should understand the neutrality of the intermediate position as that position on the scale on which the extreme values "cancel each other out" (2002, p. 181).

change.[28] It therefore will not assimilate and remain in state Q_0. So when the motion that carries Q_1 meets Q_0 (for an interpretation of what "meeting" here means, see below), Q_0 provides a value or a standard sufficiently different from Q_1 to generate a *contrast*, or, as Aristotle puts it in [3], "it becomes relative to each extreme in turn the other extreme", which is to say that it becomes a *contrary opposite* of the incoming motion's value.[29] Now this contrast should be equivalent to a *manifestation of the difference* between Q_0 and Q_1. This is so because Aristotle defines the actual sense objects as proportions of opposed values on a given qualitative scale. Actual sense objects, the phenomenal colors, sounds etc., as we have seen, are actual qualities that just *are* such proportions. Each actual colour, e.g. is defined by its position in relation to both of the extreme values on the spectrum of colors, light and dark. It is fully determined by a certain portion of light plus a certain portion of dark. The presence of opposed perceptual values in the central organ thus should be *sufficient* for the production of actual sense objects—only that in this case the contrast is not with the other extreme on the scale of possible values but with the perceptual mean which, as Aristotle says, "becomes" the other extreme. In effect, the contrast of the perceptual soul's neutral value with the incoming value generates a proportion of two perceptible values the presence of which is the manifestation of the difference between Q_0 and Q_1 and that should *be* an actual sense quality.

Given Q_0*'s* neutrality [4], the contrast that becomes manifest is of course = Q_1. But the manifestation of Q_1 is crucially different from the sensual input that carries Q_1 in that it is isolated from the matter (and the motion) of that input. This is because there is no motion over and above the incoming sensory input that would "carry" that manifestation. The manifestation of Q_1 *is* the contrast of the incoming perceptible motion's value, Q_1, with Q_0, and a contrast neither is a motion, nor does it have proximate matter that relates to it in an immediate hylomorphic way; it is, as Aristotle says, a *logos*, a proportion of perceptible values.

On the present picture, then, basic perceptual discrimination is the separation of the perceptible form from its matter. This separation is equivalent to the production of an actual phenomenal quality in the organism. Three items are involved in this process: Q_0, the neutral perceptual value of the perceptual capacity, the sensory input carrying the perceptible value Q_1, and the contrast between these two values, the actually discriminated quality Q_1. And this would to some extent vindicate Ebert's remark about cognitive capacities as being generally correlated to differences between cognitive objects. But it would be inadequate to understand this in terms of his canonical formula "*S* discriminates *x* from *y*" because, on the proposed interpretation, there is no entity that would correspond to Ebert's neutral subject of discrimination, *S*. Rather, what happens is that Q_0*, by somehow being met by, or juxtaposed with,* an input carrying Q_1, generates a manifestation of Q_1 which is isolated from its matter. In the language of Ebert's formula that would correspond to something like "*x*, by being met by perceptible input, is made to discriminate *y* from itself".

[28] A point Aristotle insists upon in *DA* I 3 and 4 (405^b31–407^b11; 408^a30–409^b18).

[29] See *Met*. X 8, 1058^a6–17 for an argument as to why different positions on perceptual scales are best characterized as contrary opposites.

The point is that *x* is not a cognitive subject of discrimination; it discriminates *y*, but it is not aware of *y*. It is also not an object of perception, given that the neutral value of Q_0 is not perceived.[30] In short, the main difference from Ebert's account is that perceptual discrimination is here understood on a subpersonal and largely, but not entirely, *causal* level:[31] Aristotle says that the perceptual mean is capable of discriminating because it *becomes* (*ginetai*, 424^{a}6), relative to each extreme in turn, the other extreme.[32] Above, this was interpreted *causally* as saying that Q_1 becomes manifest only for the time, and to the extent, in which the motion carrying Q_1 *meets* the perceptual capacity's neutral value.

3.4 Meeting the Soul?

What could this "meeting" of the perceptible input with the soul's neutral position be? From an Aristotelian perspective the following worries immediately spring to one's mind. The first is that the idea of a motion that meets the soul goes diametrically against Aristotle's exclusion of the possibility of a physical affection of the soul (*DA* 405^{b}31ssq.). The second is that an alternative, somehow non-physical ("spiritual") affection of the soul wouldn't do better, since that goes against Aristotle's explicit denial that the soul is a subject of mental episodes in *DA* 408^{b}5–29 (including perceptions, 408^{b}3; the passage is careful to make the hylomorphic copound, the "man", the subject of mental episodes, not the soul).[33] But this dilemmat-

[30] This bears some resemblance to what Aristotle says about discrimination elsewhere (*DA* 411^{a}4–6): "(…) it suffices when one of the two parts of the contrary opposition discriminates itself and the opposite as well. For it is also with the straight that we discriminate itself and the bent. The rule is the judge (*kritês*) of both, whereas the bent is (a judge) neither of itself nor of the straight". In this passage, the subject of discrimination is not a neutral subject and outside beholder of an external object, viz. of a difference between a plurality of objects, but itself on a par with the object it discriminates and (in this case) even itself a possible object of discrimination. This is of course different from our case where *x* is perceptually discriminating *y* from itself, but without being an object of perception: Q_0, although a value on the perceptual scale, is not perceptible (at least not in that moment).

[31] Johansen suggests that we should understand it as a passive process *tout court* (2002, pp. 180–181), (comparing it to the motions of a thermostat). That only works if the concept of discrimination is not meant to be addressing "hard" questions about perception, which I think it is meant to address in Aristotle. He also suggests to understand Aristotle's repeated observations according to which the mean states of our sense organs can adapt to different conditions, of, e.g., light etc. ("range shifting"), as a point about the mean state of the perceptual capacity (2002, pp. 182–85). On the current interpretation, by contrast, "mean state" is ambiguous between the intermediate state of the medium in the sense organ and the mean state of the perceptual capacity: while the former would be capable of adjusting to different environmental conditions, the latter would not.

[32] This point is emphasized by Johansen (2002, p. 180).

[33] The passage is discussed below. Aristotle sometimes talks as if the soul was a subject of change (e.g. *Somn.* 454^{a}8–10) but he also uses the language of quasi-affection ("the soul is somehow, *pôs*, affected", *Phys*. 244^{b}10–13). Heinaman (1990, pp. 85–88) and Menn (2002, pp. 86–91) give

ic construal does of course not exhaust the options. To say that *A* and *B meet* implies nothing as to whether *A* and *B* affect each other, be it physically or not. All it implies is their *juxtaposition*. Indeed, the above interpretation of perceptual discrimination even *requires* that both, Q_0 and Q_1, remain unaffected by their juxtaposition, since it is precisely their co-presence that generates the contrast between the two. Any affection would result in assimilation and hence destroy the contrast.

To be sure, Aristotle nowhere spells out in any detail how the juxtaposition of Q_1 and Q_0 is supposed to take place in the organism. And I have no substantial suggestion to make that would resolve that difficult issue of Aristotle's physiology of sense perception. Presumably, to determine that question for him would have to involve empirical research. So instead of attacking directly a question for which, I think, Aristotle doesn't give us an answer because he doesn't have one, I shall stick to what he explicitly says. For that, I shall argue, will on its own terms suffice to back the above interpretation of perceptual discrimination. For Aristotle explicitly claims that (i) the perceptual soul is localized in the body, that (ii) there is a juxtaposition of sensory input with the perceptual soul, that (iii) the juxtaposition of the soul with sensory input does not involve an affection of the soul. And this is all we need to attribute the above interpretation to him.[34]

Localization of the perceptual soul That Aristotle localizes the perceptual soul in the heart in a non-metaphorical way is clear from passages like *MA* 703^{a}2–3, a passage extremely hard to interpret metaphorically since Aristotle there not only localizes the soul in the heart but does so by distinguishing it from the body, and by assigning it an active function as the mover of the body (but see also 702^{b}20–5 and *PA* 647^{a}28, 665^{a}10–15). So the local presence of the soul in the heart, which is the central perceptual organ and the place where perceptual awareness happens, is well secured by the texts.[35] *Juxtaposition with sensory input and unaffectedness of the perceptual soul*. Regarding the juxtaposition of the soul with sensory input, the perhaps most important passage is *De Anima* I 4, 408^{b}5–18, where Aristotle points out that the soul, although the center of incoming and outgoing motions[36] (an

chronological explanations: by the time he wrote *Physics* VII and like passages Aristotle was still on his way to his mature position in the *De Anima* (or even still in the grip of the Platonic analysis of sense perception). For an attempt at assessing that language on the basis of two different kinds of affections ("destructive" and "quasi alterations"), see Lorenz (2007, pp. 214–216). I hope my interpretation will to some extent mitigate these inconsistencies. See also Fn. 42 below.

[34] Historically speaking, assumptions (i) and (ii) should be default positions for Aristotle anyway, given that many of his predecessors, including Plato, agreed on both of them (in the stronger version of an *affection* of the soul by the sensory input). The point of disagreement where Aristotle stands against the tradition is (iii). This point has been made by Menn (2002).

[35] Cp., for instance, *PA* 647^{a}25sqq. There are, of course, many issues here; e.g., even though he undoubtedly localizes the soul (assigns it a certain location), Aristotle cannot consistently think that the soul *has* a place (*topos*), given that his definition of place is tied to the notion of extended bodies (*Phys*. 212^{a}5–7). So the soul seems to be somewhere in the sense of being *in something* but without this implying that it has a place. On that distinction, see Morison (2002, pp. 15–20).

[36] A consequence of the location of the soul in the heart is that the heart is also the place where perceptions (*holôs pasês aisthêseôs*) arrive (*pros tautên perainousai*) and motor reactions (*kinêseis*

assumption he shares with Plato and many others), remains *unmoved* throughout (an assumption he does not share with Plato, Democritus, and others, and which he argues for at length in *DA* I 3–4). This no doubt was a paradoxical claim to his contemporaries since Aristotle also wanted to insist on the traditional view according to which the soul is responsible for cognition and motor processes. Aristotle attempts to reconcile both views with the introduction of a novel conception of the body/soul relation on the level of mental episodes. He claims that the soul is literally the unmoved *terminus* of sensory input (receptivity) and literally the unmoved *starting point* of motor processes (spontaneity), but it is itself not a part of these motions, nor is it affected by them. Let us take a look at the passage. It raises, and argues against, an objection against Aristotle's immobility claim according to which the soul is not a possible subject of motion. The objection is a simple insistence on the common way of speaking of mental episodes such as anger, pity, perception and the like as "motions of the soul" (*kineseis tês psukhês*, 408^{b}1–4). Aristotle grants that this presents a plausible case for thesis that the soul is moved (*hôs kinoumenês*). Interestingly, he responds not by denying that the so-called motions of the soul are motions in a literal, physical sense; what he denies is that these motions imply any affection of the *soul*:

> We may fully admit that being pained or pleased, or thinking, are motions, and that each of them consists in being moved, but this being moved occurs due to the soul, e.g. anger or fear consists in the heart being moved in such and such a way, and thinking consists perhaps in this [being moved] or something else; of these modifications some arise when certain parts are moved locally, others [when certain parts are] altered (what sort of parts and how, belongs to another discussion). Yet to say that the soul is angry is similar to saying that the soul weaves or builds. Perhaps it is better to avoid saying that the soul pities or learns or thinks, and rather to say that the man [does all that] with the soul. This does not imply that motion is in the soul, but rather that sometimes it proceeds to the soul and sometimes from it, e.g. perception [proceeds] from these [peripheral sense organs to the soul], whereas recollection [proceeds] from the soul to the motions or traces in the sense organs. (*DA* 408^{b}5–18)[37]

Aristotle here excludes motion from the perceptual soul by declaring it literally the unmoved terminus and likewise the unmoved starting point of receptive and spontaneous motions. The incoming motions reach to the soul (*mekhri ekeinês*) and the outgoing motions proceed from the soul (*ap' ekeinês*),[38] the soul being literally the

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tôn hedeôn kai tôn luperôn) originate (*enteuthen archomenai*), *PA* 666^{a}11–13.

[37] Cp. *MA* 703^{b}26–35. For an analysis of this passage, see Corcilius and Gregoric (2013, pp. 84–86).

[38] Note that the exclusion regards the soul only as a *subject* of motion: while denying motion to the soul, Aristotle affirms the soul's active role perceiving and in originating motor processes (in this case an episode of recollection). The soul, in spite of being unmoved, is *both* responsible for sensory receptivity and causally spontaneous. This (rather bold) claim requires at least three qualifications. First, Aristotle does not say that the soul is responsible for receptivity and causally spontaneous in *the same respect*. Rather, as we will see, there are different contexts in which the soul can play these roles. Second, the passage does not say that the soul is the subject of intentional states. Aristotle is careful to exclude this option by stating that the subject of intentional states is not the soul, but the "man", i.e. the soul/body compound. Third, the soul is not declared to be capable of initiating motor processes by itself, see below Fn. 40.

endpoint of incoming sensory input and literally the starting point of sensorimotor processes but without being a part of either.[39] On the other hand, Aristotle insists on the traditional notion of the soul as responsible for cognition and motor processes. Now within the Aristotelian framework, this can only be made sense of if it implies the *contiguity* of the soul with the incoming and the outgoing motions, since without contiguity there would be something in between the soul and these motions. And if that were the case the soul could not make a difference to these motions (there is no *actio per distans* in Aristotle), let alone function as their end- viz. starting point. This strongly suggests that he is thinking here of the soul as being contiguous with the incoming and outgoing motions in a way that does not imply the affection of the soul. And in the case of the outgoing motions (motor processes), we do have good evidence that Aristotle thinks of them as being contiguous with the soul. He even goes into considerable detail as to how the soul is capable of moving the body without itself being affected. There is no room for discussing this matter here, but it is clear that in the context of his explanation of animal locomotion Aristotle accepts the idea of there even being a sort of *contact* between body and soul (but, in line with the above *De Anima* passage, not *vice versa*).[40] Unfortunately, there is no such explicit discussion of the reverse case of incoming perceptual input and how it relates to the perceptual soul. We do, however, find the explicit claim *that* there is contiguity between the soul and the incoming perceptible motions. This is in a passage in *Physics* VII 2. The passage makes this very clear by saying that the perceptible input is "together" (or "adjacent", *hama*) with the "senses themselves" in precisely the sense that there is nothing in between the two (*metaxu, ana meson*,

[39] This bears directly on our initial question regarding activity and passivity of sense perception. The passage shows that either/or versions of our initial question ("is the act of perception active or passive?") are somewhat ill posed. The role of the perceptual soul as the unmoved terminus of incoming and outgoing motions suggests that it is somehow *both and neither*.

[40] Since for Aristotle efficient causation requires contact (*haphê*) and ordinary cases of contact are reciprocal, the idea of the soul being the unmoved mover of the animal body is based on a conception of contact that does not imply a reciprocal affection of the soul. Aristotle offers such a *non-reciprocal* conception of contact. On that conception, there are cases of contact in which only the patient (the body) is affected, not the agent (the soul) (cp. *GC* I 6, cp. *Phys*. 198^{a}35–b1). Aristotle's example is this: "for we say sometimes that the man who grieves us 'touches' us, but not that we 'touch' him" (*GC* 323^{a}32–33), the point being that *a* moves *b* in virtue of the fact that *b* stands to *a* in a non-reciprocal relation such that *a* changes because of *b* without this having an effect on *a*; *a* causes the process, but is not a part of it. How is this supposed to work in the concrete case? Presumably, the soul "touches" the living body by providing a cognitive content that, given the right circumstances, affects the animal body, i.e. phenomenal content provided by the actuality of the soul efficiently causes (triggers) motor responses in the animal body and it does so in virtue of the fact that the *body* relates to it in certain ways; the content remains unaffected thereby. This is also what I take to be the gist of the pronouncement in *DA* 407^{b}17–19: "It is because of the communion (of soul and body) that the one acts and the other is affected and the one is moved and the other sets into motion". For an account of efficient causation of animal locomotion by the soul in Aristotle, see Corcilius (2008, Sect. I, 2011); Corcilius and Gregoric (2013, pp. 60–67); for other recent accounts, see Buddensiek (2009); Morel (2010).

Phys. 243^{a}33–35). And that juxtaposition of the senses with the sensory input is stated not only in a summary fashion but specifically for each of the five senses:[41]

> Nor again is there anything intermediate between that which undergoes and that which causes alteration: this can be proved by induction: for in every case we find that the respective extremities of that which alters and that which undergoes alteration are adjacent (*hama*). (…). Thus we say that a thing is altered by becoming hot or sweet or thick or dry or white: and we make these assertions alike of what is inanimate and of what is animate, and further, where animate things are in question, we make them both of the parts that have no power of sense-perception (*mê aisthêtika tôn merôn*) and of the senses themselves (*autas tas aisthêseis*). For in a way even the senses undergo alteration, since actual sense perception is a motion through the body in the course of which the sense is affected in a certain way (*paschousês ti tês aisthêseôs*). We see, then, that the animate is capable of every kind of alteration of which the inanimate is capable: but the inanimate is not capable of every kind of alteration of which the animate is capable, since it is not capable of alteration in respect of the senses: moreover the latter [i.e. the affection of the inanimate] escapes notice, whereas the former [i.e. the affection of the senses] does not, though there is nothing to prevent it to escape the notice of the animate as well when the process of the alteration does not concern the senses. Since, then, the alteration of that which undergoes alteration is caused by the perceptible objects, in every case of such alteration it is evident that the respective extremities of that which alters and that which undergoes alteration are adjacent (*hama*). Thus the air is continuous with that which causes the alteration, and the body that undergoes alteration is continuous (*sunekhes*) with the air. Again, the color is continuous with the light and the light with the sight (*opsis*). And the same is true of hearing (*akoê*) and smelling (*osphrêsis*): for the primary movent in respect to the moved is the air. Similarly, in the case of tasting (*geusis*), the flavor is adjacent (*hama*) to the sense of taste. And it is just the same in the case of things that are inanimate and incapable of sense-perception. Thus there can be nothing intermediate (*metaxu*) between that which undergoes and that which causes alteration. (*Phys*. 244^{b}2–245^{a}11, trans. Hardie/Gaye, modified)

Here we have the explicit statement that the incoming perceptual input reaches the sense capacity in precisely the sense that there is nothing in between the soul and the sensory input. So, even though we don't know how *exactly* Aristotle thought of the meeting of the soul's neutral value with the sensory input, we do have sufficient evidence for attributing to him the view that there is such a juxtaposition.[42] And that is enough to support the interpretation of perceptual discrimination suggested above.

The following picture results: perceptual discrimination—the separation of the perceptible form from its matter—is the production of an actual object of perception

[41] Unlike the others, the sense of touch is not mentioned explicitly, but haptic qualities are mentioned towards the beginning in 244^{b}7–8.

[42] The language of the sense being directly affected by the incoming sensory motion (alteration) in *Physics* VII cannot easily be done away with as a reflection of a supposed earlier stage in Aristotle's thinking about sense perception, since we do find the same language also inside of the *De Anima*, e.g. in the (largely parallel) passage in 434^{b}27–435^{a}10 (*tên opsin kinei*, see also 422^{b}3, *paschei gar ti hê geusis*, 426^{b}31–427^{a}1, *kinei tên aisthêsin*). This, I think, suggests that Aristotle thinks of the affection of the perceptual capacity in a way that is compatible with his hylomorphic claim of the immobility of the soul. So I suggest that "the sense is affected in a certain way" in *Phys*. 244^{b}10–11 and other like passages points to the actualization of the soul's neutral value by the sensory input such as proposed above, and not, as "spiritualist" interpretations have it, to a cognitive act of the soul itself.

in the organism. It happens exactly in the moment at which a perceptible input reaches the endpoint of its motion towards the perceptual center of the animal (located somewhere in the heart), and before it passes that point and, perhaps, reverses into a different region of the body:[43] the point at which the motions literally stop moving in direction of the perceptual center is where the perceptual soul's neutral value is actualized. The resulting juxtaposition of the incoming perceptible value with the soul's neutral value generates a contrast and this contrast is the actual sense object.

Is there more to be said about this neutral position of the perceptual soul? Whatever else he thought of it, it seems that the perceptual soul's neutral value is a metaphysical given for Aristotle. As other perceptible values as well it is a certain proportion of extreme values on scales of perceptible values. It is the proportion according to which living bodies are, as it were, "tuned" in order to be capable of engaging in episodes of perception. As such it is the essence of percipient living bodies that explains why they are able do what is essential for them, i.e. perceiving.[44] But the perceptual soul is more than just a value on a scale of perceptual values according to which the animal body is structured. If I am correct, its actuality also plays a causal role in the production of phenomenal content.

3.5 Perceptual Discrimination, Activity and Awareness

In which sense, then, is perceptual discrimination an active doing? On the interpretation presented here, the process of perception is to a large extent a causal event on a subpersonal level (we usually do not, and could not, decide to perceptually discriminate colors, sounds etc.). But that does not make it an *entirely* passive affair. This is because the process involves the actuality of the soul. And of this actuality we have seen that it is neither quite a passive affection nor quite an active doing: the soul is neither affected nor does it act as the subject of perception; instead, the incoming perceptual input actualizes the neutral value which causes the *living body* to generate phenomenal content, and this is something that *living bodies do*, even if only on a subpersonal level.

If I am correct, Aristotle manages to explain how perceptual discrimination turns physical events–incoming sensory input—into something non-physical, namely

[43] Presumably, as a *phantasma*, cp. *DA* 428^{b}10sqq. The point at which the sensory input stops moving towards the soul is described as a limit in *DA* 435^{a}8–10: "[it is better to say that] (…) the air, so long as it remains one, is affected by the shape and color […], hence it is that it in turn sets the sight in motion, just as if the impression on the wax were transmitted to the limit (*hôsper an ei to en tôi kêrôi sêmeion diedidoto mekhri tou peratos*)."

[44] Cp. the discussion of the perceptual capacity in *DA* III 2, 425B26sqq. The existence and nature of the perceptual capacity is a foundational assumption for the science of living beings, see Corcilius and Gregoric (2010).

phenomenal content *about* the physical world,[45] with a bare minimum of metaphysical assumptions about the role of the soul. What I mean by "non-physical" is that Aristotelian phenomenal content is unlike his standard (hylomorphic) physical objects and events in that it is form without proximate matter; it is a contrast, or, as Aristotle says, a proportion (*logos*). Note that the non-physicality regards only the content *as such*. It is still true on the current proposal that there is neither perception nor phenomenal content in the world without simultaneous qualitative change in the same respect (as Aristotle says in *MA* 701^{b}17–18, 702^{b}21–22, *PA* 641^{b}6, cp. *DA* 429^{b}4–5). Perception necessarily involves such changes because it requires the affection of the perceptual apparatus by incoming perceptible motions.

Note also that, on the current interpretation, perceptual discrimination in its simplest form can be called "cognitive" only with some limitation. We are talking about the most basic cognitive achievement at the point on the *scala naturae* at which animals differ from plants *minimally*. Accordingly, the account of perceptual discrimination offered here is meant to account only for the bare presence of the most basic objects of perception (=the manifestation of the contrast between simple sense qualities Q_1 and Q_0). This is a far cry from what we would call ordinary objects of perception. But even with regard to these simple objects, it is not clear whether their mere presence can fully account for the *awareness* of them. It seems to me that it does not. For awareness to take place there would also need to be a capacity to *receive* that content. This is of course what Aristotle adds a little later in the text when he defines the perceptual capacity as the capacity of taking on the perceptual forms without their matter (424^{a}17–24, quoted above). Without going into any detail, I would like to remark that that definition gives us no reason to think that the *soul* is the subject of that reception/ awareness. Aristotle nowhere says or implies that the soul is *homunculus* inside the living being that perceives the discriminated content like a spectator would. Such a view of the perceptual soul, (apart from not even suggesting an *explanation* as to what perception is or does) would, I think, conflict with Aristotle's claim that the soul is not a subject of perceptual episodes. Perceiving, as is clearly implied in the passage above quoted (*DA* 408^{b}16–18, cp. 408^{b}3), is an activity not of the soul itself, but of the *living body* ("the man"). We should therefore not conceive of the perceptual capacity as a capacity *of* the soul alone either (as I think is ultimately done by those who say that the *soul* is affected by the perceptual object, whatever the nature of that affection is); instead, Aristotle gives us all sorts of reasons for thinking that the perceptual soul *is* this capacity, and that it is a capacity *of* a certain type of living body

[45] From this point onwards we can ask whether things (*pragmata*) are adequately presented by their appearance (*phantasia*) and whether these appearances are true or false (cp. *Met*. 1024^{b}21–26). The perception of special objects of perception, Aristotle says, is for the most part true (*DA* 438^{b}18–19). Presumably, he says this because (i) its content more or less coincides with the causal effect of the sensory input and (ii) special objects are simple, i.e. they do not involve a combination of a plurality of appearances, as higher forms of perceptual cognition seems to do.

(*DA* 412^{a}19–413^{a}10, 413^{b}11–414^{a}28).[46] Receiving perceptual forms without their matter is what *animals* do when their perceptual systems are affected in appropriate ways: they discriminate and become aware of the discriminated content. Once this is granted, there is no good reason to think that the *soul* should do anything over and above what it already does in the process of discrimination. I thus suggest that perceptual awareness—the reception of the perceptible object without its matter—is what *living bodies* do as an immediate consequence of that actuality of their souls: once generated by the process of discrimination, the phenomenal content is present in the organism (its presence lasting for exactly as long as the sensory input acts on the sensory system); to *receive* this content without its matter then may only point to the capacity of the animal's body to be affected by that content *as phenomenal content*. What I mean by this is that the phenomenal content will determine issuing motor reactions in the animal's organism in ways that are *informed by* that content such as to make these reactions intelligible in terms of the received content.[47] This, I think, is all "reception of the form without the matter" *need* mean. If this is right, there is no necessity to postulate a further actuality of the soul apart from the one involved in sensory discrimination to account for that reception. Discrimination—the production of phenomenal content in the animal—plus the animal body's reaction to it *as* phenomenal content seems all that Aristotle's account of basic perceptual awareness requires.[48]

[46] Hence, it is a capacity *of* the soul only in the sense that it is a part of the soul, and this part of the soul is a capacity of the living body. On parts and capacities of the soul in Aristotle, see Corcilius and Gregoric (2010).

[47] The animal body being by its nature designed to do precisely that, see *MA* 703^{a}29–^{b}2. For further discussion of what this means, see Corcilius and Gregoric (2013, 78sqq).

[48] Hence, one may say that discrimination and awareness are one and the same event, but different in being (as was suggested by de Haas, see Fn. 23 above, even though his interpretation of "reception" differs from the one offered here), the one being the act of discrimination, the other the reaction of the animal body to the discriminated content. Caston argues that Aristotle's wax analogy in 424^{a}19–21 shows that "taking on the perceptible form without the matter" is only a necessary, not a sufficient condition of perception on the grounds that this process does not require consciousness or even life (2004, p. 307, Fn. 121, citing Philoponus' comments on a later passage in the same chapter where Aristotle discusses the difference between air that carries a certain scent and the actual perception of that scent, *DA* 424^{b}16–18, *In De an*. 444,17–20. It should be noted, however, that Philoponus does identify sufficient conditions of perception in the relevant passage in *DA* 424^{a}17–24, including the wax analogy, *In De an*. 437,4–438,23). On the interpretation I am suggesting "taking on the form without the matter" means something different from what Caston takes it to mean, namely being aware of phenomenal content previously isolated (discriminated) from a given sensory input. This is something signet rings, or any other non-perceptive being, cannot do. It follows that on my reading the signet ring analogy cannot be understood as an "example" of taking on the form (Caston), for the trivial reason that animals are capable of perceiving and wax is not. I do not think that this is necessarily to the detriment of that interpretation, though. If perception is the receiving of the isolated form, as I think it is for Aristotle, then there *could* be no other non-cognitive example for this. The point of the analogy is rather to provide a necessarily somewhat inadequate illustration of what it is to receive cognitive content without its matter. For the view that the soul is a "receptacle" of the perceptual forms that itself undergoes non-standard kinds of change, see Lorenz (2007, p. 204). For the (in that respect similar) view that the soul is affected by ratios, see Ward (1988, p 221).

3.6 Conclusion: Activity and Higher Forms of Perceptual Discrimination

I have offered a model for understanding Aristotle's account of basic perceptual discrimination as based on his hylomorphic conception of nature, his cardiocentrism, and the localization of the perceptual soul. I argued that the juxtaposition of the soul's neutral value with the value of the sensory input is sufficient for generating basic phenomenal content in the central organ of the animal. I further suggested that the presence of that phenomenal content is not sufficient for perceptual awareness and that for Aristotle perceptual awareness additionally requires the reception of that content. Finally, I proposed an understanding of that reception as a natural reaction of the animal body to the discriminated content. Naturally, this should raise many questions, which I am unable to address in the little space remaining. But I think the general model should be clear by now. In spite of Aristotle's rather archaically sounding talk of incoming motions reaching the soul, his account can address the "hard" philosophical question of phenomenal experience, at least in the most basic form in which it occurs in nature. Aristotle presents us with a very simple (if not crude) but also powerful account of perceptual discrimination that has the remarkable feature of actually *explaining* the production of basic phenomenal content in the animal.

I would like to conclude by again emphasizing that my interpretation focused on the simplest achievement of perceptual discrimination, the production of special *per se* objects of perception, single colors, sounds and so on. This is only the very first beginning of cognitive achievements on the *scala naturae*.[49] And it is only for this basic form of perceptual discrimination that I suggested how it can be regarded as an active doing, namely in the weak sense of a subpersonal activity of the living body that is neither quite a doing nor quite a passive affection. Higher forms of perceptual discrimination may well involve much more of the animal's own activity. I would maintain that for Aristotle they even have to, but there is no room to argue for this here.[50]

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[49] This is, as said above, the point at which animals differ from plants *minimally*. The reason why plants do not perceive, even though they are affected with the same kind of perceptible input as animals are, is precisely that they have no perceptual mean—and hence are incapable of discriminating—nor a principle capable of receiving the perceptual forms without their matter (*DA* 424^{a}32–B3).

[50] See above, p. 2. Aristotle speaks of discrimination (*krinein*) with regard to *all* forms of cognition, perceptual and intellectual (e.g. *DA* 404^{b}25–27). Since the content of higher forms of perceptual cognition may not be exhausted by what causally affects the perceptual system of the animal (cp. *DA* 418^{a}23–24), it seems that there are different ways in which perceptual discrimination can work: basic discrimination seems to be exactly *about* what causally affects the perceptual system at a given point of time (which is why on the present account it does not seem to be representational), whereas higher forms of perceptual cognition may be not (and hence may perhaps be regarded representational). I believe that the production of the objects of higher objects of perceptual cognition involves a great deal of active "construction" by the perceptual system and I am also inclined

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to think that the efficient cause of this "constructing" is the animal itself. But in spite of this active involvement of the animal in the production of perceptual objects it seems that for Aristotle all forms of perceptual discrimination do *involve* affections and that he also thinks that this feature is their common essential characteristic. This is different in the case of intellectual discrimination. Aristotle insists that intellectual thinking is not itself an affection–although it does *involve* a great deal of affection as necessary conditions (see e.g. *De Mem*. $449^{b}31–450^{a}1$; *DA* $403^{a}9$; $427^{b}15$; $431^{a}17$, $^{b}2$; $432^{a}8–10$). From this it seems to follow that the notion of intellectual discrimination is not the same as that of perceptual discrimination. This, it seems to me, is as it should be, given that thinking and perceiving are supposed to be two fundamentally different cognitive activities.

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Chapter 4
On Activity and Passivity in Perception: Aristotle, Philoponus, and Pseudo-Simplicius

Miira Tuominen

Ancient and late ancient theories of perception are often described by a generalisation according to which Aristotle held a passive theory whereas Plato, the Platonists and the Neoplatonists supposed perception to be something active. I shall argue that, despite this general difference, there are important points of convergence in the theories of Aristotle and his Neoplatonic commentators. First, the notion of activity is important for Aristotle's theory as well. Perception not only is an activity (*energeia*) for Aristotle. It is a perfect activity, the perfection of which is the activity itself and is thus not dependent on an external product. Further, the reception of forms without matter is by no means an exhaustive description of perceptual cognition in Aristotle. The sensitive soul is also capable of memory, imagination, and non-universal generalisation Aristotle calls 'experience'. Human beings who have reason also make perceptual judgments that, however, are not identified with perceptions in Aristotle's theory.

While the Neoplatonic commentators on Aristotle's *De anima* modified his theory in several ways and underlined the activity of the soul, I contend that they also maintained some of Aristotle's core assumptions. By contrast to Aristotle, they identified perception with rational perceptual judgments. However, I argue that they still retained the assumption that there also is sensation of external objects but ascribed this to the sense organism rather than the sensitive soul. The point is rather clear in Pseudo-Simplicius and I also argue that it is likely that Philoponus maintained a similar view.

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4.1 Introduction

Considering that perception involves percipients' complex interaction with the external world, one might ask in what ways this interaction is the percipient's own activity and what role the more passive reception of information plays in the process. As has been shown by many striking studies in recent years, the focus of our attention largely determines what we are aware of in perceiving the world.[1] In general, the active direction of attention can happen, as it were, freely from our own initiative when we choose to concentrate on something. However, our attention can also be gripped by something more passively, and other things that in principle belong to the scope of what we can perceive at a given moment fail to be registered by our cognitive system (as is the case in the "invisible gorilla" tests). As has been highlighted in modern discussions, active interpretation is an important element in human perception: we cannot assume that the world simply appears to us as it is, but our cognitive structures and conceptual schemes have a crucial effect on how we see the world.[2] Yet none of this is possible without the reception of information from the external world. In general, it is by no means obvious, which of these elements should be taken to define perception and whether perception should be identified with one or some aspects of our perceptual cognition.

These modern developments were of course not known to ancient authors but active and passive elements in perception were discussed from a different angle. It is a commonplace to claim that Aristotle and the ancient Aristotelians underlined passive or receptive elements in perception, whereas Platonists and Neoplatonists claimed that perception is something active. In the following, I shall consider this commonplace in the light of a brief discussion of Aristotle followed by a consideration of his two Neoplatonic commentators, Philoponus (c. 490–570 CE) and Pseudo-Simplicius.[3] When it comes to assessing Philoponus' views on perception, our task is complicated by the unfortunate fact that we do not have his commentary on *De anima* III in its entirety. For example, a crucial section of his commentary on perception of perception and appearance (φαντασία) is missing (the commentary on III 2–3).[4]

[1] Perhaps the most famous one is the so-called "invisible gorilla test" or "gorilla attention test"; see, e.g., Chabris and Simons (2010, p. 5). For general reviews of research concerning attention, see Pashler (1998) and Styles (2006).

[2] On early modern discussions on selective attention, see Leijenhorst (2007).

[3] The latter commentary has in the manuscript tradition been attributed to Simplicius, but I join the scholarly consensus that the treatise was not written by Simplicius. Thus I shall call the author "Pseudo-Simplicius". Its authenticity was for the first time doubted in the early seventeenth by Franciscus Piccolomini. Later, it has been attributed to Priscian of Lydia by Bossier and Steel (1972). Carlos Steel also defends the attribution, see Steel (1978). The authorship of Priscianus is also accepted by Perkams (2005, 2008). The arguments for the attribution are criticized by Hadot (1978), see esp. 196, and Blumenthal (1982), who first defended the attribution of the commentary to Simplicius but later joined the consensus that the commentary cannot have been written by Simplicius. I agree that Simplicius could not have been the author of the commentary but shall refrain from attributing the commentary to Priscianus, even though I have no arguments against this attribution. This essay is not a contribution to the discussion on the authorship of the commentary.

[4] A commentary on the third book of Aristotle's *De anima* that is in some manuscripts attributed to a certain Stephanus from Alexandria and a somewhat later figure than Philoponus himself has

When it comes to Aristotle's theory, despite its emphasis of the reception of forms, the notion of activity is central for it in many ways. First, perception is understood *as an activity* in the sense of being a natural function at work.[5] Secondly, it is, according to a distinction Aristotle makes in *Metaphysics* IX 6, *a perfect activity*, one that is fully at work at any given moment of its occurrence and is not dependent on the production of something. Thus it is opposed to productions such as building that is perfect only when the product, such as a house, is there. Thirdly, perception is a simultaneous actuality or perfection of two things, the perceptible *object as perceptible* and the capacity of perception,[6] and the active cause of this perfection is the perceptible object. The reason for this, from Aristotle's point of view, is that if our perception of the object differed from the full actualisation of the object's perceptibility, the object's nature would be distorted or altered in perception. Such an actualisation would include something that our perception adds to or subtracts from the object, a conclusion that Aristotle did not accept. Rather, it is *precisely because* he wanted to explain the unaltered transmission of the perceptible object to our sensory system that he analysed perception as a receptive process. For active elements in Aristotle's theory, see also Corcilius above. He argues that a crucial sense in which perception is active for Aristotle is the separation of phenomenal content from matter, and this is how he analyses Aristotle's dictum that perception is discernment (the Greek κρίνειν and derivatives).

With respect to the commentary tradition, I shall argue in sect. 3 that whereas Philoponus develops Aristotle's account in several important ways, his commentary on *De anima* II 7–12 does not significantly depart from Aristotle with respect to the understanding of activity just described. However, his attribution of a cognitive change to the sense *organs*—rather than the soul or the human being—suggests a layered view in which there is sensation in the sensory organism but full perception[7] requires rational judgment. As mentioned, a serious complication concerning the

been published in the Commentaria in Aristotelem Graeca after Philoponus' commentary on books I and II. Its authorship is disputed. Philoponus' own commentary on a section of book III on the intellect (*De anima* III 4–8) has been preserved in a 13th–century Latin translation and translated into English by Charlton in the series Ancient Commentators on Aristotle (Ithaca: Cornell University Press, 1991), but that section does not concern sense perception. Thus we only have a rather limited access to Philoponus' overall conception of perceptual cognition.

[5] As the connection between ἐνέργεια (activity) and ἔργον (function, work) also indicates. I shall mainly translate Aristotle's technical term ἐνέργεια as "activity" but shall use "actuality" when it is contrasted with a potentiality or something potential (as, for example, in T4 below). Another technical term Aristotle introduces for perfections or actualities, ἐντελέχεια, is not central in the terminology of the passage that I discuss in this essay.

[6] I am grateful to the participants of the ancient philosophy research seminar in Athens (November 2012) for a helpful discussion on this and several other points.

[7] In Aristotle's case there is perhaps not so much difference between whether we use "sensation" or "perception" as the translation of the simple acts of perceiving the proper objects of the several senses (such as seeing colours, hearing sounds and so on), since perceptual judgments are not included in perception in this sense in Aristotle. However, Pseudo-Simplicius, following Iamblichus, points out that human perception has the same name as the perception of other animals merely homonymously (187.37 *in de an* III 2, 425b12). This is why I shall use "perceptive" to translate the Greek αἰσθητικός in this text from Pseudo-Simplicius, whereas in relation to Aristotle "sensitive" is an equally possible translation. I am grateful to Pavlos Kalligas for a discussion on this point.

confirmation of the latter point about judgment is that we do not have Philoponus' commentary on book III chap. 2–3. In sect. 4 below, Pseudo-Simplicius serves as an example of such a layered view and he offers an explanation of how the effects in the sense organs are related to the projection of concepts required for perceptual judgment without being their causes.

Further, with respect to the notion of activity and its relation to receptivity, there is the following difference between Aristotle's account and that of Pseudo-Simplicius. Whereas for Aristotle the full actuality of the object's perceptibility is achieved in the receptive activity of perception in the percipient's soul, Pseudo-Simplicius denies this. For him, there is passive or receptive activity in the sense *organs* but such activity is not sufficient for the full perfection of the object. The full perfection of the object does not take place in the sense organism but is derived from the activity of the perceptive soul which, for Pseudo-Simplicius cannot be passive or receptive as it is for Aristotle. It is important to note, however, from the beginning that Aristotle by no means denies the existence of rational, perceptual judgments and for him they are also active in the sense of not being direct causal consequences of the reception of forms. However, for Aristotle, judgments are not a necessary element in how he analyses perception and thus, in fact, the authors use the notion of perception in different ways.

4.2 Aristotle: Perception as Reception of Forms Without Matter

In his treatise on the soul (*De anima*), Aristotle considers perception (αἴσθησις) from a very specific angle. In fact, he mostly uses the term in a technical and restricted sense, particularly in book II, the final chapters of which (7–12) he dedicates to this theme. His treatment is largely affected by the discussion in Presocratic natural philosophy concerning the question of how external objects can affect our senses considering that they often are detached from our organs and that (efficient) causation at distance is not possible. In Corcilius's words, Aristotle focuses on the "causal ancestry" of sense perception. Thus it needs to be born in mind that, as indicated, Aristotle's account of perception in *De anima* II by no means exhausts his view of perceptual cognition neither in human beings nor in non-human animals.[8] For example, it excludes what he has to say about perceptual appearances (φαντασίαι) and perceptual beliefs (δόξαι), the former of which are common to many animals whereas, from Aristotle's perspective, the latter require universal notions that non-human animals lack.

The general well-known characterisation of perception Aristotle gives in the context reads as follows:

[8] I am grateful to Gösta Grönroos for reading a version of the manuscript and for discussion on this and several other points.

(T1) With respect to all perception in general, it needs to be grasped that perception is the reception of perceptible forms without matter. (Aristotle, *De anima* 424a17–19)[9]

The way in which Aristotle formulates this gives the impression that he considers the reception of forms without matter as both necessary and sufficient for perception in the restricted sense of *De anima* II 7–12. However, the definition at least presupposes that the reception happens in an ensouled being, more specifically, in a creature that has animal soul that has the capacity of perception.

A crucial element in Aristotle's brief general account of perception in *De anima* II 7 is that perception is a *receptive* (Greek δεκτικός in T1) process. In Aristotle's analysis of causation, causal processes include an active and a passive element. In order for a change to take place, there needs to be the initiator of change that has the active power of changing but, and this is important for perception, in order for the active cause to effect the change, there needs to be a suitable recipient that can be affected in the relevant way.

The terminology of active and passive aspects (τὸ ποιεῖν, τὸ πάσχειν) in perception is already found in Plato's *Theaetetus*:

(T2) [T]here are two forms of motion, each of which is infinite in number. One has the *power of affecting, the other of being affected*. Through the intercourse and mutual friction of these, offspring is generated that is unlimited in number but in pairs so that one is the perceptible and the other the perception, always emerging together and born with the perceptible. (Plato, *Theaetetus* 156a5–b2; emphasis mine)[10]

This passage occurs in the dialectical context of the dialogue's search for the definition of knowledge (ἐπιστήμη) and with respect to the question of whether perception could be a plausible candidate. As is well known, this suggestion gets rejected in the dialogue and there is no need to ascribe this account of perception to Plato. Aristotle did not do so either and thought that the denial of the pre-existence of the perceptible object only belonged to "the earlier natural philosophers" (οἱ πρότερον φυσιολόγοι*, De an*. III 2, 426a20 in T3 below). As is customary for Aristotle's research procedure, he found this view on the status of perceptible objects in some sense correct but lacking.

(T3) But the earlier natural philosophers did not state this correctly, holding that there is nothing white or black without sight and no flavour without taste. In one way they spoke accurately, in another not. For perception and perceptible objects are spoken of in two ways: potentially and actually; and of the latter the statement holds, of the former it does not. (Aristotle, *De an*. III 2, 426a20–25)[11]

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[9] καθόλου δὲ περὶ πάσης αἰσθήσεως δεῖ λαβεῖν ὅτι ἡ μὲν αἴσθησίς ἐστι τὸ δεκτικὸν τῶν αἰσθητῶν εἰδῶν ἄνευ τῆς ὕλης. All translations are mine unless otherwise indicated.

[10] τῆς δὲ κινήσεως δύο εἴδη, πλήθει μὲν ἄπειρον ἑκάτερον, δύναμιν δὲ τὸ μὲν ποιεῖν ἔχον, τὸ δὲ πάσχειν. ἐκ δὲ τῆς τούτων ὁμιλίας τε καὶ τρίψεως πρὸς ἄλληλα γίγνεται ἔκγονα πλήθει μὲν ἄπειρα, δίδυμα δέ, τὸ μὲν αἰσθητόν, τὸ δὲ αἴσθησις, ἀεὶ συνεκπίπτουσα καὶ γεννωμένη μετὰ τοῦ αἰσθητοῦ.

[11] ἀλλ' οἱ πρότερον φυσιολόγοι τοῦτο οὐ καλῶς ἔλεγον, οὐθὲν οἰόμενοι οὔτε λευκὸν οὔτε μέλαν εἶναι ἄνευ ὄψεως, οὐδὲ χυμὸν ἄνευ γεύσεως. τῇ μὲν γὰρ ἔλεγον ὀρθῶς, τῇ δ' οὐκ ὀρθῶς· διχῶς γὰρ λεγομένης τῆς αἰσθήσεως καὶ τοῦ αἰσθητοῦ, τῶν μὲν κατὰ δύναμιν τῶν δὲ κατ' ἐνέργειαν, ἐπὶ τούτων μὲν συμβαίνει τὸ λεχθέν, ἐπὶ δὲ τῶν ἑτέρων οὐ συμβαίνει.

Again the scope of objects Aristotle is concerned with here is very limited. He is discussing the qualities that are proper to one sense, i.e., colours for sight, sounds for hearing, smells for the sense of smell, flavours for taste, and the tactile qualities such as hardness and softness for touch. A similar analysis could perhaps be applied to the so-called common sensibles—size, shape, number, and motion—qualities that can be perceived by several senses.[12] However, Aristotle also allows for the perceptual cognition of individuals but it belongs in Aristotle's analysis to what he calls "accidental perception"[13] and is dependent on but by no means reducible to the perception of the proper and common sensibles.

As (T3) shows, Aristotle denied that the perceptible object (understood as a quality proper to one sense or a common sensible) does not pre-exist the act of perception *at all*: he argues that the earlier natural philosophers were wrong to claim that the perceptible objects *as potential* do not exist independently of percipients. However, with respect to the full actuality of the perceptible object Aristotle takes the view to be correct—colours, sounds and other perceptible qualities as actualised perceptibles do not exist outside perception. Aristotle thus maintains that there would be colours as specific kinds of mixtures of the transparent and the opaque on the surfaces of things (*De sensu* 3, 439b8–14)[14] even if there were no perceivers. For him colours, sounds, smells, tastes, and tactile qualities are objective physical features of external bodies that exist independently of perceivers.[15] However, they also have a potentiality to be perceived and their full actuality *as perceptibles* is dependent on perceivers, as the following passage makes clear.

> (T4) Because the actuality of the perceptible object and the perceptive capacity is one, even though their being is different, it is necessary that hearing and sound that are spoken of in this way [i.e., as actual], flavour and taste, and the others similarly, are simultaneously destroyed and preserved. But if they are spoken of in the potential manner, this is not necessary. (*De an*. III 2, 426a15–20)[16]

We can also see that Aristotle supposes that no real change takes place in the object when it is perfected from its potential perceptibility to being actually perceived: the objects' actuality as perceived is another mode of being of the very same thing or structure. Further, for both the perceptible object and a percipient, there is one single actuality in the percipient (*De anima* III 2, 426a9–11).[17]

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[12] For a recent analysis of the common perceptibles in Aristotle, see Gregoric (2007, pp. 194–199).

[13] For accidental perception in Aristotle, see Cashdollar (1973). Gregoric (2007, p. 199) also briefly discusses the issue of accidental perception.

[14] Also colours as powers to set in motion the transparent (i.e. illuminated) medium, air or water (*De an*. II 7, 418a31–b2).

[15] For Aristotle's analysis, see also Broackes (1999) and Broadie (1993).

[16] ἐπεὶ δὲ μία μέν ἐστιν ἐνέργεια ἡ τοῦ αἰσθητοῦ καὶ τοῦ αἰσθητικοῦ, τὸ δ' εἶναι ἕτερον, ἀνάγκη ἅμα φθείρεσθαι καὶ σώζεσθαι τὴν οὕτω λεγομένην ἀκοὴν καὶ ψόφον, καὶ χυμὸν δὴ καὶ γεῦσιν, καὶ τὰ ἄλλα ὁμοίως· τὰ δὲ κατὰ δύναμιν λεγόμενα οὐκ ἀνάγκη.

[17] "For as acting and being acted on are in that which is acted on but not in that which acts, in this way the actuality of the perceptible as well as that of the perceptive are in the perceptive". (ὥσπερ γὰρ καὶ ἡ ποίησις καὶ ἡ πάθησις ἐν τῷ πάσχοντι ἀλλ' οὐκ ἐν τῷ ποιοῦντι, οὕτω καὶ ἡ τοῦ αἰσθητοῦ ἐνέργεια καὶ ἡ τοῦ αἰσθητικοῦ ἐν τῷ αἰσθητικῷ.)

Aristotle's view of the metaphysical status of perceptible objects is thus a rather sophisticated one. As structural or physical properties of external bodies (mixtures of the transparent and the opaque as in the case of colours, movements of air as in the case of sounds, or modifications of liquid or air in the case of flavours and smells), they exist as objective features of the external world independently of percipients. However, these physical structures also have another mode of being: their actuality as perceptibles in the acts of perception taking place in the percipient. The perceptible qualities can thus be characterised as dispositional properties of external things.

When it comes to activity, we need to return to the different uses of the notion distinguished above. First, even though the percipient is the receptive or passive party in the causal process involved in perception, Aristotle also considers perception *as an activity* (ἐνέργεια, e.g., *De an*. 426a16 in T4 just quoted). It is a natural function of the human soul's capacity at work. Secondly, among activities it is a complete one: it is perfect in itself and not dependent on a product. As such, it is contrasted to imperfect activities such as building, which are perfect only when they have led to the production of something external of the process itself such as a house (*Metaphysics* IX 6, 1048b18–35). In the passage in the *Metaphysics*, Aristotle in fact calls only the perfect activities "activities" (ἐνέργειαι), whereas imperfect activities are called "movements" (κινήσεις). Thirdly, as we have seen, the active cause of perception is the perceptible object but its full actualisation requires the passive or receptive party, the percipient. Therefore, as mentioned, the full actualisation of the active element is possible only *in the same activity* that is the activity of the passive element.

4.3 Philoponus on Perception

Reception of Forms and Grasping the Objects

Aristotle's theory was interpreted in many different ways in the late ancient commentaries on the *De anima* and in Alexander of Aphrodisias' treatise with the same title, which, however, I shall not discuss in this context.[18] In this section, I shall focus on Philoponus' interpretation of Aristotle's theory. It needs to be noted that even though in general Philoponus often disagrees with Aristotle (e.g., his arguments against Aristotle on the eternity of the world and his criticism of Aristotle's remark concerning projectile motion),[19] the commentary on the second book of the *De anima* is not particularly anti-Aristotelian. Quite the contrary. There is some explicit

[18] Alexander's commentary on Aristotle's *De anima* has been lost.

[19] Philoponus' critical discussions have been highlighted by Sorabji in several publications. See especially Sorabji (2010 [1987]).

criticism of Aristotle in the commentary,[20] but its rhetoric is much less striking than that of the commentaries on the eternity of the world and the *Physics*.[21]

Philoponus points out that reception of forms without matter is not sufficient for perception. What is needed in addition is a capacity of the soul (δύναμις ψυχική) and such a capacity is not present in all things that are capable of receiving the form without matter. If it were, water, air, and mirrors would also perceive, and that is clearly not the case. (See Philoponus, *in de an*. 444.18–22.)[22] What, then, is the capacity like and how does Philoponus account for it?

From the psychological point of view, the crucial difference between perceivers on the one hand and mirrors and air or water[23] on the other is that perceivers have a capacity to *discern* "the effects caused by the perceptible objects" (444.22–23).[24] And, according to Philoponus, such a capacity is not found in all bodies but in "the natural organic body" (444.24), not as a whole but in a part that is "such that is capable of having [literally "receiving"] that capacity because of its proportion of a certain kind and its appropriate mixture" (444.25–26).[25] Thus we perceivers differ from mere form-receptors because we can discern the effects that take place in our sensory system, whereas water and air transmit and mirrors reflect all effects indiscriminately.

Therefore, in addition to emphasising the psychic capacity to discern the effects that take place in our sensory system, Philoponus also hints at a certain physical difference between the sense organs and other form receptors: a sensitive part of the body is "capable of having that capacity because of its proportion of a certain kind and its appropriate mixture". Thus, there are certain parts of the body that not only are capable of receiving the perceptible form without matter, but also have the capacity that enables perceivers to discern between perceptible qualities as they affect the senses. I shall return to this requirement in sect. 3.2 below. Note, however, that even though formulated somewhat differently, the requirement of the psychic capacity is by no means anti-Aristotelian. Aristotle also ascribes perception only to such organisms that have animal soul, and a body not having it will have neither sense organs nor the capacity to perceive.

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[20] Consider, for example, 421.5–6 "these things were not well grasped by Aristotle" and Philoponus' lengthy criticism of Aristotle's argument that all senses must have a medium since otherwise an important similarity between them would be lacking (concluded in 433.15–434.5).

[21] For such striking rhetoric, see, e.g., Hoffmann (2010 [1987]).

[22] For the point about mirrors, air, and water, see also ibid. 437.22–24.

[23] I.e., those materials that can receive the perceptible form without matter, in this case the visible form, so as to transmit or reflect it.

[24] ἀλλὰ δεῖ καὶ δυνάμεως τοιαύτης τῆς κρίνειν δυναμένης τὰ πάθη τὰ ὑπὸ τῶν αἰσθητῶν γινόμενα.

[25] ἥτις οὐκ ἐν παντὶ σώματί ἐστιν, ἀλλ' ἐν τῷ φυσικῷ ὀργανικῷ, ὡς ἔδειξε, καὶ οὐδὲ τούτῳ παντί, ἀλλ' ἐν τούτῳ τῷ μέρει αὐτοῦ τῷ διὰ τὴν ποιὰν συμμετρίαν τε καὶ εὐκρασίαν δέχεσθαι ταύτην τὴν δύναμιν δυναμένῳ (444.23-26). For the point about discerning, see also, e.g., 437.22–24: Mirrors and moulding wax differ from the senses/sense organs because they cannot *discern* the effect that occurs in them. (τὰ μὲν οὖν κάτοπτρα καὶ τὰ ἐκμαγεῖα διαφέρει τῆς αἰσθήσεως τῷ μὴ δύνασθαι *κρίνειν* τὸ πάθος τὸ ἐν αὐτοῖς γενόμενον.)

One might ask whether one reason for Philoponus to deny the sufficiency of the reception of forms for perception is to claim that, in addition to the reception that takes place in the sensory mechanism—the external sense organs, the nerves and the brain—an additional element that is needed to complete the process of perception is a rational judgment that is added on top of a mere sensory discernment of sensible qualities. As mentioned, Philoponus' commentary on chaps. 2–3 of Aristotle's *De anima* III have been lost and this unfortunate fact prevents us from forming a comprehensive view of how Philoponus understands perception in his commentary. However, one possible indication that Philoponus required rational judgment is that he uses the verb ἀντιλαμβάνεσθαι to refer to the activity of perception in a complex section on the role of flesh in tactile perception. This is a word Plotinus uses of perceptions (*Enneads* IV.4.23, 2–4; 24; cf. also I.1.7, 11) and supposes that perceptions in a sense *are* perceptual judgments.[26]

Philoponus talks about grasping (ἀντιλαμβάνεσθαι) in a section that is of central importance for another question, namely whether or to what extent Philoponus dematerialises Aristotle's theory of perception, as has been suggested by Sorabji.[27] This claim of course depends on whether Aristotle's theory is (literally) materialistic, and, as many others, I disagree with Sorabji on this. However, I do not think that the only possibility of denying Sorabji's claim of *literal* material change is to argue for a purely immaterial or spiritualistic account of Aristotle. Unlike Burnyeat and like Caston, for example, I think that there is a lot of conceptual space between these two options and that we should locate Aristotle's theory in this space.[28] What is more, in the light of Aristotle's hylomorphism (i.e. the claim that in the sublunary world all things are composite of form and matter), a simple opposition of materiality and immateriality is not the best frame for analysing his theory of perception. However, this is a very complex issue both with respect to the discussion concerning Aristotle's theory and to Philoponus' remarks that bear on this question, as well as what the conditions are for calling a position "materialistic". I cannot tackle the issue in detail in this context.[29] However, some passages relevant to the question of dematerialisation need to be considered here in order to clarify how Philoponus understands perception in his commentary on book II chap. 7–12.

The passage about grasping (ἀντιλαμβάνεσθαι) makes a distinction between a simple material affection in a natural body and a cognitive change:

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[26] See, e.g., Emilsson's conclusions in Emilsson (1988, pp. 141–148). For ἀντιλαμβάνεσθαι in Pseudo-Simplicius, see, e.g., *in de an*. 187.31.

[27] Sorabji (1991).

[28] For the materialist interpretation, see Sorabji (1974, 1992, 2001); see also Everson (1997). For the immaterialist or spiritualist interpretations, see Burnyeat (1992, 2001, 2002); see also Johansen (1997). For more recent discussions of the whole dispute, which began from a footnote in Sorabji's (1974) article (49n22) and which in Caston's words "has grown beyond all bounds", see Caston (2005), that contains rich footnotes for further references (see esp. 246nn3–4); for analyses that aims at a more balanced view, see Caston (2005) and Bolton (2005). Caston's view to some extent resembles Modrak's; see Modrak (1987) and others mentioned in Caston (2005), 247n7.

[29] Peter Lautner also argues in his recent article (2013), 379 and 398–399 that Philoponus' theory does not support the spiritualist reading of Aristotle's theory of perception.

> (T5) As a sense, it grasps and cognises them, whereas as a natural body, it is materially affected by them. (*in de an*. 433.3–4)[30]

However, rather than pointing to a rational judgment required to complete a perceptual process, Philoponus is referring to a change that takes place in the sense *organ*. Therefore, even though I find it plausible that Philoponus on the whole suggested a layered view (sensation in the organism and rational judgment in the soul), the term ἀντιλαμβάνεσθαι *alone* is not sufficient to imply a reference to rational judgment in this context.

In addition, both Alexander of Aphrodisias and Themistius use the word in their accounts of sense perception. Alexander, whose commentary is pre-Plotinian, uses "grasping" (ἀντίληψις 65.11) to refer to the cognition of the so-called common sensibles: shape and size, movement and rest, number, and distance (65.12–14); cognition that takes place in the animal soul and does not require rational judgment. In Themistius, ἀντιλαμβάνεσθαι occurs in a discussion of the proper objects of touch that are not easily definable. Whereas sight has colours, hearing sounds, taste flavours and smell odours as their proper objects, touch grasps (ἀντιλαμβάνεται 57.28) rough and smooth, hard and soft, heavy and light, hot and cold and dry and wet (or solid and liquid). Themistius also speaks of grasping in a context that bears a strong resemblance to the text quoted from Philoponus above (T5). He points out that the sense organs (αἰσθήσεις) do not become matter for the object and literally affected by it. This is why they are perfected in grasping (ἀντίληψις) and discernment, whereas matter is incapable of making distinctions and grasping.[31] The term thus has a history in the commentaries on the *De anima* and the passage in Alexander in particular is an example of ἀντίληψις in a context in which rational judgment is not required. Since Philoponus also attributes the grasping to the sense *organs*, the term as such does not entail a rational judgment in his commentary on *De anima* II 7–12.

Sense Organs and Perceptual Cognition

What, then, are the sense organs doing according to Philoponus' account? This is of course a very complex question and cannot be fully addressed here. However, with respect to this question we can find an important difference from Aristotle's theory. According to Philoponus, there is cognitive change in the sense organs, whereas for Aristotle such change is proper to the person who perceives sometimes expressed as the change happening in his or her soul. Consider the famous passage in *De anima* I 4, in which Aristotle points out that even though some tend to say that the soul de-

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[30] ὡς μὲν αἴσθησις ἀντιλαμβάνεται αὐτῶν καὶ γινώσκει αὐτά, ὡς μέντοι φυσικὸν σῶμα πάσχει ὑλικῶς ὑπ' αὐτῶν.

[31] αἱ δὲ αἰσθήσεις οὐχ ὗλαι γίνονται τῶν αἰσθητῶν· οὐ γὰρ λευκαίνεται ἡ αἴσθησις οὐδὲ μελαίνεται οὐδὲ βαρύνεται ἢ ὀξύνεται, ἀλλ' ὃ πολλάκις καὶ εἰρήκαμεν καὶ ἐροῦμεν, τὸ εἶδος ὑποδέχεται μόνον καὶ τὸν λόγον. διὸ καὶ εἰς κρίσιν καὶ εἰς ἀντίληψιν τελευτῶσιν· ὕλη γὰρ οὐδεμία δύναται κρίνειν τὸ ἐγγινόμενον εἶδος· ἀσύνετον γάρ τι καὶ ἄκριτον καὶ ἀναντίληπτον ἥ γε ὕλη (Themistius, *in de an*. 78.7–12).

sires, it is like saying that it weaves or builds and that rather than saying that the soul feels compassion or pity, learns, or thinks, it is the human being that does so with the soul (408b11–15; τῇ ψυχῇ in line 15).[32] In *Physics* VII 2 (244b11–245a1), also discussed by Corcilius above.[33] he also formulates the difference between ensouled and soulless beings in terms of a difference between whether there is awareness of the affect in the organs or not. Those with a perceptive soul are aware (οὐ λανθάνει) of the changes whereas those lacking perceptive soul are not (λανθάνει).

One important and indeed striking passage from Philoponus is also cited by Sorabji to support his thesis of dematerialisation.

> (T6) It needs to be known that the sense organ for touch does not become endowed with a certain quality by every perception; for it does not become such when grasping heavy and light, sticky and friable, rough and smooth, the flesh becomes like this, but it merely receives their forms *in a cognitive manner* (Philoponus, *in de an*. 432.36–433.1; my emphasis).[34]

From Sorabji's point of view, the fact that Philoponus takes the most corporeal or material of all senses, that of touch,[35] to receive the forms merely cognitively speaks clearly for a dematerialised account of perception. This also seems to be confirmed by Philoponus' explanation of what a cognitive change means: the body, as a natural body, is materially affected by the qualities of the objects, whereas as a sense (αἴσθησις)—or a sense organ—it grasps and cognises the qualities (433.3–4).[36]

With respect to the claim of immateriality, we need to note that there is some evidence that the effects in the sense organs are also physical. The first reason is that Philoponus' discussion of the most immaterial sense, namely sight, operates on the traditional view according to which the eye becomes compressed and dilated or

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[32] τὸ δὴ λέγειν ὀργίζεσθαι τὴν ψυχὴν ὅμοιον κἂν εἴ τις λέγοι τὴν ψυχὴν ὑφαίνειν ἢ οἰκοδομεῖν· βέλτιον γὰρ ἴσως μὴ λέγειν τὴν ψυχὴν ἐλεεῖν ἢ μανθάνειν ἢ διανοεῖσθαι, ἀλλὰ τὸν ἄνθρωπον τῇ ψυχῇ.

[33] For actual perception is a motion occurring through the body in which a sense (organ) is affected. An ensouled being can undergo all those changes that a soulless being does, but a soulless being is not capable of undergoing all those affections that the ensouled being does (for they do not change in accordance with the senses). And the soulless thing is not aware of being affected, whereas the ensouled being is *aware of being affected*. (My italics) ἡ γὰρ αἴσθησις ἡ κατ' ἐνέργειαν κίνησίς ἐστι διὰ τοῦ σώματος, πασχούσης τι τῆς αἰσθήσεως. καθ' ὅσα μὲν οὖν τὸ ἄψυχον ἀλλοιοῦται, καὶ τὸ ἔμψυχον, καθ' ὅσα δὲ τὸ ἔμψυχον, οὐ κατὰ ταῦτα πάντα τὸ ἄψυχον (οὐ γὰρ ἀλλοιοῦται κατὰ τὰς αἰσθήσεις)· καὶ τὸ μὲν λανθάνει, τὸ δ' οὐ λανθάνει πάσχον.

[34] ἰστέον δὲ ὅτι οὐδὲ τὸ ἁπτικὸν αἰσθητήριον ὑπὸ πάσης αἰσθήσεως ποιοῦται· οὐδὲ γὰρ ὅταν ἀντιλαμβάνηται βαρέος καὶ κούφου, γλίσχρου καὶ κραύρου, τραχέος καὶ λείου, τοιαύτη γίνεται ἡ σάρξ, ἀλλὰ μόνον γνωστικῶς τὰ εἴδη αὐτῶν δέχεται.

[35] For the hierarchy of the sense with respect to materiality in Philoponus, see *in de an*. 352.23–353.37; cf. also 416.18–24 and 413.6–12. In the last-mentioned context, Philoponus points out that even though sight is the swiftest of all senses, it does not always grasp its object accurately at first instance but may at first take, say, a circle to be a straight line and only from close up recognise it as a circle (413.12–16).

[36] "As a sense, it grasps and cognises them, whereas as a natural body, it is materially affected by them" (ὡς μὲν αἴσθησις ἀντιλαμβάνεται αὐτῶν καὶ γινώσκει αὐτά, ὡς μέντοι φυσικὸν σῶμα πάσχει ὑλικῶς ὑπ' αὐτῶν, 433.3–4).

expanded as Lautner (2013) translates it.[37] depending on the colour of the object, a change that is probably also seen in changes of the size of the pupil:

> (T7) For the sense organ undergoes two effects: one as simply a body, another as a sense organ. As a body, it is affected by a body, as a sense organ by the activities of the perceptible objects. For example, the eye as a sense organ is compressed or dilated by the activities[38] of the colours; as a body it is, if it so happens, affected by fire and is warmed. (Philoponus, *in de an*. 439.15–20)[39]

Therefore, even though the effect that the activities of the colour cause on the sense organs are not the simple material effects of turning white or red, it would also be misleading to take them as not being material or physical in any sense of the word.

A complication arises from the recognition that text (T6) can be taken in two different ways. The passage makes a distinction between flesh as a body and the material change in it on the one hand and the organ of touch that undergoes a merely cognitive change on the other. First, this distinction can be understood as one between flesh and the organ of touch. On this reading, Philoponus would be saying that flesh as a body is undergoing a material change caused by the tactile qualities, whereas the organ of touch, which is *not flesh* but some inner organ, is changed merely cognitively and thus discerns the tactile qualities. However, it can also be taken to imply that flesh *is the organ of touch* but also a natural body. As merely a body it takes on the qualities that affect it, i.e., it becomes heavy and light (one might ask what this means), sticky and friable, or rough and smooth. By contrast, as the organ of touch, flesh is merely cognitively changed so as to discern between the tactile qualities just mentioned.

In the former reading, flesh as a natural body is changed materially but the sense organ of touch is distinct from it and changes merely cognitively. In other words, on this reading there is cognitive change in the sense organ that is not flesh. Philoponus engages himself in a longish and complicated discussion (c. 20 CAG pages) on the question of whether flesh is the organ or medium for touch. The main upshot is that even though Aristotle has launched many arguments for the claim that flesh must be understood as the medium for touch, these *arguments* should not be accepted. Philoponus points out that, if flesh were the medium, the effects of whatever touches it would be transmitted to the inner sense organ very slowly because flesh is a coarse

[37] For the expansions and contractions of the pneuma according to Philoponus, see also Lautner (2013), 391.

[38] This term probably refers to Plotinus' view of light as an external activity of luminous bodies (*Enn*. IV.5.7, 33–34), implying that colours are also products of light in contact with matter (ibid., 37–38; for further references for colours as some sort of light in Plotinus and thus capable of affecting the internal light in the eyes, see Emilsson (1988, p. 53). I thank Pavlos Kalligas for a discussion on this point.

[39] δύο γὰρ πάθη πάσχει τὸ αἰσθητήριον, ἓν μὲν ὡς ἁπλῶς σῶμα, ἕτερον δὲ ὡς αἰσθητήριον. ὡς μὲν οὖν σῶμα ὑπὸ σώματος πάσχει, ὡς δὲ αἰσθητήριον ὑπὸ τῆς τῶν αἰσθητῶν ἐνεργείας· οἷον τὸ ὄμμα ὡς μὲν αἰσθητήριον πάσχει συγκρινόμενον ἢ διακρινόμενον ὑπὸ τῆς τῶν χρωμάτων ἐνεργείας, ὡς δὲ σῶμα πάσχει ὑπὸ πυρός, εἰ τύχοι, θερμαίνοντος.

substance (418.4–17).[40] Since there is no noticeable delay in our perception of, say, a hot surface that we touch, one should be sceptical about the claim that flesh is (merely) the medium for touch. Yet Philoponus is prepared to accept that flesh, in a sense, is also the medium for touch (418.17–18) and the organ should ultimately be identified with *pneuma* (418.18–19). However, he himself strongly advocates the claim that, at the same time, flesh is also the sense organ for touch (415.25–29, 418.22–23, 418.27–28, 420.14–15, 427.25).

Philoponus' analysis of the sensory organism is not limited to the outer organs, the eyes, the ears, and the nose. He claims that in fact they are not the primary (οὐ πρῶτα 438.28) sense organs:

> (T8) [T]he sensitive soul does not reside in them but the effect is transmitted to it through them (438.28–30).[41]

The primary sense organ, in Philoponus' analysis, consists of *pneuma*, thin material that resembles air and breath that runs in the channels of body Philoponus calls "nerves"(νεῦρα). Galen had identified nerves[42] in his anatomical studies and Philoponus seems to refer to Galen's work here.[43] Philoponus also distinguishes between the *pneuma* of each sense that runs in the channels or nerves connecting the outer sense organ, such as the eye or the ear, to the perceptual centre. As for Galen, for Philoponus as well the centre is found in the brain[44] and the primary sensory *pneuma* and the sensitive soul reside in it; it is also the location for the "common sense" that unifies our several senses (433.34–35).[45] Galen was reluctant to commit

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[40] Cf. also Philoponus' conclusion of his discussion on the organ of the sense of touch (433.39–434.5) in which he points out that it is not necessary to assume that in all cases the medium and the sense organ must be different and thus the sense of touch is not anomalous in this respect.

[41] οὐ γάρ ἐστιν ἐν τούτοις ἡ αἰσθητικὴ ψυχή, ἀλλὰ διὰ τούτων τὸ πάθος ἐπ' ἐκεῖνο ἀναπέμπεται.

[42] It is important to note that Galen only affirms of the optic nerve that it contains *pneuma* and is uncertain about the other kinds of nerves: see PHP VII 4.1–3; p. 4484–24 De Lacy (V 611–612K): in the last-mentioned passage he gives two alternative options, one of which is the *pneuma*. Here as elsewhere I am grateful to Teun Tieleman for reading and commenting a draft of this article, especially on the point about Galen.

[43] I am grateful to Katerina Ierodiakonou for a discussion on this point. Galenic influence on Philoponus has been argued for by Todd (1984), 103–110 (see pp. 106–107 for the *De anima* commentary). Todd also raises the question of whether Philoponus was reading Galen himself or whether he was drawing on a tradition that had "fashioned Galenic ideas into the doxographical form in which we encounter them in this commentary" (ibid., p. 105).

[44] When it comes to the question of what exactly in Philoponus derives from Galen, it is important to note that, on many issues (such as the question of whether all nerves contain *pneuma* and on the distinction between different kinds of *pneuma*) Galen himself is uncertain, whereas later Galenism tended to systematise his observations. See Debru (2008, p. 272) for further references.

[45] Philoponus gives a prominent role to the idea that *pneuma* is the soul's primary instrument (common in Galen as well), and he also refers to Galen's theory of the nerves and the brain as the origin of nerves. Further, his discussion of the relation between our bodily constitution (or mixture) bears resemblance to some of Galen's formulations, even though Philoponus is explicit that the soul's capacities are prior to the bodily mixtures. By contrast, Galen at least once points out that the effective movements (παθητικαὶ κινήσεις) are always consequent upon (ἑπόμενον) the dispositions of the body (PHP IV 767 = SM 2, 32, 1) thus suggesting, at least verbally, that the bodily mixtures are prior to the effective movement (cf. also Galen's formulations according to

himself to any fixed position on the nature of soul but he pointed out that if the substance of the soul is not *pneuma*, *pneuma* should be identified as its instrument and is thus at least closely related to the soul (PHP V 609 = 446,11.15 in De Lacy; PHP V 648 = 480,7–9 De Lacy).[46]

In the lines preceding (T8) Philoponus does not mention flesh and tongue. One might argue that this is mere sloppiness on Philoponus' part and that he means to say that tongue and flesh are not the primary sense organs either. However, considering that he spends a lot of time and effort on discussing Aristotle's argument for flesh being the medium, for the most part being critical of this claim and affirming flesh and tongue as the organs of these senses, it would be surprising if Philoponus had just forgotten about the point in 438.27–28. This argument is not conclusive of course but gives some additional strength to the status of flesh and tongue as sense organs in Philoponus' account.

In Philoponus' discussion, flesh is both the sense organ and the medium for touch but it is not a medium in the same way as illuminated air is for sight. Flesh is a medium similarly to how all the sense organs are also media with respect to *pneuma* that is the primary sense organ (418.18–19).[47] Hence in this context Philoponus makes the medium and the sense organs relative: with respect to *pneuma*, the vitreous humours inside the eye for example are media, whereas with respect to the air outside they are the organs for sight (418.19–21).[48] Similarly, flesh seems to be a medium with respect to *pneuma* but an organ with respect to anything external.

The account according to which the sense organs undergo a cognitive change, might suggest a view resembling emergentism: from certain complex mixtures of material psychic capacities, cognition and discernment emerge. However, Philoponus is quite clear that this is not his view on the relation. Explanatory priority must be assigned to our perceptive capacity. Physical mixtures do not give rise to psychological states or capacities; psychic capacities are productive (ποιητικός) causes of our material constitution or mixture (σωματικὴ κρᾶσις, 388.25).

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which the affective movements are products of the temperaments of the body; PHP V 464 = CMG 4, 1, 2, p. 322, 3–4; 322, 13). Philoponus' opposition to Galen on this point has also been noted by Todd (1984, p. 110), who refers to Philoponus' discussion of reason's freedom to oppose "the dictates of the body" (with reference to Philoponus 52.1–4 and 4–13) and to the "creative reasons" (δημιουργικοὶ λόγοι) that engender the forms of the πάθη of the soul in "a suitable blend of the elements" (52.13–21).

[46] The Neoplatonic discussion of the *pneuma* as the vehicle (ὄχημα) of soul has been discussed in Stéphane Toulouse's dissertation (2001). According to Toulouse (2001, p. 523), Philoponus accepted this doctrine at first but criticises it in his On the eternity of the world against Proclus (*Contra Proclum*).

[47] τὸ μὲν γὰρ κυρίως αἰσθητήριον τὸ πνεῦμά ἐστι.

[48] In the passage in which Philoponus acknowledges that flesh is also the medium for touch, he also, puzzlingly, goes on to say (418.22-23) that "in the case of touch, flesh is rather a medium than the organ because it is more connected with matter and more earthen" (ἐπὶ δὲ τῆς ἁφῆς ἡ σὰρξ μᾶλλον μεταξὺ ἢ αἰσθητήριον διὰ τὸ προσυλότερον καὶ γεωδέστερον) Charlton translates: "flesh is rather a sense organ than a medium because it is more connected with matter and earthen", which seems to contradict the text and he gives no note on the point.

The context in which Philoponus discusses this question is when commenting on Aristotle's claim that soft-fleshed creatures are more intelligent than others and human beings are the most intelligent because they have the softest flesh (*De an*. II 9, 421a22–26). According to Philoponus, flesh is a material cause (388.23) for intelligence (φρόνησις), and it cannot be its productive cause but can, at most, be understood as a contributory cause (συναίτιον in 388.24).[49] In the same context, Philoponus also points out—in terms reminiscent of Galen—that the movements of our soul (ψυχικὰ κινήματα 388.25) "are disposed together with the physical mixtures" (συνδιατίθεται … ταῖς τοῦ σώματος κράσεσιν 388.24–6).[50] However, Philoponus is explicit that the movements of the soul are not generated or produced by the mixtures of the body. Rather, the mixtures of the body seem to be contributory causes for the psychic movements (388.26–7).

Thus the bodily mixtures or movements are not primary productive causes of psychic changes, but what about the cognitive changes in the sense organs that Philoponus talks about in (T6)? Are the cognitive changes in the organs causes of some kind for the psychic movements? I do not think that the material considered here really addresses this question. However, as pointed out above, a major difficulty in assessing Philoponus' conception of perception is that we do not have the whole of his commentary on book III. The main object of study in the commentary of book II seems to be αἴσθησις as something we might call "sensation", and this explains the focus on the sense organism.

We have considered above some texts that point to cognitive changes, grasping and cognising, in the sense of sense *organs* (T6). In addition, there are some passages (335.26–30; see also 444.22–23) in which Philoponus seems to claim that discernment (κρίσις)[51] is taking place in the organs when the organs are affected by the external objects (in 335.26–30 colours and shapes). The discernment is then transmitted to the soul (335.29–30).[52] This suggests that the grasping and cognising in the organs amounts to the sensory discernment of objects such as colours and shapes. One possibility of understanding the transmission is that the changes in the organs move to the brain that, according to Philoponus, is the proper location of the sensory capacity and hosts the psychic *pneuma*, the primary sense organ for sight, hearing, and smell. How exactly Philoponus understands the relation between the psychic *pneuma* in the brain and perceptual soul proper is left unclear in the commentary on book II.

Summing up the argument in this section, the important point for our present purposes is that text (T6) shows that Philoponus attributes a cognitive change to the

[49] The notion of a contributory cause also appears in Plato's *Timaeus*, where he characterises the material as restricting to what extent the forms as paradigms can be realized in the natural world as contributory causes (46c–d, 47e–48a, 68e–69a).

[50] Galen, by contrast, states that the soul should be identified with the mixture (κρᾶσις) of the temperaments of the bodily elements (PHP IV 783 = SM 2, 45, 4).

[51] In Plato's discussions on perception κρίσις means "judgment", in Aristotle "discernment" without rational judgment. The fact that Philoponus ascribes κρίσις to the organs here makes me infer that he means discernment rather than judgment.

[52] καὶ οὕτως ὑπ' αὐτῶν τοῦ αἰσθητηρίου παθόντος ἡ κρίσις ἐπὶ τὴν αἴσθησιν διαβαίνει.

sense *organ*—be it flesh or *pneuma*—not to the soul or to the human being. I have suggested that this cognitive change should probably be understood as the sensory discernment of sensible objects such as colours, shapes, sounds and smells. Such cognitive changes occur in some areas or parts of an organic living body, i.e., in a body that is structured and made living by a soul, and those areas or parts are called "sense organs". As I have pointed out above, in a way the idea that physical organs can undergo cognitive change makes Philoponus' argument, almost paradoxically, even more materialistic[53] than Aristotle's way of taking cognitive changes to belong to the person (the human being) or, loosely speaking, to the soul.

4.4 Pseudo-Simplicius: Human Perception as Rational Concept Projection

Projection of Concepts Requires an Effect in the Sense Organs

In the commentary that in manuscripts is attributed to Simplicius but that is not authentic, we find an account according to which human perception is in its core and ultimately a rational process that involves projection of "concepts" (λόγοι).[54] The claim occurs in connection with Pseudo-Simplicius' discussion of Aristotle's account of perception of perception (*De an*. III 2, 425b12), i.e., what in Aristotle is a perceptual and non-rational awareness of perceptions that belongs to non-human animals as well. In that context and referring to Iamblichus, Pseudo-Simplicius distinguishes human and animal perception and claims that the two are called "perception" only homonymously (187.37).[55] Other scholars have discussed Pseudo-Simplicius' account in greater detail,[56] and my purpose is not to propose a novel

[53] This of course presupposes that one understands Aristotle's theory in a non-literal way, as I have mentioned in the introductory section that I do.

[54] The term "concept" can be misleading but it is difficult to come up with an alternative. The λόγοι that are projected are internal to the soul and recollected. Therefore, they are instantiations of the real structuring principles of reality, the intelligible forms. However, they are also important structuring elements of human cognition and thus bear some resemblance to concepts even though differing from mere concepts. Because of being instantiations of intelligible forms in the human soul, the λόγοι thus convey some genuine knowledge about the structure of the world.

[55] The commentary is in general heavily dependent on Iamblichus as Steel (1978) and Perkams (2008) have shown.

[56] Especially Steel (1978), Perkams (2008) and Lautner in several articles e.g. (2004). See also Rappe (2000, pp. 54–56), who also discusses under the name of Philoponus the commentary on book III published after Philoponus on books I–II in the Commentaria in Aristotelem Graeca which some manuscripts refer to Stephanus' lectures but the authorship of which is disputed. Rappe articulates her point by using the notion of self, which is relevant for my discussion only on the point of self-reflexivity below.

reading of the commentator's theory as a whole but to briefly discuss some relevant passages in connection with the analyses proposed by Aristotle and Philoponus.

Whereas in Philoponus' case the relation between the sensory discernment in the organs and the discernment (perhaps in the Platonic sense of κρίσις as judgment) in the soul was left unclear, Pseudo-Simplicius explains the effect in the organs and the activity of the soul as follows.

> (T9) Clearly the perceptible object, being individual and external, must not only be there but must also be present to the perceptive faculty so that it may act in a way on the sense organ; and upon its being acted on, the perceptive soul projects the common concepts of perceptible objects that are within it in a way appropriate to the effect and recognises the perceptible object through its own activity, being in a state of accord with the form of the sensible object. (*in de an*. 124.32–125.2)[57]

To describe the relation between the effect in the sense organ and the projection, Pseudo-Simplicius uses the expression that the sensitive soul projects the concept "upon its [i.e., the sense organ's] being acted on" (ἐπὶ τῷ τούτου πάθει, 124.34). It is difficult to assess what exactly is implied by this formulation but it definitely suggests that the projection is in some senses dependent on the effect the object has on the organ—and obviously this is a sound point to make. If I project the concept of a horse in my mind when the horse is not present, this is a thought or a fantasy of a horse, not a perception of it.

The connection between the effect in the organ and perception as concept projection is explained in some more detail later in the commentary:

> (T10) But clearly the perceptible object is perfected and brought to activity by the perceptive soul itself and it also projects the form of the perceptible from itself, but it has been stimulated to the projection by the change that occurs in the sense organ caused by the perceptible object. This is because neither is the perceptive life entirely separate from bodies nor does it project the appropriate concept on the perceptible object immediately but on the vital effect or the passive activity in the sense organ. (*in de an*. 192.12–18)[58]

Here Pseudo-Simplicius makes four moves that are important for our discussion.

First, he modifies Aristotle's view according to which perceptible objects (such as colours and sounds) attain their full actuality in acts of perception that take place in the perceiver. Whereas for Aristotle the active cause of this actuality is the object and the soul's role is receptive, for Pseudo-Simplicius the object is brought

[57] Steel's translation from Sorabji (2004, p. 40) modified. Τῷ αἰσθητικῷ δηλαδή, ὅτι ὑπάρχειν δεῖ τὸ αἰσθητὸν ἄτομον ὂν καὶ ἔξωθεν, καὶ οὐ μόνον εἶναι ἀλλὰ καὶ παρεῖναι τῷ αἰσθητικῷ, ἵνα καὶ δράσῃ τι εἰς τὸ αἰσθητήριον καὶ ἐπὶ τῷ τούτου πάθει ἡ αἰσθητικὴ ψυχὴ προβαλλομένη τοὺς ἐν αὐτῇ τῶν αἰσθητῶν κοινοὺς λόγους οἰκείως τῷ πάθει γνωρίσῃ τὸ αἰσθητὸν κατ' οἰκείαν ἐνέργειαν, κατὰ τὸ τοῦ αἰσθητοῦ στᾶσα εἶδος.

[58] ἀλλὰ δῆλον ὡς καὶ τὸ αἰσθητὸν τελειοῦται καὶ εἰς ἐνέργειαν καθίσταται ὑπὸ τῆς αἰσθητικῆς ψυχῆς, αὐτῆς καὶ τὸ τοῦ αἰσθητοῦ προβαλλούσης εἶδος ἀφ' ἑαυτῆς μέν, ἀλλὰ πρὸς τὴν προβολὴν ἐγειρομένης ἐκ τῆς ἐγγενομένης τῷ αἰσθητηρίῳ κινήσεως ὑπὸ τοῦ αἰσθητοῦ, διὰ τὸ μήτε παντελῶς εἶναι χωριστὴν σωμάτων τὴν αἰσθητικὴν ζωήν, μήτε πρὸς τὸ αἰσθητὸν ἀμέσως, ἀλλὰ πρὸς τὸ ἐν τῷ αἰσθητηρίῳ ζωτικὸν πάθος ἢ παθητικὸν ἐνέργημα τὸν οἰκεῖον προβάλλειν λόγον. For a rather similar analysis, see Pseudo-Simplicius' comments (*in de an*. 165.31–166.34) on Aristotle's *De anima* II 12, 424a17 that is quoted above as T1.

to perfection by an active act of the perceptive soul. Pseudo-Simplicius does not explicitly say that it is the soul's activity of concept projection that perfects the perceptible objects—he merely points out that the soul perfects the objects *and* that it also projects the concepts. However, it seems plausible to suppose that the concept projection plays a crucial role in the perfection of the object, and it is perhaps also possible to take this "and" (Greek καί) epexegetically as meaning "that is". At any rate, the perfection of the object occurs through the active act of the rational soul—and this cannot be soul's *receptive* activity as in Aristotle's account.

Secondly, even though the projection uses as its resource the soul itself, it needs to be awakened, "stirred" (as Steel translates) or "stimulated" (as Blumenthal translates) by the change that takes place in the sense organ.[59] We saw above that Philoponus uses the notions of material and contributory cause for the relation between the effect in the organ and the movements of our soul (ψυχικὰ κινήματα 388.25), but Pseudo-Simplicius does not do so in the context. He does not refer here to the change or movement (κίνησις) that takes place in the organ as a *cause* of concept projection. He points out elsewhere (192.10–11) that the less perfect factor cannot be the crucial cause for something that is more perfect (following a common Neoplatonic tenet). Similarly, what is potentially perceptible cannot be the cause of perception (192.11–12), and in this respect Aristotle's analysis cannot be accepted. Rather, as we saw, the object needs to be perfected by the soul and the concept projection the soul performs needs to be stimulated by the effect in the organs, but the effect is not identified as the cause of the projection.

The third important point is related to the above discussion of materiality and immateriality in Philoponus. Pseudo-Simplicius explains the necessity of a change in the organ by referring to the fact that the perceptive life (192.16–17, i.e., the perceptive soul, 192.13) is not entirely separate from the body. For the same reason, the soul cannot project the forms (εἶδος, 192.14 in T10) or common concepts (κοινοὶ λόγοι, 124.35 in T9) to the objects directly on the external object but it does so on the vital effect (ζωτικὸν πάθος, 192.18 in T10) or the passive activity (παθητικὸν ἐνέργημα, *ibid*.) in the sense organ. Therefore, Pseudo-Simplicius makes clear that even though perception as rational concept or form projection is not a material process, it does not take place without some material interaction with the object, or, more specifically, an effect that occurs in the organs. Further, he also ascribes a certain activity to the sense organs he calls "passive activity" (παθητικὸν ἐνέργημα an expression seemingly introduced by Pseudo-Simplicius).

The fourth and final remark I would like to make with respect to the passage is related precisely to this passive activity and Pseudo-Simplicius' divergence from Aristotle on this. The notion of passivity (πάθος, παθητικός) is included in both the phrases for the vital effect (ζωτικὸν πάθος, 192.18 in T10) and the passive activity (παθητικὸν ἐνέργημα, ibid.),[60] and it also occurs twice in (T9) quoted above.

[59] Cf. 188.2–3: "The whole [soul] is not stirred by itself … but it is activated by being somehow moved by the perceptible object". οὐδὲ ἀφ' ἑαυτῆς τὸ ὅλον ἐγειρομένη … ἐνεργεῖ δὲ ὑπὸ τοῦ αἰσθητοῦ πως κινουμένη.

[60] See also παθητικὴ ἐνέργεια in 166.14 ad Aristotle, *De an*. 424a17.

Therefore, even though perception as such should, from Pseudo-Simplicius' point of view, be identified rather with rational perceptual judgments (i.e., the concept or form projection) than with effects in the organs, the passive or receptive effects in the organs are necessary for perception. Whereas Philoponus ascribed cognitive change to the organs, Pseudo-Simplicius attributes to them the receptive activity that Aristotle takes to occur in the percipient or his or her soul.

What Does Pseudo-Simplicius' Rational Perception Amount To?

We have now briefly discussed some central passages in Pseudo-Simplicius' analysis of perception and awareness of perceptions and seen that the account suggests that only the rational perceptive soul can bring the perceptible object to full actuality, possibly through rational judgment understood as the projection of "common concepts" or forms. What, then, is this projection?

The most likely interpretation seems to be that the projection consists in or involves the recognition of the object *as something*. Evidence for this reading can be found, e.g., in (T9) according to which the perceptive soul "*recognises* the perceptible object through its own activity, being in a state of accord with the form of the sensible object" (125.1–2, my emphasis). The most natural way to take this would seem to be that, when stirred by a change or movement caused by a white round thing, the soul projects on the passive activity of the organ the notions of white and round and recognises the object *as something white and round* and makes the judgment that "this is white and round". The essential nature of perception thus seems to consist in the judgment about the perceptible objects, in this case as something white and round.[61]

In addition to recognition, the rational soul's contribution also involves at least two other important elements, namely the affirmation of the truth of the perception and the percipient's awareness of him or herself as perceiving the object. The point about recognising the truth is prominent in another context in which Pseudo-Simplicius considers the difference between human perception and the perception in non-human animals. One such difference is taken to be that, whereas non-human animals are non-rationally aware of *things* (πράγματα) but not of the truth of their cognition of them (211.1–8), human beings can grasp the truth (or falsity) of their perceptions.[62] He also seems to say that animal cognition of things can only be

[61] Plato also distinguished perception from beliefs, but was less optimistic of how much the perceptual faculty can do without reason and belief, whereas later Platonists such as Alcinous tended to ascribe to Plato the view according to which even perceptions of colours involve opinionative reason (δοξαστικὸς λόγος) see the texts translated in Sorabji (2004, pp. 33–37). For Plato's account, see Remes's contribution to this volume.

[62] The passage is also discussed in Gerson (2005, pp. 147–152). For the point that self-reflexivity is impossible for or in a body, see also Philoponus (14.29–38, 161.31–162.27, 292.5–13) and Pseudo-Philoponus (466.12–467.12) mentioned in Gerson (2005), 150n80. However, as Lautner has argued (2004) συναίσθησις also implies an elementary self-awareness to non-human animals

true (211.3–5) but it cannot include the judgment of the cognition *as true*. The supposition probably is that even though animal cognition is, in this sense, extremely reliable (it senses or cognises perceptible things), it is inferior to human perception because it cannot evaluate its own truth-value.

This brings us to the final important point in Pseudo-Simplicius' account that has been noted by other scholars as well.[63] In Pseudo-Simplicius it is self-reflexivity that is argued to make human perception rational. According to a common argument, nothing material can be genuinely self-reflexive and hence, since human perception is claimed to be self-reflexive, it has to be immaterial and rational.

> (T11) And it is shown by this that our rational faculty reaches up to perception, if it is so that human perception is capable of being aware of itself, … therefore, our perception is rational (*in de an*. 187.29–36).[64]

Even though the point about self-reflexivity is not directly connected to the claim about rational judgment and projection of "common concepts", the rationality of human perception has a strong tie to the idea that human beings are not only capable of being aware of perceptible things *as* the kinds of things they are but also of *themselves as* the perceivers of these things. This point is obviously linked to the question of what the human beings themselves are thought to be, and it seems that the emphasis on human rational soul or intellect in Pseudo-Simplicius, as in general in Neoplatonic authors, as what a human being truly is, affects the analysis on self-reflexivity. Even though Pseudo-Simplicius allows a form of awareness of perceptions that is not rational,[65] this cannot be true self-reflexivity if the true self that the reflexivity needs to turn to is not the soul-body compound.[66] This is a very complex issue and I cannot pursue it in greater detail in this context.

All in all, even though Pseudo-Simplicius emphasizes that it is the rational judgment that amounts to perception in human beings, the theory according to which the reception of perceptible forms is necessary for perception remains largely intact. However, it is ascribed to the sense *organs* rather than to the perceptive soul. As we saw above, perceptions as rational judgments, i.e., the projection of "common concepts" needs to be activated by changes in the perceptual organs, and it is on the passive activities in the organs that the concepts are projected. Further, even though such activation by the external objects is necessary for perception, perception is not identified with the passive activity in the organs but with the rational projection

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as an imitation of the genuine reversal (ἐπιστροφή) that is only possible to reason and involves a higher cognitive achievement and also a more truthful form of self-awareness.

[63] E.g., Lautner (2004) and Rappe (2000).

[64] καὶ δείκνυται διὰ τοῦδε καὶ μέχρι τῆς αἰσθήσεως ἡμῶν τὸ λογικὸν διῆκον, εἴ γε καὶ αἴσθησις ἡ ἀνθρωπεία ἑαυτῆς ἀντιληπτική. … λογικὴ οὖν ἡμῶν ἡ αἴσθησις. Cf. also 290.6–8.

[65] Namely συναίσθησις. For a discussion, see Lautner (2004, p. 165).

[66] According to Pseudo-Simplicius, human beings also have perceptual awareness (συναίσθησις) of themselves as body-soul compounds; see *in de an*. 7.20–22 on the opening of Aristotle's *De anima* (402a3).

of "common concepts" or forms, i.e., perceptual judgments that declare what the objects are (like).

4.5 Conclusion

When one compares the three accounts briefly discussed above, some common trends can be detected when we move from Aristotle to Philoponus and Pseudo-Simplicius. To simplify, in the two commentators the analysis of perception as reception of forms that Aristotle offers in *De anima* II 7–12 is ascribed to the sense organism as opposed to the human being or his or her soul. Philoponus attributes cognitive change to the sense organs and Pseudo-Simplicius confines passive activities to them. Philoponus may of course well mean that the changes are cognitive only in the sense that they produce cognition in us or in our soul, not that the organs would themselves be the subjects of cognition. However, he also talks about discernment (κρίσις) and grasping (ἀντίληψις) that takes place in the sense organs—or perhaps the primary sense organ understood as *pneuma* in the brain, which in any case also is a physical organ. Therefore, there is reason to suppose that this is not merely sloppiness of diction but that he really supposes that the sense organism is capable of such awareness of external objects we could call "sensation". Further, it seems plausible to conjecture that Philoponus would have complemented his analysis into a layered view consisting of sensation in the organism and judgment in the rational soul in his comments on the early chapters of *De anima* III. This cannot be confirmed due to the unfortunate loss of that part of the commentary.

When considering Pseudo-Simplicius, we can point to the following difference between his theory and that of Aristotle pertaining precisely to the notion of activity. Whereas for Aristotle, we as percipients and the objects as perceptible are perfected in the act of perception the active cause of which is the object and we as percipients are its receptors, for Pseudo-Simplicius passive activity the cause of which is the external object is limited to the sense organs. However, he agrees that the object and the percipient are perfected in the same act, but the primary active cause of this act cannot be the object. Rather, its cause must be the rational soul when it projects the "common concepts" on the effects taking place in the organs.

This might perhaps seem like a small difference but it indicates a significant divergence in how Aristotle on the one hand and his Neoplatonic commentators on the other analyse perception. Whereas for the former, perception is a non-rational function of the animal soul, the latter identify perception proper with rational judgments. Note that Aristotle by no means denies perceptual judgments made by reason. He just does not identify those judgments with perception. Conversely, neither do Philoponus and Pseudo-Simplicius deny non-rational sensation or awareness of perceptible objects but ascribe them to the sensory organism. The content of perceptual experience has been widely debated in contemporary theories of perception, and from what has just been said, it is striking that none of the authors discussed

here denies non-rational sensation of sensible objects but differ on the question of whether perception should be identified with such sensations or rational judgments.

One important aspect of this difference is that, for Aristotle, perception cannot obviously presuppose reason because, according to Aristotle, our intellect receives its contents from experience (as explained in *Posterior Analytics* II 19).[67] His view, however, is not purely empirical because also the intellect is, for Aristotle, a special kind of receptivity—receptivity for intelligible objects—and beings that do not have this receptive capacity will not develop reason. The Neoplatonic authors need not worry about this, since for them the forms or ideas pre-exist in the soul and can thus be projected on affections in the sense organs without a problem. However, in addition to the necessity of the projection being awakened in particular perceptions, it also needs to be "awakened" from the turmoil caused by birth into the body.

On the other hand, despite diverging on the question of whether perception should be identified with non-rational sensation or rational judgment, all three authors seem to agree that whereas the object causes an effect in the sense organism, the judgment that reason makes is free from such determination. Pseudo-Simplicius articulates the point by referring to the Neoplatonic principle according to which lower functions cannot cause higher ones. For Aristotle this is an indication that perceptual judgments are more easily mistaken than the reception of forms for which the only source of error seems to be physical disturbances in the sense organs or external conditions, such as lighting. As we saw, Pseudo-Simplicius also assumes that animals sense things in a highly reliable manner but because, contrary to human beings, they are not capable of evaluating the truth-value of their sensations, this testifies to the function being inferior to human perception (also reflected in the hierarchical ontological status of the objects).

In sum, all the authors discussed here take the reception of forms without matter to be necessary for perception. They also agree that the rational soul has a capacity of making rational judgments about the perceptible objects without being strictly determined or caused to do so by the effects taking place in the sensory mechanism. The most central difference is whether or not perception is identified with that judgment. Therefore, in many respects, the theories are closer to each other than the commonplace notion of one theory as active and another as passive would seem to imply.

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[67] For a discussion of this difficult passage and for more references, see, e.g., Tuominen (2010).

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Chapter 5
Augustine on Active Perception

José Filipe Silva

5.1 Introduction

Perception conceived of as an active process, built around the notions of intentionality and attention, has assumed major significance in contemporary cognitive psychology and philosophy of mind. The roots of such a conception are, however, old. There was a strong tradition in the Middle Ages according to which the mind/soul was seen not as a passive recipient of sensory stimuli but as the agent of its own acts and the efficient cause of perception. This is the tradition of medieval Augustinian philosophical psychology.[1] According to this tradition, perception is the result of activity in the mind/soul, either reacting to the affection of the sense organs or taking the full initiative over what is perceived through some sort of direct contact with the object.[2]

In order to show how such a tradition developed it is necessary first to present Augustine's theory of perception, its main tenets and its many inconsistencies and difficulties: this will serve not only to clarify Augustine's theory but also to set the background against which later medieval accounts of perception were to be drawn. It was Augustine (354–430) who drafted, in a non-systematic way, the theory of active perception as defined above, incorporating Platonic and Stoic influences but subjecting them to his theological project—his model of the mind as the image of the divine trinity being a clear case in point.

[1] The existence of the tradition of medieval Augustinianism is problematic in the sense that it is difficult to define the exact requirements for "membership", but I take its existence to be undisputable. As a starting point, membership could be assigned to all authors who used Augustine as an authority to justify their thought with respect to a specific topic such as the activity of the soul in perception. For illuminating discussions on this subject, see and more recently Marrone (2001).

[2] Direct contact here means without the mediation of any representational devices.

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In what follows I purposefully avoid two aspects of Augustine's theory of perception—his physiological descriptions of the process and his extramissionist account of vision—for the same reason: no matter where in the process the doings of the agent of perception, the powers of the soul encounter the physical objects, what needs to be explained is how this interaction, mediated by the body, is epistemologically relevant, in other words conducive to the acquisition of knowledge of the external thing.[3] I take this interaction to be an instrumental aspect of the theory and prefer to concentrate on the philosophical problem of what is known. I do not address the issue of conceptually laden perception either, at least not directly.

5.2 Perception and Intentionality

In a very well-known and often quoted passage in his work *De Trinitate*,[4] Augustine states that seeing—taken as the exemplary case of perception—includes three elements: the object that is seen, the vision that is the organ of sense as informed by the species/form of the object that is seen, and the attention of the soul directed to the external thing as long as the external thing is present to the senses (*De Trinitate* 11.2.2). He does not give an account of the process of perception in the passage, however, but rather describes the elements that constitute the process, without which no perception takes place. He does define perception (*sensus*) in other works as:

> 1 an effect on the body (*passio corporis*) that does not escape the awareness of the soul (*De quantitate animae* 25.48)
> 2 the soul, when it perceives in the body, is not in any way acted upon by it but acts more attentively in the reactions of the body, and that these activities (…) are not hidden from it, and this whole process is called 'perceiving' (*De musica* 6.5.10)

Here Augustine is suggesting that perception is a process constituted by (i) a bodily change (caused by an external thing), (ii) the soul's attentive action towards the body, and (iii) the soul's awareness of these activities.[5]

If one compares this account and the one Augustine offers in *De Trinitate* 11, and attempts to match the elements involved in both, the result would be something like the following—with (1)–(3) describing the elements in *De Trinitate* and (A)–(C) describing those in *De quantitate animae* and *De musica*, and a one-to-one correspondence between the elements of the two descriptions (i.e. (1) corresponds to (A)):

(1) External thing (object).
(2) Sense organ informed by the form/species of the external thing (vision).
(3) *Intentio* of the soul directed to the external thing for as long as the external thing is present.

[3] The key aspect of perception is on the soul's activation of the sensory instrument (see *De musica* 6.10) rather than the exact working of that particular instrumental bodily sense.

[4] The edition of Augustine's works as well as the translations used are listed in the bibliography.

[5] See Silva (2012, pp. 164–165) for references.

(A) Affection of the sense organ by the external thing.
(B) Action of the soul reacting to that affection (described in A).
(C) Awareness by the soul of its attentive action (described in B).

The first conclusion from this comparison is that, although the two descriptions are of the same phenomenon, they describe it from very different viewpoints. The first, in *De Trinitate*—which one could call the objective account (OA)—focuses on the external thing and its physical interaction with the sense organs, whereas the focus in the second, in *De quantitate animae*/*De musica* —which one could call the subjective account (SA)—is on the psychological element of the soul's reaction to a physical change: whereas OA describes how the soul comes to know an external thing causing an affection of the body, SA describes the awareness by the soul of its actions following such affection. Presented in this way, there seems to be no real connection between the two accounts. I still think there is, but it all depends on how proposition (3) is interpreted. I would like to suggest that (B) and (C) in the SA correspond to the two aspects of what is described in (3) of the OA, that is, that *intentio* describes the action of the soul and awareness of that action.

What both OA and SA make clear is that, for Augustine, perception requires the existence of an external thing that causes a bodily change, in other words that is endowed with the power to act upon the perceiver's body (his/her sense organs). This action of the impression of sensory stimuli on the sense organs is understood as the action of one material thing (the object) upon another (the sense organ), not the cause of the act of perceiving. Augustine is clear in pointing out that to say "the vision is produced by the body that is seen" means only that the object is able to beget "its own likeness, which arises in the sense when we perceive" (*De Trinitate* 11.2.3, 319): we only have sensations of those things that act upon us (*De quantitate animae* 24.45). This is Augustine's statement of direct realism: it is to the object that the *intentio* is turned in the act of perception; we only perceive the external thing.[6] On the other hand, he also makes clear that the object, which exists beyond being perceived, offers itself "publicly" to all perceivers (*De Libero Arbitrio* 2.7).

However, the subject of sensation is not the body but "the soul through the body" (*De Genesi ad litteram* 3.5.7). Although sensation needs to have a physiological basis—a change in the sense organ caused by the perceptible qualities—what makes perception possible is the soul's attention turned to the external thing (the third element in OA). Let us look again at the description of what this intention(ality) does in *De Trinitate* 11.2.2:

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> i. It directs 'the sense [i.e. the sense organ] of the body outwardly towards a body.'
> ii. Unites 'with it [the sense organ] in order to see it [the external object].'
> iii. Fixes 'its gaze upon it [the external object] when it [the external object] is seen' and keeps the gaze 'fixed upon that body when it has been [in]formed' by the form of the external thing. (*De Trinitate* 11.3.6)

[6] *De Trinitate* 11.2.3. The argument is that only through rational reflection are we able to discriminate between the object and the likeness.

The first proposition introduces a relevant (and often overlooked) element: *intentio* directs the sense organ to the outside world prior to any particular sense experience within it and it prepares the bodily instruments in a way appropriated for them to be affected from without. Augustine refers to this in *De musica*, stating that the soul activates the senses in a way that gives the necessary conditions for perception to take place (*De musica* 6.5.10). This *intentio* precedes any particular experience, and it is found even if the bodily sense is removed. Thus conceived, it is not determined by any external thing, but it is what makes the perception of external things possible. (I return to this point later in this chapter.)

I would like now to consider what is the power responsible for this attention, and then to discuss in some more detail what I take to be Augustine's view on intentionality. With respect to the first issue, Augustine seems on the one hand to identify *intentio* with the will, which is a rational power and thus present only in human beings, but on the other hand implies that it is present in all acts of perception of all perceivers, be they rational or non-rational. It could, of course, be argued that the notion is equivocal, meaning different things when applied to human beings and to animals: this is possible but there is another way out.

In *Confessionum* 8.5 Augustine recalls the inner struggle between his two wills, the spiritual one directed to God and the old corporeal one subjected to concupiscence. As he points out, both are his wills and neither is more the subject of those "willings" than the agent.[7] He compares the ruling of the irrational will to a state of sleep from which one struggles to get out. I will not go into the details of Augustine's theory of the will here but rather wish to point out that this strongly suggests that his conception was broad and not restricted to a rational power.[8] A power, being non-rational, must reside in the part of the soul we have in common with other animals, and it is this power and its sensory correlates of intention (*intentio*) and attention (*attentio*) that play an essential role in perception. Because human beings are rational in addition to having sensory powers, the nature of attention in them has features that are not found in non-rational perceivers, although on the basic level they share certain features with them. Such a wide understanding of intention allows us to make another suggestion.

Many of the problems in interpreting Augustine's account of intentionality stem precisely from taking this notion as epistemological. I would suggest, however, that its primary meaning is metaphysical, and that it must be understood in the context of the relation between the body and the soul. The argument is clear: if Augustine defines perception as that which takes place in the body to which the soul pays attention and of which the soul has immediate acquaintance, perception needs to be understood in the context of how the soul relates to the body.[9]

[7] My attention was directed to this passage by Tomas Ekenberg. See Saarinen (1994, pp. 26–31) for a detailed discussion.

[8] See Knuuttila (1999). Solère (2008) shows how the term "intentio" was commonly used in the Latin tradition prior to Augustine in a non-voluntarist sense. On this tradition, see Dihle (1982, pp. 123–44). Di Martino (2000, pp. 173–198) argues for a developmental hypothesis—from *intentio* to *voluntas*—within the Augustinian corpus. On *intentio* see also Caston (2001, pp. 33–41).

[9] I do not claim to be particularly original here. If anything, the difference from other interpreters is one of emphasis: normally intentionality is approached from the account Augustine offers in

Augustine makes this connection very clear in *De Libero Arbitrio*: having discussed perception he defines the soul as the principle of life of the body.[10] The definition of the soul as the principle of life is relevant to perception because of the way the soul is present in the body, which Augustine defines in the following way:

> 4 [the soul] is spread throughout the whole body which animates not by local diffusion but through a certain vital intention.[11]

The soul is present as a whole in every part of the body and this mode of presence guarantees that all perceptual experiences are unified, in other words make the experience to be of one subject. When touched by an external thing the whole body does not feel the touch, but the whole soul feels that the body has been touched and where. Were the soul not present as a whole in every part, only the part of the soul that was in that part of the body would be aware of the change in that part of the body.[12] This would require the existence of another part of the soul that would receive and combine the information from the different parts existing in different parts of the body. The central unified view of perception the mode of the presence of the soul in the body allows is to be complemented with the faculty psychology account of the inner sense (see below). However, what is stated above explains the unified nature of the perceptual experience of a transcendental substance operating through a material instrument, not what makes this experience possible in the first place. In order to do this, I believe, Augustine needs to say something more about the soul's mode of being in the body.

The condition for the change in the body not to go unnoticed by the soul is the presence of the soul in a tensional/attentive state in the body. The change in the body is epistemologically relevant because of the soul's mode of presence in the body. Intentionality in the context of ancient and medieval thought tends to be defined as the property or quality of the mental by which it is directed to external things, in other words it refers to the nature of mental content that points to something other than itself. I think this is right, but when applied to Augustine's theory of perception it needs further qualification. My suggestion is that he considers intentionality to be what describes the soul's relation to the body and therefore precedes—rather than follows—any particular sense experience.[13] The form/likeness that is imprinted in

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De Trinitate 11, which is modeled according to the trinity and applied to the human rational soul. Instead, I take the most fruitful approach to start from the works in which he discusses perception in general, as the activity common to all (rational and non-rational) perceivers, and then find out what there is in common with the account in *De Trinitate*.

[10] As I point out in my chapter "Medieval Theories of Active Perception: an Overview" (in this volume), medieval Augustinians would adopt this view and emphasize that operations such as perception are vital acts. See, for instance, John Pecham, *Tractatus de anima*, ed. G. Melani (Florence: Biblioteca di Studi Franciscani, 1948), Chapter III is entitled "About the act of life that is to cognize" (*De actu vitae qui est apprehendere*), 9.

[11] "Per totum quippe corpus, quod animat, non locali diffusione sed quadam uitali intentione porrigitur", *Epistola* 166.2.4, 551. Cf. O'Daly (1987, p. 29).

[12] The same argument is found in *Epistola* 166.2.4.

[13] Hölscher (1986, p. 96) makes the suggestion that *intentio animi* precedes actual perception but he does not associate it with the soul-body relation, and he takes this intention to be directed to a

the sense organ is the form of the object but vision is only possible due to the existence of the soul that animates the being.

> 5 For before the vision arose, there already was a will which directed the sense to the body in order that it might be formed by seeing it. (*De Trinitate* 11.5.9)

The passage makes it clear that the intention is already there before the form of the object is received in the sense organs (what he calls vision), and that is what makes sense experience possible. It is also in this sense that I take the soul's acting more attentively on the body in passage (2) to mean the soul dedicates its intentional resources to the affection of the body. (This should be taken together with the operation of the inner sense of perceiving the state of the particular sense in its function of perceiving the external thing: on the inner sense, see sect 5.3 below).

Intentionality should be taken primarily as the directedness of the soul to the body and via the body to the external world. Such directedness remains undiminished even if the bodily sense organ is removed (*De Trinitate* 11.2.2), which means that it is not, at a basic level, determined by the content of any particular sense experience. Attention rather refers to the property of the soul as "a special substance, endowed with reason, adapted to rule the body" (*De quantitate animae* 13.22), and is best defined as "the activity with which the soul governs and cares for the body" (*De Genesi ad litteram* 7.19.25). It is this defining relation of the Fallen soul to the body that ultimately explains perception: in Augustine's words, "it is not strange that the soul, which acts in the mortal body, perceives the reaction of bodies".[14]

Attention thus conceived is a relational property of the soul, whose relatives are the soul and the body, not the soul and a given particular external thing. The activity that characterizes this pre-experiential attention is the epistemic outlook of Augustine's soul-body dualism. Intentionality thus conceived is explanatorily basic in that perception needs to be thought of as a vital act, in other words an operation rooted in the same principle that explains life. The central notion in understanding Augustine's theory of perception is that of "vital attention": the intentionality/attention that makes perception possible is the result of the way the soul is present in and vivifies the body. This presence of the animating/vivifying soul in the body is the condition that makes the affection of the sense organs conducive to perception, and this precedes any determination by a particular sense object.

5.3 Awareness

Augustine defines the soul as the principle of life, as that which vivifies the body. To be the principle of animation the soul needs to have properties that are distinct from that which is animated or vivified: it needs to be immaterial and simple. At the

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particular "thing to be perceived". I would suggest that this intentionality is directed to the body and undetermined by any particular object.

[14] *De musica* 6.4.7. This is softened by the emphasis on the inherent dignity of the human body in comparison with other bodies.

same time, Augustine, remarks, the soul relates to the body as its governor or ruler and protector (*De Genesi ad litteram* 7.18.24).[15] The soul's intimate relation with the body is revealed in Augustine's definition of pain:

> 6 And when the soul feels and is vexed by the body's afflictions, it is offended at the activity with which it governs and cares for the body being thwarted through the disturbance of the body's constitution—and this offense is called pain.[16]

The soul becomes, as it were, offended by the "disturbance of the body's constitution", takes this disturbance as an attack against its own integrity, the integrity being, of course, that of the human being. In this context, perception fulfills its role of adjusting and reacting to the environment, pursuing what is beneficial and avoiding what is harmful.[17] This is ultimately justified on a teleological level—the primary role of the soul is to protect the body, caring for its well-being and preservation (*De Genesi ad litteram* 7.18.24). The nature of perception needs to be defined in relation to its aim. The soul's mode of presence in the body explains how it reacts immediately to any bodily affection.[18] In *De quantitate animae* (28.54) Augustine remarks that non-rational animals have a sharper sense perception precisely because their soul is "more closely bound to the body".[19]

To vivify and to protect are two complementary roles of the soul even though they represent two different aspects of it—its inherent and its transcendental nature with respect to the body. The soul relates to the body as something superior to something inferior and this superiority is constitutive of the relation and the result of a certain worldview that is largely explanatory. A clear statement of this superiority is to be found in *De Genesi ad litteram* (12.16, 467):

> 7 Neither it is sensible to maintain that a body can make something in the spirit, for the spirit does not serve as the matter for a making body. That which makes is in every way more excellent than that out of which it makes something. And [a] body is not in any more excellent than the [soul].

The purpose of the above passage is to deny the possibility of something corporeal acting upon something spiritual. This is the statement of a principle that is at the heart of Augustine's philosophy, the metaphysical principle (MP) according to which it is impossible for something material to act upon something immaterial, or in other words for something lower on the scale of being to act upon something higher on that same scale. This basic hierarchy is essential to the Augustinian (and

[15] The structure of the argument in *De Genesi ad litteram* brings the levels of life and the levels of knowledge in parallel (being/existence, life, understanding). The association with Aristotle's discussion in *De anima* of the three kinds of soul/life is, of course, close, although Augustine permeates it with phenomenological considerations.

[16] *De Genesi ad litteram* 7.19.25. Compare this with *De musica* 6.5.9. See Gannon (1956) and O'Daly (2001, p. 166).

[17] It would be interesting to know if this association between perception and pain is attributable to Plato's influence—on Plato, see Remes's contribution to this volume.

[18] Augustine himself associates these two aspects—the mode of presence and perception—in *Epistola* 166 (see footnote 11 above). See Hölscher (1986, pp. 37–39).

[19] On the other hand, the dominated body can resist the action of the soul in a way that the soul (when not hidden from it) experiences as painful (*De musica* 6.5.9).

Platonic) worldview, and it plays a role in understanding his theory of knowledge. Although the metaphysical principle is well known and widely cited, I think the significance of the epistemological principle to medieval accounts of perception is still not fully understood.

In *De musica* (6.4.7), Augustine analyses and compares different rhythms, both those that act upon us—the sounding rhythms—and those that the soul creates, which he further divides into two kinds, "the ones we have when we perceive" and the ones created in the memory. Deodato describes the relation between the three kinds of rhythms as one of causality, according to which the sounding rhythms cause those found in the soul when perceiving, and these cause the rhythms in the memory. Augustine, in the voice of the Master in the dialogue, reacts by denying that the corporeal rhythms cause the rhythms in the soul because the soul "is better than the body" (*De musica* 6.4.7). They cause something in the body, not in the soul. Hearing, therefore, cannot mean that the body causes something in the soul, but rather is the result of the activity of the soul producing "something out of the body", by which he means the image of the thing affecting the body, and "in it<the body>as in something that is subject to its domination" (*De musica* 6.5.9). Thus the soul controls the body in the way that yields a better perception of external things. Augustine extrapolates this principle to other forms of perception:

> 8 although first we see a body which previously we were not seeing, and from then its image begins to be in our [soul] by which we will remember the body when it is absent, nevertheless it is not the body that produces its own image in the [soul] but the [soul] which produces the image in itself with wondrous speed. (*De Genesi ad litteram* 12.16.33, 481–482, with changes)

The passage makes it clear that as soon as "anything is noted with the eyes its image is straightaway produced in the spirit" (*De Genesi ad litteram* 12.11.22). It also implies that the image produced by the soul is of the external objects that cause those affections in the sense organs. The production of an image of an external thing is the immediate effect of the sense organs—vivified by the soul—being affected by the external thing.[20] However, the principle of the impossibility of bottom-up causality—expressed in MP—does not allow for an effect (the image) to be caused by an ontologically lower material object on a superior spiritual entity (the soul). Instead, Augustine claims, the image of the external thing is being made, swiftly, by the soul in itself. Here, then, he announces the epistemological counterpart of the metaphysical principle enounced in (7), according to which no material (external) object can be the cause of an act of the spiritual soul (let us call this EP).[21]

This takes us back to the relation between OA and SA. It has become evident that OA cannot be the real definition of perception because it leaves out the awareness that is essential to our acquaintance with external things, and which is imbedded in the definition of the soul as the ruler and protector of the body. Perception is the soul's awareness of a change in the body caused by an external thing, not the simple

[20] The object exists, naturally, prior to being perceived; vision after the object is present to the sense (*De Trinitate* 11.2.2).

[21] *De musica* 6.4.7; *De Genesi ad litteram* 12.16.33.

informing of the sense organ by the image of the external thing. If the latter were the case then Augustine would have been forced to admit that, at least in the case of bodily vision (as defined in *De Genesi ad litteram*), EP is violated.

On the contrary, it seems clear that the soul is present in the body, giving life to it, prior to any sound or visible forms reaching the ears or the eyes (*De musica* 6.5.11), and it is the action of the soul reacting to these bodily motions that makes them epistemologically relevant because the soul perceiving is aware of these activities.[22] Augustine's point (taken up by later medieval theorists) is that no (veridical) perceptual experience is possible without sensory stimulation—without the external physical thing being present to the senses—but that perceptual experience is not caused by the sensory stimuli.[23] The informing of the bodily sense organs (vision in the OA) of the likeness of the external physical thing is caused by the thing, but

> 9 sensation does not proceed from that body which is seen, but from a living body that perceives. (*De Trinitate* 11.2.2, 318)

The agent of perceptual acts is the soul, and the question can be formulated in terms of the efficient cause of perception: the theory dissociates the stimulation of the sense organs from the making of an inner image of the object that caused that stimulation. There is a causal relation between object and species in the organ, but not between the object or the species and the image in the soul. There is a change in the sense organ that is the impression of the form/image of the external thing. Nevertheless, perception is not just having the form of the thing in the sense organ: it is the soul's immediately becoming aware of this change in the sense organ, by means of which the soul becomes acquainted with the external thing the image represents. That is what Augustine means with the soul becoming aware of that more attentive action (step 3 of SA).

This raises two further questions. First, if Augustine defines perception, as mentioned above, as that which takes place in the body to which the soul pays attention and of which the soul has immediate acquaintance, what is that of which the perceiver is directly aware?[24] Is the image, rather than the external thing or even the change in the body, the direct object of perception? Whereas OA suggests that what we see is the external thing via its species/form in the sense organ, SA seems to imply that the soul is aware of the bodily change but not of the external thing causing the change. The second question concerns the role of the image that

[22] In *De quantitate animae* (30.58) Augustine stresses that both sensation and knowledge (*scientia*) are forms of awareness.

[23] Brittain (2002, p. 277) rightly states that Augustine, arguing against bottom-up causality, "needed to characterize the apparent passivity of the soul in receiving information in perception as an activity it performs on the body". I would suggest, however, that Augustine goes even further by making the mode of the presence of the soul in the body what makes the cognitive reception of sensory information possible in the first place.

[24] Augustine contrasts (*De quantitate animae* 24.45–6; 48–9) direct awareness with awareness by inference, as in the case of the bodily change of growth. This still qualifies as sensation because that is knowledge acquired through the senses—in this case through the interpretation of sense data.

is produced by the soul: it is clear that such an image of the object needs to be produced for remembering and thinking in the absence of or with the attention turned away from the object, but the question is whether actual perception—perception of objects while still present to the senses—requires the existence of mental imagery. I will address this question first.

According to Gerard O'Daly, for Augustine "[s]ense-perception is perception of incorporeal images of the objects perceived".[25] However, as text (8) for example, shows, as soon as the external thing affects our sense organs, the soul makes the image of the thing although it says nothing about the actual perception of the external thing. The distinction between bodily and spiritual vision to which Augustine alludes in several places may be helpful in terms of understanding his view on the subject.

In *De Genesi ad litteram* 12.6.15 Augustine gives the example of reading a sentence, when bodily vision corresponds to the seeing of "the actual letters". Bodily vision, he suggests, is the seeing of all material things present to the senses while present, whereas spiritual vision is the spirit's seeing of material things when absent by means of their likenesses. It is a question of spiritual vision when, in the absence of the object, the memory brings forward these images, formed by and in the soul, in order for the object to be remembered.[26] There are (at least) two ways of explaining the meaning of this distinction. On the one hand it means that when x is in front of me I see x: because I see x through my eyes, which are part of my body, to see x is a case of bodily seeing. Let us call this the restrictive interpretation of bodily seeing, in other words as applying only to the things that are perceived through the body while present to the senses. If, on the other hand, I see x while it is not within my visual field, I am imagining (or remembering) x and to do that I need an inner image of x that my memory holds. This is a case of spiritual vision.

An alternative view—let us call it the non-restrictive interpretation of bodily and spiritual seeing—is to take the distinction between the two kinds of vision as being between objects rather than the use or non use of inner images: in the case of bodily vision the object of the act is the external thing, whereas in the case of spiritual vision it is the inner image.[27] However, there is nothing to prevent bodily and spiritual seeing from being conceived of as tandem operations in that both operate on the perception of things present to the senses. It is about what I see rather than how I (come to) see it. Augustine's expressions, such as his description of bodily vision as seeing with the eyes and spiritual vision as seeing with the spirit, are misleading because he stresses in many places that the eyes do not see, and that only

[25] O'Daly (1987, p. 106). See also Gannon (1956, p. 167), Spruit (1994, p. 183) and Nash (2003, pp. 54–59).

[26] These images ("footprints") are "impressed on the memory when the corporeal things which are without are so perceived" (*De Trinitate* 10.8.11).

[27] See also *De Genesi ad litteram* 12.12.25. Both kinds of vision are distinct from intellectual vision, which does not require the use of any sort of inner image of bodily things (*De Genesi ad litteram* 12.7.16). Charles Brittain convincingly shows in his study on Augustine's conception of non-rational perception (Brittain 2002, pp. 276–277) that for Augustine what the soul is aware of is the external object by virtue of being aware of a change in the body; the perception is of the thing and not of the bodily change.

the soul sees through the body. In this sense, one should assume that Augustine was not arguing for some sort of sensation-perception distinction, but rather conceived of sensation as imbedded in perception.

In *De Genesi ad litteram* 12.3.6 Augustine compares the way we come to know (through reason) things such as the virtues and the physical things that we perceive

> 10 by observing their features or colors or what they sound like or smell like or taste like in the mouth, or what they inform those who feel and handle them about how hot or cold they are, how soft or hard, how smooth or rough.

The problem with the restrictive interpretation of bodily seeing as unmediated "seeing the actual letters" is what this means in practice: does the reader perceive each letter individually? Can *readers* see only letters? If we take his few remarks at face value without further explanation, it seems that perceivers immediately see only certain features of external objects such as the colour brown, for example, and any further aspects of perception such as perception of an e.g. brown book take place only when the object is no longer present. If that is the case there seems to be a gap between bodily and spiritual vision (*De Genesi ad litteram* 12.11.22), in other words between the perception of certain features of things instead of objects that have certain visible features. Instead, I would argue, Augustine considered the sense organs of any perceiver to be affected by perceptible qualities such as colours ("vision" in OA): what the perceiver actually perceives are things such as coloured objects (such as a "stone", the example of a perceived thing in OA), and such perceptions require internal imagery. This is allowed by the non-restrictive interpretation suggested earlier. Augustine himself considered this with his example of hearing:

> 11 unless the spirit immediately formed in itself the image of a voice heard by the ears, and stored it in the memory, you would not know whether the second syllable was the second, since the first would now no longer exist, having vanished after striking the ear. (*De Genesi ad litteram* 12.16.32)

The same idea is expressed in *De musica* 6.8.21:

> 12 Thus, unless memory helps us when we hear even the shortest syllable, so that the motion, which was created when the beginning sounded, remains in our mind, during that moment of time, when no longer the beginning but the end of the syllable is sounding, we cannot say that we have heard anything. This is the reason why it often appears to us that we have not heard some persons speaking in front of us when we were occupied by some other thought, and *this happens not because the soul does not produce those occurring rhythms at that moment*—since the sound undoubtedly reaches the ears, and since the soul cannot be inactive during this reaction of its body nor be moved in a different way than if this reaction did not take place—*but because the impetus of the motion is immediately extinguished through the attention towards something else*, and if this impetus remained, it would remain in the memory, so that we would both find and perceive that we had heard. (emphasis added)

As we "cannot hear at the same time that which cannot sound at the same time", for when the second syllable reaches our ears the first syllable has already ceased to exist, it is necessary that the memory retains the first syllable for the second syllable to be perceived together with the first in a way that the whole word is perceived. (The same can be said of the sounds constituting each syllable.) Although

we perceive the whole word, the word as a whole does not exist at the time we hear it. Given that what memory retains are images, one might ask whether all perception of objects while still present to the senses requires (sensory) imagery. What is said about sound that it "is extended in place and does not exist as a whole in any one place" is true of any visible things.[28] The unity of the percept (and its constancy) is made possible due to the functioning of the memory and therefore all perception seems to be dependent on the images of sense objects the soul produces.[29]

Another element that may help to explain Augustine's account is the function of the inner sense as described in *De Libero Arbitrio*. According to Augustine, perceivers (rational and non-rational) have in addition to the proper senses, the objects of which are the proper sensibles (the proper sensible of sight is colour, of hearing is sound, and so on),[30] what he calls an "inner sense". The inner sense is the power of perceiving external physical things by means of the senses, of perceiving the bodily senses and of judging what is perceived.[31] This power is the ruler and controller of the proper senses, judging whether enough attention is being paid to the "hearing" of a particular sound, for instance (*De musica* 2.3). A further function of the inner sense is to combine different proper sensibles, such as colour, with the shape and size of the object being perceived, thus contributing to the unity of the percept. It also contributes to the unity of the perceptual experience in guaranteeing that it is one and the same perceiver that perceives the different features constituting the perceived object. It is clear, however, that this organization and the resulting unity—of what we would contemporarily call the percept—cannot take place with an inner representation or image. What I am arguing here then is that spiritual vision should be taken to include in addition to remembering and imagining actual perceiving as a function performed by the inner sense and the memory of the present: guarantying the unity of the percept, the constancy of perception and the unity of the perceptual experience.

Let us go back to Augustine's statement that

> 13 when anything is noted with the eyes its image is straightaway produced in the spirit. But its production is not discerned unless we lift our eyes from what we were seeing with them, and then find its image still in the spirit.[32]

[28] *De Libero Arbitrio* 2.14. See also *De musica* 6.5.21. See O'Daly (1987, p. 87).

[29] The same point could be made about the pursuit or avoidance of external things, which follows their perception—see *De Genesi ad litteram* 7.18.24.

[30] *De Libero Arbitrio 2.3.*

[31] *De Libero Arbitrio* 2.3–4. Augustine expresses his uncertainty about whether this "inner sense" perceives itself (*De Libero Arbitrio* 2.4), but is clear in ascertaining that the pleasantness or unpleasantness of a sound, for example is judged by the proper sense, whereas "the inner sense judges what is adequate or inadequate in the sense of the eyes" (*De Libero Arbitrio* 2.5).

[32] *De Genesi ad litteram* 12.11.22. See also *De Genesi ad litteram* 12.33.49, the sense modality in question being that of touch. What makes these images different from those made at will by the power of the imagination is their intentionality—they are made in order to represent an external thing that acted upon the perceiver's sensory apparatus (thus determined even though not caused by it), and to represent it so that it can be known. Because of that, the perceiver is aware of the lack of conformity between the image and the real thing (*De Genesi ad litteram* 12.12.26).

The passage notes two things: first, the immediacy of the image formation and second, the production of the image goes unnoticed until the attention of the soul moves from the external thing to focus on the image. Elsewhere Augustine points out that under these same normal conditions of perception the perceiver is not able, from a sensory point of view, to discriminate between the image or likeness of the object in the sense and the object itself—this is the product of reflection and a function of reason.[33] The soul's becoming aware of the distinction only upon reflection is evidence of Augustine's direct realism, that it is the external physical thing (its form) rather than its inner proxy that is the object of perception. The problem concerns how this statement fits into SA, according to which what we are directly aware of is the affection of the bodily sense organ (caused by an external thing). This affection is simply the object's image/form impressing the sense organ, thus for the soul to become aware of the bodily change is for it to become aware of the form impressing the sense organ. This is when representationalism became an issue for Augustine and its importance would be radicalized in medieval Augustinianism.

Continuing his argument (*De Genesi ad litteram* 12.11.22), Augustine points out that what is "observed" by the eyes is brought to the attention of the spiritual vision, and that the image (through which the spiritual vision operates), which is a "sign of something", is either "understood straightaway" or its meaning remains to be further investigated by the higher reason. It is at this stage that perception becomes conceptual. We should therefore conclude that although the production of an image or inner representation and the actual perception are simultaneous, that image has no role in actual perception of the external thing that it represents. I should point out, however, the relevance of the production of this image as a side product of the perceptual act because of the explanatory principle it offers: the image of any external thing comes to be in the soul by means of the soul's activity, not as the result of the physical external thing's action.

On the other hand, the production of the image that results from the existence of the low level intentionality sheds no light on the question of what we are aware of in perception. I will now consider what kind of awareness is implied in perceptual experience. Text (12) suggests that whenever that which affects our senses does not fall under the spotlight of our attention we do not perceive it.[34] On the other hand, it also implies that even when we do not consciously attend to the thing affecting our sense organs, its image is nevertheless immediately produced in the soul. We must consider, therefore, whether the soul makes images of all objects acting upon the sense organs and, if so what level of awareness is at stake in this process (conscious versus automatic processing).[35] There is also a need to determine whether the soul perceives all the objects of which it has made images. If it does not—a view that seems to be experientially denied—then Augustine's theory should account for what in the images makes them salient with respect to other images, or whether there is something in the perceiver that explains why some objects rather than others are perceived.

[33] *De Trinitate* 11.2.3.

[34] See O'Daly (1987, p. 165).

[35] This sort of awareness is different from being aware of the perceptual state one is in because it is a function of high-order rational attention.

5.4 Attention and Consciousness

It has been suggested that the central feature in Augustine's account is the attention the soul must pay in order for an object to be perceived. I argued in the first two sections of this chapter that there is a primitive sense of attention that results from the soul's relation to the body, and that therefore precedes any particular sense experience. However, the nature of the attention changes whenever an external object comes to act upon the sense organs.

> 14 For it happens even when reading—it has happened to me very often—that I have read through a page or a letter and did not know what I was reading, and so had to read it again. For when the attention of the will is centered on something else, then the memory is not so applied to the sense of the body as the sense itself is applied to the letters. So, too, people while walking, whose will is fixed on something else, do not know where they have to go; for if they had not seen, they would have not walked to this place, or they would have felt their way while walking with greater attention, especially if they passed through unknown places; but because they walked easily, they certainly saw; yet because the memory was not applied to the sense itself in the same way as the sense of the eyes was applied to the places through which they had passed, they could in no way recall even the last thing that they had seen. Hence, to wish to turn the gaze of the mind away from that which is in the memory means nothing else than not to think of it. (*De Trinitate* 11.8.15)

I transcribe the whole passage because of its importance. Let us begin at the end with the notion that to turn the eye of the mind from the image in the memory is not to think about it. In the same way, one could conclude, not to pay attention to sensory images is not to remember them. However, as Augustine states, those walking without paying attention "certainly saw"; otherwise "they would have not walked to this place". So, even though they do not remember them, they must have perceived them, i.e. the external objects in their environment, at least to the extent that it allowed them to "walk easily" and to get "to this place". In this episode the lack of memory is associated (implicitly) with the lack of representation and (explicitly) with the lack of attention.

This must have been an interesting case for Augustine given his consistent emphasis on the connection between memory and perception on the one hand and memory and will on the other. In this case, however, something is going on in the senses to which memory is not applied because the soul's attention is focused on something else. A man may have read but not remember what he read because he was not attending to what he was reading. This explains why he does not remember even though he still perceived (i.e. he still saw the letters and to some extent followed the text). No one doubts (not even himself upon reflection!) that he was reading but it seems equally clear that he was not consciously aware of what he read, yet he was reading. When the attention is not focused on what we see then the memory also seems not to take in those seen things.[36] Two questions arise. First, how can this happen if attention is a necessary requirement for perception? Second, if the memory is not able to recall what was seen, are any images of external things formed, as Augustine claims happens whenever an object is present to the senses? It seems not because if there were images recollection would be possible.

[36] See also a similar example of the distracted walker in *De Genesi ad litteram* 7.20.26.

What seems undisputable is that perception requires the presence of some kind of *intentio* or attention, keeping the power focused on the thing to be perceived. The distracted man's walking (and reading) are possible only because some part of his soul is active (and accurate) in processing information about the environment (in order to steer clear of obstacles) and, at least to some extent, making decisions about what path to follow, plus executing all the motoric functions required for walking.[37] Thus, some (intentional) information processing must be taking place without reaching the level of conscious awareness of external things, or of its own operations, or even of itself as the subject/agent of those operations.

My suggestion for resolving this apparent paradox is to distinguish between two levels of cognitive attention: low-level attention on the level of basic information processing (that does not require intellectual resources), and higher-level attention by means of which we consciously attend to external things or objects of thought.[38] The former should be understood as the unconscious directed attention of actual perception. This low-level processed information is then transmitted to higher cognitive powers for further processing, at which stage it may receive the attention of the perceptual agent.

Text 14 implies that the processing of sensory information at this level is such that the perceiver is not subjectively aware of it—"did not know what I was reading".[39] Augustine gives a similar example in *De musica* 6.15.49, pointing out that when people concentrated on thinking about incorporeal and eternal things they sometimes fail to perceive even the rhythms they themselves activated (see also *De Genesi ad litteram* 12.12.25). This seems to indicate that some information processing takes place automatically in the sense that it does not require a conscious voluntary decision by the agent but is nevertheless intentional as it is about an external thing. Thus, because conscious attention and memory seem to operate in tandem, the memory does not make any image and it is therefore impossible to recall what was sensed.

I take it that, for Augustine, the soul selects and processes the stimuli that are necessary to respond to the environment in a way that allows it to pursue its goal, in this case to arrive at a certain place. This is the probable meaning of "walking easily", which is facilitated by the familiarity of the stimuli—Augustine points out that the walk would require "greater attention" if the walkers passed "through unknown places".[40] He clearly states in *De musica* 6.5.13 that attention is proportional

[37] Augustine states in *De Genesi ad litteram* 8.21.42 that the soul moves the body, for instance in walking, "with a king of concentration" (*quadam intentione*).

[38] This is in line with Brittain's (2002, pp. 277–278) suggestion that Augustine's theory "may allow for different *levels* of conscious awareness", and that the awareness of the bodily change that leads to awareness of the external thing does not mean "conscious awareness". I think he is right and here I try to describe how these different levels may work in cases of normal perception. In addition to these two levels of cognitive attention, we still have the ontological attention that qualifies the relation between the body and the soul and is pre-experiential: this is not object-specific.

[39] Gannon (1956, p. 157) acknowledges that, for Augustine, "the soul may or may not be aware of this motion"—the motion "by which it counteracts the effect of a passion in the organ".

[40] The recognition of the stimuli as familiar or unknown probably means that the processes included in "automatic processing" are quite complex and require some form of expectation.

to the difficulty of the action, and to walk on a known path requires fewer cognitive resources than walking on an unknown one.[41] Some mechanism for identification and processing sensory information, which does not need the resources of conscious attention and memory, is at work in the distracted walker, allowing him to steer his way, but identification of this data as "familiar" seems to avoid the need to activate higher-order conscious processing.[42] (Equally, what sensory information the soul pays attention to needs to be justified separately.)[43]

Once the pre-experience attention of the soul is directed to one particular object as the form of the object comes to impress itself upon the sense organ and the cognitive attention is available, or required by the intensity of the sensory stimuli, the object is perceived at the same time as an inner image is produced by the soul. The result is that the perceiver becomes aware of the object (or the event, reading the page or letter). This "attending to" is the first conscious act in the process in the sense of implying the soul's awareness of the object and of itself as the one being aware. This is not to say that the soul is aware of itself as distinct from the object: its perception of the object is rather accompanied by an awareness of itself as the agent of that perception. We could call this "perceptual awareness". In some cases, however, this specific attending to does not take place and thus there is no perception. This is the case in sleep or distraction, and when the intensity of the affection is not sufficient in itself to lead to a turning of the soul towards it.[44]

The second level of attention is not automatic but seems to imply the use of reason, and here *intentio* is really *voluntas*.[45] Augustine gives no clues as to what brings a certain image rather than any other to be under the spotlight of our attention. What is clear is that he takes the higher-level attention as the psychological mechanism by means of which the soul is able to control the flux of sensory information in order to concentrate in certain objects. The difficulty of resisting this tendency in the human soul to relapse into sensuous imagery, making it hard for the mind to concentrate on intellectual contemplation, could be seen as an indication of this struggle between involuntary and voluntary attention.

I would therefore like to argue for the existence of two senses of intentionality at play in the Augustinian theory of active perception: *ontological intentionality*, or *intentionality of state*, refers to the soul's continuous attention to the body; and *epistemic intentionality*, or *intentionality of content*, which refers to the perceptual acts as directed to external things and is further divided into lower unconscious

[41] And the more focused is the attention, the more clear is the perception: "the more vehement the fear or the desire, the more clearly is the eye informed", *De Trinitate* 11.4.7, 325.

[42] On this basis and from what Augustine states about the inner sense in non-rational animals, one might ask whether this low level of information processing is also found in animals, possibly sustained by the force of habit (*De quantitate animae* 28.54).

[43] Brown (2007, pp. 158–168) tries to locate Augustine in the endogenously-exogenously driven nature of attention debate, the problem being that Augustine is very sparing in her comments on the issue.

[44] The opposite case is that of a dead body, which is affected but has no perception (*De quantitate animae* 30.60).

[45] Di Martino (2000, p. 191).

and higher conscious intentionality. These three levels correspond roughly to the ontological hierarchy of life, sense and intellection that Augustine builds in *De Libero Arbitrio*.

When a particular external thing determines the pre-experiential attention, this affection either suits the nature of the soul and its action on the body or it does not (*De quantitate animae* 33.71), and the intensity of the attention that the soul pays is proportional to the intensity of the affection.

> 15 Therefore, whatever corporeal things are brought into our body or brought to it from the outside, these things produce something not in the soul but in the body itself, something that either opposes or agrees with the activity of the soul. And therefore, when the soul resists what is opposing it and only with difficulty pushes the matter that is subject to it into the paths of its activity, it becomes more attentive to its activity because of its difficulty, and *when this difficulty is not concealed to it due to its attention, it is said to have sensation*, and this is what we call pain or labor. (*De musica* 6.5.9; emphasis added)

The passage in italics makes it clear that to have a sensation is the awareness by the soul of its actions upon the body, and that this awareness is sometimes accompanied by an awareness of the difficulty or easiness of that action due to the nature of what is being perceived—that may be either agreeable or disagreeable to the soul. The whole passage seems to confirm the suggestion that perception only takes place *when* the soul becomes aware of the difficulty in acting upon the body, and that there are instances when the soul does not become aware of this difficulty and therefore it does not reach the level of conscious attention.

Perception is a unity of sense, object and the intention connecting the two other elements. However, perception of an external object is neither an affection of the body nor the making of the image by the soul: it is the perception of the external thing upon which the spotlight of attention falls. Such an account of perception as that given in *De quantitate animae* is reiterated in *De musica* and *De Trinitate*, in which Augustine clearly emphasizes the active role of the soul seeking "that which the eye or any other sense of the body seeks",

> 16 for it also directs the sense of the body, and then discovers when this same sense comes into that which is sought. (*De Trinitate* 10.7.10)

Thus, he concludes, the soul directs the senses in the same way as it directs its attention to certain objects of cognition because it has a certain expectation to find what it seeks.[46]

Thus far I have suggested that the reception of sensory stimuli entails the processing by our perceptual apparatus of that information, but that the automatic production of those images of objects does not necessarily lead to conscious sensory experience. In other words, the soul does not make an image of the object whenever there is an alteration made in the sense organs as the result of the action

[46] The distinction I am proposing is somewhat similar to the distinction Augustine makes in *De Trinitate* 11.6.10 between the will to see and the will to see this thing. The latter, the will to see this particular thing, is a specification of the former generic will to see, determined as it is by the presence to the senses of a particular external object. The generic will to see remains when there is no object, or even no organ (*De Trinitate* 11.2.2).

of an external object: for the image to be made the soul must already be in a certain state of attention. If that happens, in other words if the soul is in the proper state of attention, it can still fail to attend to the image it has made, but in such cases there is the possibility of remembering what the power of the memory has registered.

Two main questions about Augustine's theory of perception remain to be answered. The first concerns the kind of features—in the object or in the perceiver's powers—that explain the object's saliency, in other words what makes some objects rather than others attract the soul's attention. Second, the question about the conceptual-laden aspect of perception needs to be further investigated. It is clear that any account of cognition in Augustine should address the issue of how sensory data is checked to conform to the ideal truths found in the soul from the outset, but it is beyond the scope of this chapter to address this issue.

5.5 Conclusion

I have claimed that an account of perception is to be found in Augustine, and that it has the following conditions: (i) the impossibility of the soul's being acted upon by external objects, (ii) objects must necessarily act upon the sense organs for perception to take place and (iii) attention is a property of mental life that makes perception possible. Augustine's theory also affirms (iv) the assimilative capacity of the soul to produce an image of the species affecting the sense organ by means of which the object is perceived, and (v) the definition of perception as the awareness of the affection of sense organs that is caused by an external thing, and which is accompanied by the soul's producing an image in and of itself of the external physical thing.[47]

The soul's inclination towards sensuality is internally driven, in other words it is a property of the Fallen soul that it tends to pay considerable attention to the external world even at the risk of losing sight of higher purposes such as knowledge of true natures and the quest for God. Perception in Augustine is teleological in nature: its purpose and that of the soul's action of control over the body is to protect the body. The soul's sensual inclinations are not the result of any property in the external world per se, but derive from the way the soul relates to the body. In that sense, the soul is not led to act in any way by the external world: on the contrary, it is the agent of its own acts.

At the core of an Augustinian theory of active perception is the soul's solicitude (often referred to as "vital attention") with regard to the body and its affections, a consequence of its role as the ruler of the body. It is this basic or primitive sense of intentionality that explains perception. Attention is not only an essential feature

[47] Condition (iv) shows how Augustine's theory avoids the major problem in Aristotelian theories, that material objects are the cause of perceptual acts of the immaterial soul but give rise to the questions of representationalism and of what guarantees that the inner image is a correct representation of the external thing. It is the latter concern to which condition (v) alludes in pointing out that the end of the perceptual act is the external thing and not the inner representation.

of perception, it is *the* precondition it. This (at)tending is motivated by the need to tend to the wellbeing and preservation of the body, to choose sensory stimuli that are beneficial and avoid those that are harmful.

The suggestion is, therefore, that the reception of sensory stimuli does not entail the processing of that information by our perceptual apparatus, and even if the information is processed, it does not necessarily lead to conscious sensory experience. Although this could mean that such an active theory of perception is more efficient in explaining non-attended stimuli in terms of the inherently selective nature of attention, it all depends on what makes the soul turn its attention (*intentio*).[48] These two levels of information processing seem to allow for a distinction between conscious experience[49] and the internal processes that make it possible but that are not, as such, object of any cognitive act—in other words of which we are not consciously aware. On the other hand, this distinction presupposes the existence of two levels of attention: the automatic and continuous process of image formation, and conscious awareness when the soul attends to certain things, meaning that these things are perceived.

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[48] See Leijenhorst (2008).

[49] I.e., awareness of perceiving the object, with or without awareness of the representation by means of which it is perceived, and with or without awareness of oneself apart from awareness of oneself as perceiving.

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Chapter 6
Avicenna on the Soul's Activity in Perception

Jari Kaukua

6.1 Introduction

Avicenna's psychology was considered state of the art by the early thirteenth century Latin thinkers whose work was formative to the high scholasticism of the subsequent decades.[1] To some extent, his influence waned with the turn to Aristotle after the translation program of the mid-thirteenth century. This turn to more orthodox Peripateticism entailed a large scale critical assessment, one that could have come straight from the pen of Averroes, according to which Avicenna's numerous departures from the Philosopher's doctrine constituted so many deviations from the truth. However, when it comes to Avicenna's theory of perception, or more precisely, the question whether the soul has a significant *active* role in bringing perception about, he seems to have been a rather orthodox Aristotelian. In spite of his theory of the internal senses, which provided the scholastics with a considerably advanced analysis of the cognitive apparatus at work behind our experience of the world,[2] he subscribed to the view that perception is by and large a passive affair, and even though it involves a process of gradual abstraction of forms or aspects of forms from matter, this takes place more or less as a reaction by the soul to the necessary data provided by the external object of perception. In this regard, Avicenna seems to have settled firmly on the Peripatetic ground, quite distinct from the sort of Neoplatonic tendencies in the theory of perception which are evident in Augustine and the tradition founded upon him.

Yet if we expand a bit from this particular conception of active perception, in which the soul is expressly claimed to *produce* its own content with no causal influence from the external, mind-independent world, we can speak of the soul as an

[1] For a general overview, see Hasse (2000, pp. 4–12, 229–233); for a more detailed account, the entire section I.

[2] Ibid., 230.

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active principle in perception in at least two senses, both of which can be found in Avicenna, and indeed largely due to his own extensions of the Aristotelian doctrine.

First, we can speak of active perception in the sense that the act of perception initially brings into being something that is not present in the extramental object of perception. In a trivial sense, of course, perception will always be active in this sense, for even in an ontologically minimal version of direct realism, at least a relation between the subject and the object of perception will come into being anew in the act of perception. A more interesting case of the soul's activity in perception in this sense concerns the emergence of types of being that are not present in the extramental object. An example from contemporary philosophy of mind is provided by the widely discussed *qualia* such as colors. Second, a related but arguably stronger sense of activity in perception is entailed by the idea that the perceiving soul structures its object in a manner that renders problematic concepts of representation based on straightforward isomorphism between the object of perception and the corresponding extramental entity. A well-known modern example of such an idea is the system of categories and schemes Kant developed in *The Critique of Pure Reason*.

In the following, I will discuss two features of Avicenna's cognitive psychology in light of these two senses of active perception. The first of these features concerns his theory of the common sense, and the intriguing yet consistent claim that temporality is brought into being by the act of common sense. The second feature concerns the faculty of estimation. Here I will propose a novel interpretation of the function of this faculty, which amounts to the claim that estimation has a crucial role in structuring the object of perception. Since the activity of estimation in this role allows for variations that cannot be explained by exclusive recourse to the external object, Avicenna's theory of estimation can be described as proposing a rather strong active role for the soul in perception. In the end, I will briefly consider, by means of Avicenna's intriguing notion of the "vague individual", whether the addition of the intellect in the case of human souls has any consequences for our topic.

However, since any discussion of Avicenna's cognitive psychology will have to operate with his classification of the internal senses, I will first present a schematic outline of this theory. Readers familiar with the cognitive apparatus of the Avicennian sensitive soul can jump straight into the following section on the common sense.

6.2 The Internal Senses

Although it introduces a considerable amount of new material, especially in the discussion of vision, Avicenna's account of the five external senses is uncontroversially Aristotelian in essence. This is not the case with his theory of the so-called internal senses (*al-ḥawāss al-bāṭina*, sing. *al-ḥiss al-bāṭin*).[3] The term "internal

[3] For the history of the theory of internal senses prior to Avicenna, see Wolfson (1973), Rahman (1952, pp. 2–3, 77–83), Black (2000, p. 1 and n. 1), and Hasse (2000, p. 140).

sense" refers to those cognitive faculties of the sensitive soul the action of which is subsequent to the initial reception of sense data by the external senses. As such, they represent various ways of processing these data in order to yield those constituents of perceptual experience that cannot be straightforwardly reduced to causal influence from the external source of the data. Avicenna arrives at his version of the theory by means of three explicitly stated criteria of distinction between the internal senses to be postulated. First, if we can discern a distinct type of cognitive object, we have to postulate a corresponding cognitive faculty. Second, faculties that are active in relation to their proper objects must be distinguished from faculties that are passive in relation to theirs. Third, we have to make a subdivision within the class of passive faculties into retentive and receptive faculties. This is because the material requirements for the organ proper to each type of passivity are different: the organ of a retentive faculty must be relatively rigid whereas that of a receptive faculty requires a certain degree of malleability.[4]

These three criteria yield a fivefold theory of the internal senses. First, Avicenna singles out two types of cognitive objects: sensible forms and what he calls *ma'ānī* (sing. *ma'nā*).[5] Thus, there must be at least two distinct internal senses. Second, he distinguishes between one active faculty and at least two passive faculties respective to each type of object, which yields a minimum of three faculties.[6] A third distinction is made between receptive and retentive faculties within the two types of passive faculties. As a result, we have a system consisting of

1. Common sense (*al-ḥiss al-mushtarak*) for the reception of sensible forms
2. Imagery (*al-khayāl*) or formative faculty (*al-quwwa al-muṣawwira*) for the retention of sensible forms
3. Estimation (*al-wahm*) for the reception of *ma'ānī*
4. Memory (*al-quwwa al-ḥāfiẓa al-dhākira*) for the retention of *ma'ānī*
5. Imagination (*al-quwwa al-mutakhayyila*) or thought (*al-fikr*)[7] for the active combination and analysis of sensible forms and *ma'ānī*[8]

[4] Avicenna (1959), I.5, 43–44. I will subsequently refer to this edition as *Shifā': Fī al-nafs*, followed by the numbers of book and chapter, and the relevant page.

[5] The translation of this ambiguous and difficult term is a matter of debate. The medieval Latin translators opted for *intentio* which has persisted up to our time. For criticisms of this translation and suggestions for alternatives, see Gyekye (1971, pp. 32–38), and Hasse (2000, pp. 127–141). The use of *intentio* and its modern equivalent is defended in Black (2010).

[6] It is unclear to me why Avicenna does not think that an active faculty capable of having two types of object does not violate his first principle of distinction. I will, however, set this question aside as inconsequential for the purposes of this paper.

[7] Unlike in the case of "imagery" and "formative faculty", here the two terms are not synonymous. Avicenna thinks that imagination/cogitation is one faculty, but since its action is governed by different faculties in non-human and human animals (by estimation and intellect, respectively) it should be referred to by two correspondingly different names.

[8] This account is from *Shifā': Fī al-nafs* I.5, 43–45. Slightly divergent classifications can be found in the *Najāt*, the *Maqāla fī al-nafs* and the *Qānūn fī al-ṭibb*. For a discussion and tentative explanation of the divergences, see Wolfson (1973, pp. 276–282).

Our perceptual experiences are brought about by the co-operation of these faculties upon sense data provided by the external senses in the following manner. First, the common sense unites the various sense data channeled *separatim* through the five external senses into a single manifold of sensible features. Such manifolds are then retained in the formative faculty, which can thus be considered a sort of memory for sensible appearances. After the common sense has recombined the sense data into a single whole, the estimation is capable of apprehending its proper object, the *ma'nā*, in that whole. In a moment I will discuss in greater detail what I think the estimation's apprehension of a *ma'nā* ultimately amounts to; suffice it to say at this point that a *ma'nā* is something which is conveyed by or in what is sensed but which itself is not strictly speaking sensible. Avicenna's most celebrated example of a *ma'nā* is the hostility a sheep apprehends in a wolf: the hostility cannot be seen, heard or smelled, nor can it be reduced to any feature that could be such, yet Avicenna thinks we must postulate an apprehension of something like it if we are to explain the sheep's instinctive flight in face of the wolf. The *ma'ānī* are stored by the faculty of memory for later retrieval, which enables human beings and animals to recognize particular objects of perception as things one is familiar with from prior experience. Such recognition also requires the act of imagination which combines the retrieved *ma'nā* to what is presently perceived. Imagination can also actively analyze and recombine material received from the senses into objects of perception that have no equivalent in the external world.

The above classification is extremely schematic and therefore potentially misleading in a number of ways. One possible misapprehension should, however, be explicitly rejected: Avicenna's classification must not be understood as an atomistic theory of perception. Rather, the operation of one faculty involves the entire system. Although it can be analyzed into its distinct constituents, a perceptual experience is a unitary whole, which in normal cases is not brought about piecemeal so that the respective operations of the distinct faculties take place in a temporal succession. For the time being, this holistic claim will have to be taken at face value, but I do hope to provide some evidence for it in the discussion below of the role of estimation in perception.[9]

6.3 Temporal Continuity in the Common Sense

In light of the above, there is of course one obvious but trivial sense in which the common sense could be called an active faculty of perception. The sense data caused by an external object are divided across the five channels of the external senses, each of which transmits its respective proper object together with sensible features common to many senses such as motion or shape, and are first brought together by the common sense. However, Avicenna does not recognize any genuine activity in

[9] Cf. also Avicenna's description of the functioning of the internal senses in *Shifā': Fī al-nafs* IV.1, 163–165, which strongly suggests that in most cases they operate as a system.

this recombination. At this stage, the animal's cognitive apparatus is either simply hardwired, in a manner he does not seem to find particularly problematic, to gather again the elements channeled through the senses into an object that resembles the external one, or it functions under the governance of estimation in the manner we will discuss below. Thus, from the point of view of the common sense alone, we are dealing with a purely passive process.[10]

However, there is one phenomenon upon which Avicenna dwells at some greater length and which suggests that the common sense has a significant active role in perception. In the introduction of his classification of the internal senses, Avicenna provides an interesting reason for postulating the faculty of common sense. Given that the external senses are by nature highly malleable passive subjects, they are limited to perceiving only what actually occurs at present in the narrowest sense, in other words, their information is constantly updated by the external object that causes the reception in them of corresponding sensible forms. Avicenna then brings up two phenomena that cannot be explained by means of the external senses precisely because of their limitation to the reception of what is actually present: our perception of a descending drop of rain as drawing a vertical line, and our perception of the tip of a revolving oblong object, such as the lit tip of a torch, as drawing a circle. Our perception of them as drawing the line and the circle requires that we perceive *both* the actual location of the descending drop or the revolving tip *and* their past locations, and that we perceive them *simultaneously*. Since the perception itself is not open to doubt, Avicenna argues that we must postulate a faculty other than the external senses which is capable of apprehending motion as a temporal continuity. The common sense is such a faculty.[11]

Now, one might doubt that these examples refer to anything more interesting than the phenomenon of visual afterimages, and wonder why Avicenna was so adamant to not explain them by means of the material characteristics of the eye. In such an interpretation, the descending raindrop and the revolving torch would scarcely constitute particularly striking examples of the soul's activity in perception. However, Avicenna's somewhat more detailed discussion of them in a later chapter suggests that he thinks something more important is at stake.

> In the same way[12] the descending drop is imagined as a line and the point revolving on a wheel as a circle. However, you could not imagine and see that unless you saw some extension. It is not possible that you see an extension from the moving point which is not in time or from anything other than that you imagine the thing in two places. Thus, that must be due to the drop's being first above and then below, its extension being what is in between, and to the point's being in one extreme of the interval it revolves and [then] in another extreme, its extension being what is in between, while the appearance (*al-shabaḥ*) is conceived in you. That is not in accordance with one now. Therefore, a preceding appearance must remain

[10] Cf. the discussion of common sense in *Shifā': Fī al-nafs* III.7, 141–142; and IV.1, 163–165.

[11] *Shifā': Fī al-nafs* I.5, 44–45. Cf. Avicenna (1892), III, 123–124. I will subsequently refer to this edition as *Ishārāt*, followed by the numbers of section (*namaṭ*) and page, respectively.

[12] Avicenna has just mentioned the persistence of the Sun's image in vision after one has gazed at it.

> and be retained afterwards, and then be joined to the sensation of what has come later, and the two are united to an extension which is as if sensed.[13]

In my mind, the passage strongly suggests that Avicenna's point in introducing the two phenomena is to explain our experience of time or duration. This he conceives as an extension between two points in the course of motion. Three constituents are required for the perception of the line drawn by the descending drop or of the circle drawn by the point on the wheel: the place at which the drop or the point were in a prior phase of the movement, the place at which they are now, and the extension between the two places. The simultaneous presence of the three things cannot be a matter of sensation in the strict sense, if sensation is a constantly fluctuating state of being subject to the causal power of the external object of sensation. Yet the extension, or time perceived as duration, is "as if sensed", which I take to mean that it is phenomenally given in the common sense in exactly the same manner as the present state of the moving drop or point.

If this interpretation is correct, the activity of the common sense brings into being something that is not there in the external world our perception is concerned with, namely time. This is not to say that time is a purely subjective matter. Avicenna follows Aristotle in thinking that time is a measure of motion, and that motion is therefore ontologically prior to time. Perceived time is actually measured motion, and as such it is founded on an extramental process of motion that is merely reconstituted in experience as *experienced* motion. Yet the measuring of motion as a temporally extended continuity requires a sufficiently endowed cognitive subject, that is, a soul with the required internal sense faculty. Thus, the sort of temporal synthesis performed by the common sense is active in the sense that it brings something into actuality for the first time through its capacity to simultaneously retain past and receive new sense data.

Avicenna confirms this in his discussion of time in its proper place, that is, in the second book of the part of the *Shifā'* dealing with physics. Here Avicenna first distinguishes between two senses of motion: motion as an instantaneous property of the thing in motion, and motion as a temporally extended process. Motion in the first sense can quite unproblematically be conceived as extramental and independent from whether there are any souls to measure it or not. It is, however, the second sense of motion that we are concerned with, and Avicenna is explicit about its dependence on the perceiving soul.

> In reality this thing is such that it has no essence subsisting in concrete. It is impressed in the imagery because its form subsists in the mind by reason of a relation of what is moved to two places: the place it has left, and the place it has reached. Or it is impressed in the imagery because the form of what is moved, which occurs in a certain place and at a certain proximity and remoteness to bodies, has been imprinted in it. Thereafter another form, with another occurrence in another place and with another proximity and remoteness, is

[13] *Shifā': Fī al-nafs* III.7, 142–143. All translations from the Arabic are my own. The replacement of the tip of an oblong object with the point on a wheel is trivial for our concerns, but the fact that the passage relates the familiar examples not to the common sense but to the imagery and the imagination is more crucial. I will come back to this discrepancy in the concluding remarks to this paper.

> conjoined to it in sensation (*min jihati al-ḥiss*), and so one is aware of two forms together, albeit as a single form belonging to motion.[14]

When it comes to psychological details, this passage seems to be at odds with the account from the psychological section of the same work. Whereas the psychological context speaks only of the common sense, here we have the two impressions (past and present) relegated to the imagery. This seeming incoherence notwithstanding,[15] the central point remains: time as duration first comes to be in perception, whether in the common sense or in the imagery. In this regard, the end of the passage is emphatic; one becomes aware of two forms (the prior and the past phase of the moving object) together *as a single form*, which clearly means that a *new* form of motion as an extended duration comes to be by means of the soul's synthesis of the successive moments of motion into a perceived continuity with a duration.

A later chapter in the physical section of the *Shifā'* qualifies the present account in a highly interesting, if frustratingly underdeveloped fashion:

> These two nows are inevitably present together in the mind. However, sometimes the mind may be aware that a now is earlier in existence and [another] now later, that being due to the remote distance between the two, just as we are aware of the earlier now of two nows of the hour or the day. Sometimes the two nows are so close that the mind is not aware of what is between them at first sight, unless it relies on reflection (*istibṣār*), and so the mind is aware of the two as if they occurred simultaneously and were a single instant, although the slightest amount of investigation will prevent the mind from that. Still, until the mind thinks the matter over, it is as if the two nows occurred simultaneously.[16]

The passage suggests that perceived duration comes in different degrees of length, varying from our awareness of the passing of the day or the hour to gradually shorter spans of time. Towards the end of the passage Avicenna mentions a most interesting case of two moments perceived as one present. The temptation is great to read this as a pointer towards a phenomenologically sophisticated theory of experienced temporal presence, but in the absence of much further material, the most we can attest to is that Avicenna consistently recognized the need to account for the constitution of our experience of time, and that he found the theoretical means for such an account in his theory of the internal senses.

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[14] Avicenna (2009), II.1, 112; cf. II.13, 248–249. (I will subsequently refer to this edition as *Shifā': al-Samā' al-ṭabī'iyy*, followed by the numbers for book, chapter and page, respectively.) For discussion, see McGinnis (2010, pp. 61–64); and Hasnawi (2001, pp. 228–232).

[15] Given that the two sections of the *Shifā'* were likely composed relatively close to each other, (see Gutas [1988, pp. 103–106]; cp., however, Michot [1997, pp. 157–161]), there is little ground for a developmental reading. Hasnawi (2001, p. 231) suggests, not entirely implausibly, that the difference in accounts is because in the section on physics Avicenna is only concerned with showing that movement as temporal duration is a mental phenomenon in a general sense, for which concern psychological details will be of relatively slight importance. Arguably then, the psychological section would be Avicenna's final word on how exactly time is constituted. The problem is that the psychological section, as we have seen, is ambiguous in this regard, one of the two passages being coherent with this passage from the physical section. Again, I will suggest a tentative solution in the concluding remarks.

[16] *Shifā': al-Samā' al-ṭabī'iyy* II.13, 258.

In light of the foregoing, it seems safe to say that the soul, by means of its faculty of common sense or imagery, has an active role in its perception in the first sense described above. The experience of motion as time which the soul produces does have a basis in the external world. Much like such *qualia* as colors can be understood as alternative ways of representing wavelengths of light, motion as time can be conceived as an alternative representation of extramental motion. Yet the fact remains that something new is thereby brought actually into being.

6.4 Estimation and the Structure of Experience

In order to get a clearer grasp of the nature of estimation and its objects, the *ma'ānī*, as well as of the sense in which the soul's use of this faculty can be understood as an instance of active perception, let us consider two closely connected cases in which estimation is involved. These are learning and recognition based on prior experience, and the phenomenon of incidental perception.

At first glance, the description of estimation, which we paraphrased above and according to which it "apprehends *ma'ānī* which are different from the *sensata* but which exist in the particular *sensata*",[17] suggests that it is a passive faculty of apprehension. Although its object is acquired at a stage of greater abstraction from matter than the objects of sensation, it is received in an equally passive manner. Moreover, Avicenna characterizes his most common examples of estimation as innate or instinctive, something that takes place due to the way in which the estimating subject is hardwired. Some of these examples, such as the infant's disposition to suckle and grasp, or the eyelid's tendency to close when something gets near or into the eye, are indeed much closer to reflexes than the instinctive reaction of the prey fleeing from its predator.[18]

However, passivity comes in many flavors. First of all, as becomes clear from a brief consideration of such prime examples of estimation as the sheep and the wolf, the objects of estimation, unlike those of sensation, are particular to the subject. Not every subject capable of estimation will perceive the wolf as hostile and therefore something to flee from, or a lamb as an object of one's affection,[19] only a subject that is a sheep is likely to do so. Thus, even if the animal were hardwired to estimate its object in the manner natural to it, the subject-specificity of estimation suggests that there is a sense in which the soul is active in perception by means of it. In the sheep's experience, the wolf has properties that are not there in the external object

[17] *Shifā': Fī al-nafs* I.5, 45. The somewhat inelegant translation of *maḥsūsāt* is intended in order not to lose sight of the perfect tense in the participle.

[18] Cf. *Shifā': Fī al-nafs* IV.3, 183–184. Indeed, Hasse (2000, pp. 136–139) accuses Avicenna for trying to incorporate too wide a range of phenomena into his theory of estimation, which according to Hasse, is first and foremost a theory of instinctual behavior. Constraints of space do not allow a full assessment for Hasse's revisionist interpretation here, but see n. 27 below.

[19] For the latter example, see *Shifā': Fī al-nafs* I.5, 45.

considered in itself, separate from its relation to the sheep. These properties are due to the perceiving soul, and while they are conveyed in and therefore somehow due to the data received from the external object, they are not determined solely by those data.[20]

This aspect of the soul's activity becomes more pronounced still when we consider Avicenna's manner of explaining the influence of learning and prior experience upon perception by means of the faculty of estimation.

> This is one division,[21] and the other division is for something like experience. That is [such] that when pain or pleasure befalls the animal, or when a sensible advantage or sensible harm connected to a sensible form occurs to it, the form of the thing and the form of what is connected to it are imprinted in the formative [faculty], while a *ma'nā* of the relation between the two and a judgment about it are imprinted in memory. The memory acquires that by itself and by its nature (*li jibillatihi*). When that external form appears to the imaginative [faculty], it is aroused in the formative [faculty] and together with it are aroused those advantageous or harmful *ma'ānī*—and *ma'ānī* in memory in general—that are connected to it, in the manner of transmission and survey that is in the nature of the imaginative faculty. Estimation senses all of this together. It sees the *ma'nā* with this form. This is in a manner that is close to experience, and because of this dogs fear clods of earth, pieces of wood, and other such things.[22]

In a nutshell, Avicenna's explanation proceeds as follows. In the first encounter with an object of perception, the synthetic whole of sense data, consisting of all the available information provided by the extramental object by means of the external senses, is perceived in the common sense and stored as such a synthetic whole in the formative faculty. At the same time, estimation apprehends the *ma'nā* of this synthetic whole, which is subsequently stored in memory. Now, a second encounter with the same object, or another similar in appearance in the relevant respect, will not be a mere act of sensation but will also involve estimative apprehension of *ma'ānī*. To specify Avicenna's example ever so slightly, in the case of the dog that fears sticks because it has been beaten with one, the prior experience consists of visual sense data from an oblong object *and* an associated sensation of pain *coupled with* a *ma'nā*, such as "harmful" or "evil", which combines the visual and dolorous sense data into an experiential unity. When the dog perceives a similar oblong object for the second time, the visual perception becomes connected to the same *ma'nā*, even if the stick is now held by a more benevolent person with no intention whatsoever to harm the dog. This person's benevolence notwithstanding, the *ma'nā* will cause the dog's imagination to fetch a representation of the sensation of pain from its formative faculty. This tripartite cognitive whole then amounts to the dog's perception of the stick as harmful, and due to this perception it is moved to feel fear, and will either flee or prepare to defend itself.

The dog's fear of sticks is quite close to the traditional Aristotelian phenomenon of incidental perception. The only difference is that since incidental perception just amounts to the recognition of an object of perception as someone or something we

[20] For a discussion of this aspect of estimation, see Kaukua and Kukkonen (2007).

[21] This is a reference to the natural or instinctive functioning of estimation.

[22] *Shifā': Fī al-nafs* IV.3, 184–185.

know from previous experience, it does not entail as intimate a practical involvement as the example of the dog. Thus, Avicenna's explanation of incidental perception by means of estimation shows that the role of estimation in perception is not restricted to practical judgments of what is good or bad, beneficial or harmful, for the perceiving subject. Avicenna's example of incidental perception in the *Shifā'* is the perception of a yellow substance as honey.

> Moreover, we make judgments about those that are sensed by means of *ma'ānī* which we do not sense, either because it is in their natures that they are not sensed at all or because they are sensed but we do not sense them at the moment of judgment. As regards those in the nature of which it is not to be sensed, they are such as hostility, maliciousness and avoidability which the sheep apprehends in the form of the wolf, all in all the *ma'nā* which it avoids, or agreeability which it apprehends from its fellow, all in all the *ma'nā* which it likes. These are things which the animal soul apprehends but none of which is indicated by the sense. Therefore the faculty by means of which they are apprehended is another faculty, and it is called estimation. As regards those that are sensed, we see for instance something yellow so that we judge that it is honey and sweet. This [i.e. the sweetness] is not brought to it [i.e. the yellow thing] by what senses at this moment. It belongs to the genus of what is sensed, although the judgment itself is not by means of what is sensed at all even if its parts belong to the genus of what is sensed. [The judgment] does not apprehend it immediately (*fī al-ḥāl*), rather it is a judgment which judges about it [i.e. that the yellow thing is honey and sweet] and which can be mistaken about it. It is also due to that faculty.[23]

The question in all its simplicity is: when I see, upon my arrival to the breakfast table, next to the teapot a jar full of a yellow substance with a slightly granular texture, how is it possible that I will at that very moment, without tasting the substance, know what the substance tastes like? Clearly this must be based on prior experience of something that in all relevant respects appeared visually similar *and* tasted sweet. Only a person for whom both the visual sensation of yellow and granular substance and the gustatory sensation of sweetness have been united in some synthetic whole that she has experienced will be able to apprehend the sweetness of what she *sees*. And according to Avicenna, this synthesis is performed by the estimation as a judgment that this yellow is sweet, which in all relevant respects is similar to the dog's judgment that this oblong object poses a threat. One sees the yellow substance, and this sensation triggers a *ma'nā* which in turn orders the imagination to fetch the sensation of sweetness from the formative faculty and combine it to the yellow substance actually seen.

But what exactly does estimation apprehend here? It cannot apprehend either the yellowness that is actually present in sensation or the sweetness that is not actually present but can be retrieved from the formative faculty, precisely because they are not the kind of objects estimation apprehends. As we recall, the proper objects of estimation are *ma'ānī*, which according to Avicenna's precise definition are different from but exist in what is sensed. If we demand consistency from Avicenna, we should not accept estimation to apprehend anything that can be apprehended by the senses.

[23] *Shifā': Fī al-nafs* IV.1, 166.

It has been suggested that objects of sensation such as sweetness can be objects of estimation when they are not actually conveyed by the external sense of taste.[24] According to this interpretation, the defining characteristic of *ma'ānī* is not non-sensibility in the absolute sense. Instead, a constituent of experience will be a *ma'nā* apprehended by estimation whenever it is not *actually* apprehended by the senses, even if in other cases it could be apprehended by them. This interpretation, reconstructed in Deborah Black's seminal study, is corroborated by two further passages from the *Najāt* and the *Ishārāt* according to which estimation is required in incidental perception to fill a gap that the imagination and the common sense cannot fill "since these internal senses only perceive what external senses themselves have perceived".[25] Estimation is required to fetch the sweetness from the formative faculty, subsequent to which the imagination can combine the two objects (yellow and sweet) apprehended by the two faculties (common sense and estimation, respectively) into one perception.

This interpretation can, however, be countered by the fact that if the missing sensible is all that is required, Avicenna's system of internal senses could render it present without the help of estimation. To my knowledge, he nowhere claims that the imagination should be unable to perform its combinatory functions alone, without the guidance of any superior faculty. On the contrary, he claims that that is precisely what happens in dreaming.[26] Thus, there is no reason why the imagination should not be able to provide the sensible quality not actually sensed in instances such as the recognition of a yellow substance as one that also tastes sweet. But Avicenna explicitly mentions *ma'ānī* in our passage and thereby postulates the need for estimation in incidental perception. This brings us back to the starting point: what does estimation apprehend here?

Let us take a closer look at Avicenna's text. The key phrase for our question is: "As regards those that are sensed, we see for instance something yellow so that we judge *that it is honey and sweet* (*fa naḥkumu annahu 'asalun wa ḥalw*)". As Avicenna says in the end of the passage, the judgment in the example is performed by means of estimation, and so we can say that its judgment concerns not two, but three things: the yellow substance, the sweetness, *and the fact that the yellow substance is honey*. Moreover, although Avicenna could be clearer here, I believe that the structure of the judgment is latently hierarchical. If this is correct, the order in the constituents of the judgment will no longer be coincidental. Rather, instead of a simple conjunction, the *ma'nā* attributed to the actually perceived yellow substance contains an implicit inference: "this yellow substance is honey and *therefore* sweet". In other words, the apprehension of the *ma'nā* "honey" in the sensation of the yellow substance contains an order for the imagination to perform its proper function and fetch the sensible quality of sweetness from the formative faculty because it

[24] Black (1993, pp. 225–226).

[25] Ibid., 225–226. Notice that this is not Black's final view (for which see 226–227), which recognizes a role for estimation that is comparable to that proposed here.

[26] Cf. *Shifā': Fī al-nafs* IV.2, 169–173, 179–180.

belongs together with the quality of yellowness when apprehended in connection with the *ma'nā* "honey". This *ma'nā* simply amounts to the simultaneous presence of yellowness and sweetness.[27]

If this interpretation is correct, then *ma'ānī* should be understood as some kind of quasi- or proto-concepts that serve an important function in structuring our perceptual experience. Insofar as we perceive robust things instead of mere conglomerations of sensible features, this is because the sensible features are connected to each other by means of *ma'ānī* that are not themselves sensed but are present in or conveyed by what is sensed. This also explains why Avicenna distinguishes *ma'ānī* that are non-sensible in the absolute sense from ones that are not *actually* sensed. Absolutely non-sensible *ma'ānī* are properties that we can positively describe so that they are not reduced to any sensible qualities, whereas sensible *ma'ānī* amount to nothing but certain connections between sensible qualities. Avicenna is explicit that the judgment itself, which despite the title is the *apprehensive* act proper to estimation, is not sensible although its *parts* are such. In other words, the interpretation according to which the *ma'nā* here is a certain manner of relating sensible qualities to each other, that is, a certain judgment which is about what is sensed but not sensed itself, can be reconciled both with the passage and with Avicenna's criteria of distinction between estimation and common sense.

I take it as obvious that in incidental perception, the perceiving soul is active in its production of the object of perception, for in such cases as seeing something sweet the content of perception is not exhaustively determined by the extramental object. The soul adds something to the immediately sensed quality by taking it as an element in a structure provided by the *ma'nā* which connects it to other similar elements. That the soul is active is emphasized by the fact that, as Avicenna remarks immediately after the passage we have been considering, incidental perception is subject to error in a manner different from that of the senses. Commonplace cases in point are the various idiosyncratic and entirely unwarranted prejudices we may have towards objects of perception. Avicenna's particular example is again related to honey, which he says someone may feel disgust towards because she perceives it to resemble yellow bile. For this person, seeing the yellow substance will trigger the *ma'nā* "yellow bile" which amounts to the connection between yellowness and a certain disgusting taste fetched from the formative faculty.[28] The error, or the idiosyncratic prejudice, is not in the act of seeing, for the yellow substance can appear exactly as it is without the soul. Only the subsumption of what is immediately sensed under one or another *ma'nā* opens the room for the kind of variations that can properly be termed errors in perception and judgment.

[27] In my interpretation Avicenna will also be immune to the kind of accusations of incoherence Hasse (2000, pp. 136–139) directs at him. One of the most serious drawbacks of Hasse's interpretation is precisely the fact that he has to judge so much of Avicenna's explicit discussion as nothing but unfortunate additions to his "core theory".

[28] *Shifā': Fī al-nafs* IV.3, 182–183.

It should be emphasized at this point that estimation is a faculty we share with non-human animals, and so the sort of judgment it performs is not an intellectual one. Furthermore, the operation of estimation is not free. We perceive the yellow substance as honey or as yellow bile quite like the dog perceives the stick as posing a threat. We may of course subsequently pause to reflect upon the functioning of our estimation, and even attempt to override its judgment in the light of more reliable information acquired by means of the intellect. This, however, is an altogether more complex case, one that we may hesitate to call perception anymore. But if estimation is therefore a passive faculty, in what sense can we consider its contribution to render the soul an agent in its perception? Everything of course hinges on what we mean by active, but I think it should be clear by now that at least in the second sense of activity we characterized in the beginning, estimation amounts to the soul's activity in perception. In estimating its object, the soul classifies the received sense data in a manner not determined by those data into a wholesome object of perception the explanation of which requires dual input from both the object and the soul.

6.5 The Vague Individual

The soul's activity in perception becomes more emphatic when we move to consider forms of perception exclusive to human beings, which involve contents due both to the cognitive faculties of the animal soul and to the intellect. Such combinations can be considered special cases of incidental perception, in which the subsumption of sense data under *ma'ānī* is governed by universal concepts. For instance, if we have acquired understanding of the essence of horse, we can subsequently recognize individual horses as instantiations of the universal. In such cases, estimation functions under the governance of the intellect.[29] Avicenna is frustratingly elliptic concerning the details of such governance in his psychology, but there is a discussion in the section of the *Shifā'* on physics, which can be used as a clarification.

Avicenna discusses the phenomenon he calls a vague individual (*shakhṣ muntashir*) in the very first chapter of the physical section of the *Shifā'*. The general discussion concerns the question of what is best or primarily known by us and what is such in nature. If we regard the intellect alone, the human intellect proceeds from the knowledge of what is more common to the knowledge of what is more specific.[30] But if we take into account the entire cognitive apparatus of the human being and consider the acquisition of knowledge as a process that begins from sensation and proceeds by way of gradual abstraction, then Avicenna recognizes that we must start from the individual.[31] He then proceeds to make an interesting observation: the

[29] Cf. *Ishārāt* III, 125.

[30] *Shifā': al-Samā' al-ṭabī'iyy* I.1, 3–6. This is because the more common or general is a part of the definition of the more specific, which means that knowledge of it is required in knowing the more specific.

[31] *Shifā': al-Samā' al-ṭabī'iyy* I.1, 7.

fact that we have to begin from the individual is perfectly coherent with the general claim that the more common is better or primarily known to us, because even in sense perception we proceed from the more common, or vague, towards the more determined individual. He mentions two concrete examples which indicate that this is the case. Suppose we see an object approaching from afar. In such a case, we will first perceive some body, which we will then recognize as some animal, and it is only at the very last instance that we are capable of determining that it is for instance a human being. Although this is a special, if not unusual case, Avicenna clearly thinks that it is telling of the structure of all perception. The other example is from developmental psychology. According to Avicenna, when a human infant is in contact with its parents at the earliest stages of its cognitive life, it will only perceive the form of a man or a woman, without being able to distinguish between individual men or women. Only gradually will it be able to perceive its own father or mother as distinct from other human adults.[32]

Avicenna says that the term "vague individual" is applied equivocally to the two cases. This is because in the second case, the vagueness concerns the individual, whereas in the first case, it concerns the nature proper to the individual.[33] Now, it is the first case that is of interest to our topic,[34] and the precise nature of the soul's activity in this case consists in its classification of the object of perception under various alternative universal concepts. This is borne out by Avicenna's characterization of the nature of vagueness involved in it:

> As regards the other case,[35] it is this determinate (*al-mu'ayyan*) corporeal individual. It cannot be other than it is, except that it is possible that the *ma'nā* of animality or the *ma'nā* of inanimateness are related to it in the mind because of the mind's uncertainty, not because the thing in itself can be such—that is, to be such that either of the *ma'nayn* could be related to that corporeality.
> […] In the second sense, it is not possible in the mind that it is just any individual of that species, rather it is nothing other than this determinate one. However, there can still be possible uncertainty and variance in the mind—that it is designated (*yata'ayyana*) by a determinate animality instead of inanimateness for example, or by a determinate inanimateness instead of animality, in a designation related to [the mind], even after its judgment that in itself [the individual] cannot be both things but is designated as one of them.[36]

The case is clear: an object seen from afar appears indistinct, and can therefore be classified as an animal although in closer inspection it turns out to be a stone. Or one might mistakenly classify an object as a monkey when in reality it is a human being.

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[32] *Shifā': al-Samā al-ṭabī'iyy* I.1, 8. Avicenna's second example is of course rather implausible, perhaps he did not spend much time with infants. However, if we forgive him the somewhat unfortunate example, the point is clear: it is by learning that we become able to make distinctions between the individual objects of our perception, both between objects belonging to different species and objects within the same species.

[33] *Shifā': al-Samā' al-ṭabī'iyy* I.1, 9.

[34] Of course the second case is also related to the question of the soul's activity in perception. However, since I believe it can be treated as a case of incidental perception, I will not dwell on it at any greater length here.

[35] Avicenna discusses the two senses of "vague individual" in an order reverse to ours.

[36] *Shifā': al-Samā' al-ṭabī'iyy* I.1, 9.

In principle this can be explained in much the same manner as the phenomenon of incidental perception, for as we saw, it also entails the possibility of misidentification. However, the difference is borne out by Avicenna's saying that this case is due to uncertainty, and that the uncertainty persists even if one certainly knows that there is no room for the kind of variation in essence in the extramental object of one's perception. This entails room for deliberation in a way that the case of incidental perception does not.

But we are still short of any detailed explanation of how this conceptual influence in perception actually takes place. In a recent paper, Deborah Black has brought forth a passage from the epistemological section of the *Shifā'*, which she suggests is able to clarify the psychological underpinnings of Avicenna's notion of the vague individual.[37]

> [K]nowledge and the universal intellectual form are impressed in the soul little by little from sensed individuals. When they are gathered together, the soul acquires universal forms from them and then puts them aside. That is also because that which senses the particular in some respect senses the universal. For what senses 'Socrates' also senses 'human'. The same holds for what it [i.e. the particular that is sensed] conveys: for it conveys to the soul Socrates and some human being, but it is an extended human being mingled with accidents, not pure human being. If the intellect then peels it and removes the accidents from it, then it is left with separate human being in regard to which Socrates does not differ from Plato. And if sensation does not perceive human being in any respect, then estimation in us and in animals will not distinguish individuals of one species from [those of] another species, as long as the intellect is not [involved]. But neither does sense distinguish that, but rather estimation, although the estimation distinguishes [one] thing and the intellect something else.[38]

This passage suggests, unsurprisingly perhaps, that estimation is involved in the case of vague individuals. Some sort of pre-conceptual classification takes place in both us and non-human animals, whether or not the intellect is involved. This is further proof for my interpretation above of the wide structuring role of estimation in all perception. However, once we bear in mind that the estimation can function both by itself and under the governance of the intellect, we begin to get a clearer picture of what room for free deliberation there is in perception. When we see something appear vaguely in the distance, there may be a tendency in us to perceive it as something, say as a human being. This happens in spite of our full awareness that our perception is indeterminate to some extent. The tendency to perceive the distant object as a human being is due to the corresponding *ma'nā* being triggered in our estimation, which in turn causes the object to be classified with human beings. We can, however, pause to consider and entertain other possible ways of regarding the same object, perhaps we are even capable of seeing the object as something else altogether, as a formation of rock for instance. In such a case our estimation subsumes the relevant sense data under another *ma'nā*. But now the classification is due to a consideration by our intellect, which involves an order for the estimation to make us see the object in a different manner, in the light of another *ma'nā*.

[37] Black (2011).

[38] Avicenna (1954), IV.10, 206.

The above sketch requires reading quite a bit in between the lines in which Avicenna all but holds his tongue. However, the debatable psychological details aside, Avicenna's discussion of the vague individual strongly suggests that he held our universal concepts to play an active role in the structuring of our perception, and perhaps even allowed that in some sense we can really perceive the object of our perception in different manners depending on under which concepts we happen to subsume it. And if, as the last passage from the epistemological section of the *Shifā'* leads us to believe, this variability in the perception of a single stable external object is but a further stage of the kind of activity estimation is always engaged in, then the soul actively structures its perception all the way through.

6.6 Conclusion

I have suggested that we can find at least two levels on which Avicenna, in spite of his subscription to the Peripatetic theory of passive reception of perceptible forms and *ma'ānī*, attributes some kind of activity to the soul in bringing about its perception. To recall, the lowest of these was manifested in the manner in which the common sense synthesizes the moments of perceived motion into a temporal continuity. The higher type of activity was argued to take place on the level of estimation, whether in its functioning by itself or governed by the intellect. To conclude, let me just indicate how these two manners of activity may eventually collapse.

As I argued in the beginning, the system of internal senses in Avicenna should not be understood as a set of atomary faculties but rather as a dynamic whole divided for analytic and medical reasons. If the system always functions as a whole, then it would be natural to assume that estimation and its structuring principles, the *ma'ānī*, are also somehow accountable for the temporality of perception. Indeed, this may help us to explain Avicenna's apparent inconsistency as to which of the internal senses is responsible for the synthesis of phases of motion into temporal duration.

As we recall, Avicenna made a rigid distinction between receptive and retentive faculties. In the light of that distinction, it cannot be the common sense which retains the prior phases of the perceived motion, but rather the imagery.[39] But the imagery cannot perceive the two phases together. Thus, the prior phase must be fetched from the imagery by the faculty of imagination, and only thereafter can the common sense perceive the two together.[40] But we may further suppose that in its combinative act the imagination is not functioning on its own but rather guided by the estimation. The estimation in turn governs the imagination by means of a *ma'nā*, which we have argued to be a structuring principle in perception. If this interpretation is on the right track, Avicenna's view is that the soul structures its perception at a very basic level.

[39] As suggested in *Shifā': Fī al-nafs* III.7 and *Shifā': al-Samā' al-ṭabī'iyy* II.1.

[40] As suggested in *Shifā': Fī al-nafs* I.5.

I hesitate to suggest this as a solution to the mentioned incoherence, because it is very much a reconstruction of an account that is frustratingly fragmentary. It remains a fact that Avicenna is silent about many, if not most, of the details in the phenomena we have discussed. Yet it is also true that he did pay explicit attention to those phenomena, and did set out to explain them by means of his system of cognitive faculties. Given the perspicacity and originality of his insights, it will be a worthwhile task for future research to inquire into whether and to what direction his sketches were developed by subsequent theorists of perception.

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Chapter 7
Medieval Theories of Active Perception: An Overview

José Filipe Silva

7.1 The Augustinian Tradition on the Philosophy of Perception

Although perception has historically been taken as a basic constitutive process of knowledge in that all knowledge is either the direct result of or made accessible to higher cognitive powers by means of perception, the majority of medieval thinkers treated it in a perfunctory manner, as a side issue to other "major" philosophical problems such as intellectual cognition. To say that it received limited attention is not, however, to say that it received none. In recent decades, scholars working on medieval epistemology have investigated and unearthed a variety of accounts encompassing a multitude of philosophical lines of influence. This scholarly work has focused on what could be called the Aristotelian tradition and the tradition of geometrical optics in the Latin West. In what follows I would like to draw attention to a different tradition, that of Medieval Augustinianism, with a view to reconstructing its key elements and mapping its major historical developments.

It is argued, in the chapter on Augustine that he conceived of perception as a dynamic process made possible by the soul's mode of presence in the body, paying continuous attention to its affections and its active formation of images of external objects that act upon the sense organs. Perception is precisely the awareness by the soul of the affection (*passio*) of the sense organs by sensory stimuli. Furthermore, according to this theory, the soul's activity guarantees the inviolability of the basic ontological principle of the superiority of the soul over the body (MP), expressed in the epistemological principle (EP). These elements—ontological superiority, attention, capacity for making inner images representative of external objects, and perception as an act of the vital principle—are at the heart of medieval theories of active perception.

The above-mentioned chapter identifies some problems with Augustine's account, together with the developmental nature of such a theory throughout his life.

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I take these aspects to be secondary in terms of understanding how the theory was received in the Middle Ages, however. Most authors considered them part of one single theory—Augustine's—and developed their own theories from it and under his authority, sometimes of course achieving a very different effect. The claim is that even if there were no Augustinian theory of perception (and I think there was), there was certainly a medieval Augustinian theory of perception. Similarly, I do not intend to claim the existence of an Augustinian tradition in a wide sense, and rather to argue that there is a certain tradition in the philosophy of perception that is explicitly indebted to Augustine. Many authors, especially in the late Middle Ages, shared a number of core commitments with respect to what we know of the external world and took them to originate in Augustine. They all refer to certain passages in Augustine's works—such as *De musica* 6.5, *De trinitate* 11.5, *De Genesi ad litteram* 12.16 and *De quantitate animae* 23.48—in support of their claims.[1] In the following sections I present a brief survey of what constituted such a tradition throughout its main historical developments. The focus is on late medieval thought, under the assumption that the new Aristotle radically changed the nature of the discussion about perception.

The resurfacing of Aristotle's works in the Latin West from the mid-twelfth century onwards, together with the works of his commentators (especially Avicenna and Averroes) and Arabic optical treatises (especially Alhacen's *De aspectibus*) revolutionized the Latin philosophical psychology and epistemology. As a result, the Aristotelian causal theory of perception became mainstream. According to this theory, perception should be understood in the general framework of a theory of change and according to the principle of act and potency: it is the taking on by the senses of the sensible form without its matter. Aristotle's analogy of the reception by the sense organs of the form with wax receiving an impression from a seal exemplifies this point most clearly, independently of the kind of change the "receiving of an impression" or "form without matter" is taken to mean.[2]

The object in this account is the efficient cause of perceptual acts by acting upon sense organs *and* powers, bringing about the actualization of what the powers potentially are (let us designate this the causal efficacy principle (CEP)). A good example of this theory is to be found in Thomas Aquinas, as follows:

> 1 to sense is to be moved; since, through the sensible objects' altering the condition of the senses in acting upon them, the animal is made actually sentient from being only potentially so.[3]

[1] Even authors not belonging to this tradition identify the theory with Augustine: see e.g. Albert the Great 1968, II.3.6, 105–106. See Pattin (1988), v–vi; 1–3. The fact that the same passages are quoted in support suggests the existence of a textbook of Augustinian sentences on different topics in the manner of the *Auctotitates Aristotelis*. I am unaware of the discovery of such a work, but its existence seems likely.

[2] i.e. Whether there is a physiological change in the sense organ or just an intentional or spiritual change.

[3] Aquinas 1961/1967, II.82.12, 270. See Aristotle, *De anima* II.5, 418a3. See also Albert the Great (*De anima* II.3.6, 107) who, when explaining the way sensible things actualize sense powers, states that he is following "directe Peripateticorum sententiam". At roughly the same time (ca.

An offset of the theory is that the sense powers are passive with respect to external objects, which generate the actual sensation. Passivity is not a detail but an integral part of the theory: the object (or its perceptible qualities) is the agent acting upon the appropriated power in a way that actualizes that power, and without this potentiality-actuality axiom perception remains unexplained. In this type of account the external object performs two roles: that of the agent, in the sense of being the activator of the perceiver's perceptual powers, and of the content, in the sense of being that which is known as the result of the process (see Corcilius's contribution to this volume). It must be said that the theory accommodates some activity, but it is limited to the combination of sensory information and perceptual judgment.[4] Proponents of such a theory include, in addition to Thomas Aquinas, authors such as Godfrey of Fontaines and Thomas of Sutton.[5]

The newly available works on natural philosophy, optics and medicine contributed to shaping how the mechanics of perception was explained in radical new ways, and challenged traditional Augustinian accounts. The problem with Aristotelian theory they identified was this: the image in the soul is the result of the object's efficacious action even though the material object cannot act upon the spiritual soul, and the material species issued by the object cannot become spiritual on its own.[6] Instead they focused on defending the impassibility of the spiritual soul with respect to corporeal objects against the bottom-up causality on which the Aristotelian theory was based, in other words the notion that perceptual acts of the soul are caused by material external objects.[7] My claim is that a more sophisticated and systematic account of perception within the Augustinian camp came into being as a result of this challenge. The outcome was a group of theories that limit the role of objects in the process of perception, taken as necessary conditions for perception but not the cause of perceptual acts, and that stress the active nature of the soul. This activity is expressed in the soul's capacity for producing by itself the exact image of the external object via assimilating itself into the species of the object affecting the sense organs and perceiving that external thing.

My intention in what follows is not to be exhaustive (more authors should be included) or comprehensive (more theses may be claimed), but rather to lay the

1256), Robert Kilwardby identified such a view as being of the *Aristotelici*, see Silva and Toivanen (2010, p. 252).

[4] See Anonymi Magistri Artium 1998, II.11, pp. 126; and Anonymi Magistri Artium 1985, II.10, q.3, pp. 276–279.

[5] See e.g., Godfrey of Fontaines 1932, q.1; Thomas of Sutton 1969, q. 13, pp. 86–91.

[6] Matthew of Aquasparta presents this argument in an eloquent way in Qdfc 3, #20, 253. From the fourteenth century onwards, the debate over the agent sense displaced the Augustinian active theory. The existence of an agent sense was raised by Averroes and further developed at the beginning of the century by John of Jandun (see Brenet's contribution to this volume).

[7] According to this tradition, due to the conjunction (*colligacione*) of the soul to the body, the body, can act upon the soul by resisting its ruling of the soul by its natural inclination to sensuality. See, e.g. John of la Rochelle 1995, pp. 48, 153.

foundations for a more detailed study.[8] The focus is on the elements that contributed to the development of such a theory.

7.2 Excited by Things: The Role of Objects in Perception

Robert Pasnau starts Chap. 4 of his influential book *Theories of Cognition in the Later Middle Ages*, entitled "Passivity and Attention",[9] by referring to Boethius' criticism of the Stoic view that the soul is completely passive in the process of perception. Boethius (480–524/525) writes in *Consolation of Philosophy*:

> 2 This is a cause of greater power, of more effective force by far than that which only receives the impressions of material bodies. Yet does the passive reception come first, *rousing and stirring all the strength of the mind* in the living body? When the eyes are smitten with a light, or the ears are struck with a voice's sound, then is the spirit's energy aroused, and, thus moved, calls upon like forms, such as it holds within itself, fits them to signs without and mingles the forms of its imagination with those which it has stored within.[10]

Pasnau is making the point that medieval authors thought perception must involve active elements, and therefore sided with Boethius against a completely passive account of cognition. It is interesting to note however, and despite the fact that Boethius was a frequently used authority, how infrequently this passage features in the context of discussions on perception—Pasnau names no particular thinker making use of it.[11] Moreover, what accounts for activity in different accounts needs to be argued rather than just intuited, and it must be made clear that to claim that perception involves active elements is different from claiming that it is an active process.

Boethius' criticism of Stoic perceptual theory in the above passage focuses on the fact that perception depends on the affection by external objects of the perceiver's sense organs, and on the forming of an impression (or image) of the object causing that affection.[12] The first problem he identifies is that Stoic epistemology seems not to provide an account of the passage of material images in the senses to immaterial images in the spiritual mind, or of how concepts are formed through abstraction.[13] The really serious problem, however, is that the Stoic account has the

[8] The author of this chapter is currently writing a monograph on the notion of active perception from Augustine to the fourteenth century. He gratefully acknowledges audiences in Helsinki, Rome, Paris, Jyväskylä, and Uppsala for their comments on previous versions of it.

[9] Pasnau (1997, p. 125).

[10] Boethius 1984, Book 5, Meter 4, transl. W.V. Cooper (London: J. M. Dent and Company, 1902), pp. 156–157.

[11] He does refer to Thomas Aquinas' SCG III.84.10 but with respect to the passivity of the intellect, not of the senses, see 129–130.

[12] For these aspects and a detailed summary of the Stoic view of perception, see Lokke (2007, p. 35).

[13] See Colish (1990, pp. 270–271). The problem the Stoic account raises about the certainty of knowledge in that all perceptions are contingent and particular and devoid of the kind of certainty innate notions are endowed with seems not to play a major role here.

obvious unwanted consequence of making the mind look like an absolutely passive entity, and cognition the direct result of the way objects act upon perceivers:

> 3 Once, old Stoic philosophy/Brought forth riddling, obscure old men:/Sense perceptions and images/They believed, were impressed on minds/From the outermost skin of things.[14]

This account makes the action of objects upon the sense organs lead necessarily to the formation of the image *and* to the assent to this image.[15] In other words, the causal relation implies that once the object offers itself to the perceiver the perceiver cannot fail to perceive it. Boethius was ready to accept that external corporeal objects affected the body but he refused to accept that external things therefore acted upon the soul. The difference is slight but significant: what takes place in perception is not the affection of the mind but the affection of the body, and what happens to the mind is related to but not the consequence of this affection.

The passage in italics in text (1) also shows Boethius's inclination to emphasize the role of objects in arousing the mind to search within itself for notions that are similar to those received, applying them "to the marks received from without". The mind, he claims, excited by the action of sense objects upon the body (a form of material-material causation), applies to those received images inner (pre-experience) images that it has "hidden". The mind's reaction, its excited motion to search for, find and apply forms to the images, shows its active nature and qualifies the process. Before going any further, however, one needs to raise two important questions. First, are these images pre-experience in the sense of being innate or do they precede this particular experience but result from a previous sense experience?[16] Second, what does this application of the "hidden" images to the ones received from outside really mean? Are these forms universals, general notions that allow the mind to judge the particular sensory images? If that is the case then perception has two immediate consequences: (i) it always involves recognition (of the type of object just perceived); (ii) it is necessarily a rational operation.

The same kind of ontological divide that is at the heart of Augustine's account of perception—the spiritual soul and the corporeal object—and the impossibility of the acts of the soul being caused by corporeal objects, is also evident in Boethius. It is worth pointing out, however, that Boethius' account differs from Augustine's in one important aspect: whereas Augustine considered the soul to be active because it is able to react to the affection of the sense organs, and to assimilate itself into this affection, resulting in the making in and of itself the image of the external thing, in Boethius' view the soul does not make but rather finds within itself forms that can be applied or made to fit the images received from without. As I will show versions

[14] Boethius 2001, Book 5, Meter 4, pp. 139–140.

[15] An essential feature of late medieval discussions is whether this relation between the presence of the object to the perceiver implies the formation of this image and whether the image could be formed without an external correspondent object; this discussion is related to the capacity of God to create in the human soul images of non-existent objects.

[16] Are these forms the "common notions" he identifies with Plato's innate ideas? On this identification, see Colish (1990, p. 279).

of both theories were developed in the Middle Ages, the first one in the 1240s in both Paris and Oxford.

William of Auvergne (1180–1249), writing in Paris, claimed that true knowledge was the result of assimilation, and that this was true of both intellectual cognition and sense perception.[17] Sense organs (such as the eyes) have the capacity to receive sensible forms in the same way as the intellect has the capacity to receive intelligible forms.[18] We therefore come to know sensible objects "through the signs and impressions that they produce on the organs of the senses".[19]

The reception of these forms is not sufficient to explain perception, however: if it were, in other words, if the form were the actualization of the potentiality of the sense organ, and this actualization were perception (i.e. seeing), it must be the sense organ that actually perceives the object. In that case, each sense organ would be both the instrument and the agent of the action of perception. This simply does not make sense in the light of Aristotelian natural philosophy as it would raise the following difficulty: the same thing seems to be more and less worthy than itself, in other words the eye as an instrument is less worthy than the eye as the agent (an instrument is less worthy than its user).[20]

William held that perception also required in addition the existence of a power that is responsible for the seeing:

> 4 The act of seeing consists of two things (…) namely the impression or reception of a visible modification that is produced in the eye and the cognition or judgment by which the visible thing is known and is judged with regard to its color and shape. (DA 5.6, 121, transl. Teske, 199)

This passage makes it clear that perception requires judgment about color and shape, which is an operation of the soul. The mere reception of forms is not productive of seeing, for example, in other words does not qualify as efficient causality.[21] A bodily sense organ such as the eye is not able in itself to judge or to distinguish the impressions received (DA 5.6, 121). It is with William, as Jean-Baptiste Brenet (2000, 62) points out in the Introduction to his translation, that the questions of efficient causation and the role of the (sensible, intelligible) object in the process of cognition take centre stage. Although William's concern was primarily with intellectual agency (the dynamism of the individual human intellect), it extended to all acts of the soul, including sense perception. The soul is active and it is the principle of activity of its own operations, judging what is received through the sense organs, but also controlling them as instruments for knowing.[22] The existence of this control presupposes the power's activity of control over the way the instrument needs to be controlled:

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[17] Auvergne 1674, (Du, hereafter) II.3, 118.

[18] Auvergne 1674, (DA, hereafter, 194).

[19] "… illae non sunt notae nisi per signa & impressiones quas faciunt in organis sensuum", DA 102; William of Auvergne 2000, p. 145.

[20] DA 5.8, 123.

[21] *Guillaume d'Auvergne, De l'âme* (VII, 1–9), transl. J.-B. Brenet (Paris: Vrin, 1998).

[22] In DA 1.3, 67 William defines the human soul as the "operator" of the instrumental body.

> 5 the power that commands the eye (…) moves the eye by such movements because it desires and seeks to see, but it only seeks what it can acquire, and for this reason it is possible for it to see. (DA 5.6, 121, transl. Teske, 199)

This passage makes it clear that the human soul is active in the sense of controlling the sense organs but doing so according to a set plan in terms of seeking what it can acquire. It is the soul that does the seeing provided it receives the impression in the sense organs. In addition, the soul only attends to the objects (or images) to which it pays attention. Paraphrasing Augustine, William claims (DA 7.4, 208) that when someone is so concentrated on seeing or hearing something, he or she does not see or hear other things, as when in a state of dreaming or rapture.[23]

William appears to accept that the sense organs, which the soul animates, receive likenesses of external things but does not conclude from this that the soul assimilates into these external things as a recipient becoming like the agent: external physical things do not act upon the soul except in the sense that they act upon the sense organs. Thus, the human soul does not receive anything from external physical objects:[24] instead, the intellect, excited (*excitatus*) by the presence of things that are external to the senses, makes swiftly (*mira velocitate*) images of them.[25] The action of external things upon the sense organs provides the occasion for the soul to exercise/execute its immanent (and pre-experiential) inclination for knowledge as well as its power to do so. The power moves itself into the act of cognizing.

William interprets this excitement in the context of a more general theory of the soul, according to which whatever one comes to know must be integrated into a web of previous knowledge, which exists as a default in the soul through divine illumination—understood here as related to the original creation of the soul. This is expressed in William's well known example of the spider and the web it builds. The touching of the web by a passing fly is enough to arouse the soul, which perceives the fly without receiving from it any sensory impression representing it.[26] William

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[23] Matthew of Aquasparta expressed the same idea in *Quaestiones disputatae de fide et de cognitione*, pp. 394–400 (hereafter, Qdfc).

[24] "… intellectus noster non est recipiens a rebus sensibilibus, & materialibus similitudines earum", Du II.74, 929. See also Du II.55, 914: "… neque enim animae nostrae a rebus sensibilibus aliqua reciperent, nisi per organa sensuum venirent ad illas passiones ab ipsis: sic neque passiones hujusmodi aliquid operarentur in animabus nostris, nisi ipsa organa hujusmodi alligata essent eisdem".

[25] "Differ autem exemplum istud a designationibus, que fiunt in intellectu, quia designatio hujusmodi figurarum ad placitum, vel ex placitum est, et pacto: illae autem quae fiunt in intellectu, sive apud intellectum, per ipsum ex natura, & per naturam fiunt, natura inquam intellectus, *quia mira velocitate*, atque agilitate format apud semetipsum designationes, *quas a rebus non recipit, sed leuissime commotus, exilissimeque excitatus ab illis, res ipsas sibi ipsi exhibet, & praesentat, & earum species ipse sibi ipsi in semetipso format*." Du III.3, 1018, (emphasis added). See also Du II.74, 929–930: "Licet autem in explicandis occasionibus istis, sive excitationibus, per quas novae vel cogitiones, vel cogitationes". See Marrone (1983, p. 58) who identifies Augustine as the reference in this passage.

[26] "Aranea quippe, licet dici non posset proprie, quod a musca per motum telae suae recipiat aestimationem, vel imaginationem casus ipsius muscae, aut captionis ejusdem, fit tamen per occasionem motus hujusmodi in ea praedicta imaginatio, vel aestimatio, cum manifestum sit ipsam muscam necdum visam, nec alio sensu apprehensam impressionem facere non posse", Du II.76, 930.

also argues that one is able to recognize the subject of a conversation between a man and a trader from hearing random words from a conversation even though the subject—in this case the exchange of money—is never mentioned. Thus, perception is permeated by reason.

This establishes a relation to Augustine's definition of perception as awareness of change showing, at the same time, a shift of the theory in the direction of stronger intellectualism: the strong unity of the soul means that all its functions are, in a sense, rational.[27] On the other hand, William acknowledges that the soul is endowed by the Creator of "hidden" forms that do not derive from experience but that explain the behaviour of sentient beings, such as the spider's innate knowledge of how to build its web.[28]

Finally, William, like Augustine before him, connects the activity of the soul with its mode of presence in the body and its definition as vivifying and ruling the body. The power controls the eye as its instrument but is not identified with it. This argument advocating the instrumentality of the body (including the sense organs) has another side to it: it shows that the power (that does the perceiving) cannot be material because whatever is material is passive. The power must be active in the sense of being productive of the act of seeing, and the soul is active in the sense of producing "within itself and in itself" apprehensions of sensible things (DA 5.6, 121).

At roughly the same time, in Oxford Richard Fishacre (1205–1248) was arguing in his *Commentary to the Sentences* that sensible things generated likenesses of themselves, which they impressed in the instrument of the common sense, the heart.[29] The soul acts on this impression by forming in itself an image of this likeness.[30] Retaining the basics of Augustine's terminology, Fishacre remarks that the soul swiftly assimilates and conforms itself to the received species.

By way of clarification he explains that, in his understanding, this "assimilation" (*assimulatio*) meant that by means of which something is communicated to another similar either by participation or by imitation, taking the case of the soul to be the latter. The soul makes itself like (or, assimilates) the species in the organ by imitation—meaning that the soul does not come to share any property with the thing cognized as it does not receive anything from the thing but that due to its own

[27] Marrone (1983, p. 61–62).

[28] "& ad hunc modum se habet de aranea, & de aliis, quibus lumina naturalium quarundam scientiarum quaedam videntur indita, vel impressa. Eorum igitur duntaxat scientia hujusmodi substantiis est a creatore naturaliter insita, vel innata, quorum cognitio ad regendam vitam ipsarum, & dirigendas operationes necessaria, & conveniens est." Du II.64, 913.

[29] "Sensibilia gignendo ex se similitudines suas, et per sensus immittentes eas in nobis, eas imprimunt in instrumento sensus communis, id est in ultimo sentiente, scilicet in corde; ex qua impressione efficitur ut anima, eo quod sit illi parti corporis maxime unita, intelligat illud cuius similitudo in corde fuit impressa. Nostra enim cognitio incipit a sensu. Et ideo dicit quod deficiente sensu necesse est scientiam deficere, in *Posterioribus analyticis*", Richard Fishacre 2008, pp 334–340.

[30] "Respondeo. Cum verbum quo se loquitur res exterior mihi, scilicet species rei, pervenerit ad intimum sentiens, non procedit ulterius ut intret gignendo se in mentem. Sed, ut dicit Augustinus, anima miris modis et mira quadam velocitate efficit in se simile ei quod est in organo intimo, hoc est assimulat se ille speciei susceptae et conformat, ut lux aquae cui contiguatur", Richard Fishacre, *In Primum Librum Sententiarum*, ed. Long (1968), (hereafter, *InISent* 3, *24).

power it becomes like it. The soul, like a piece of wood, has the natural (innate) capacity to become an infinite amount of things, but only one at a time.[31] The stress up to this point is still on the soul's *power* of making itself like something else, but in distinction three of Book Two of his *Sentences commentary*, Fishacre develops his reasoning a step further.

His concern here is to discuss the priority of memory and intelligence. Among his arguments for the existence of a double memory he claims that "the soul from its creation has in itself many species of things".[32] With respect to these, when the sensible species arrive at the organ of the common sense they excite (*excitatur*) the soul to search for the intelligible species it has in itself.[33] To say, as an Aristotelian would, that the soul is, in a way, all things—in other words it is a blank slate with the potentiality to become all things—means according to Fishacre's interpretation that the soul already has in itself the images of all things to be known.[34] Thus, it has the species of things before it cognizes the thing.

To conclude, Fishacre suggests that, in addition to the innate power of the soul to make itself like all things, there exists within it from the outset an indeterminate number of likenesses of things to which it turns once aroused by its contact with external objects. The innate-content aspect of Fishacre's theory would be the target of one of his students, Robert Kilwardby. Before moving to the next section I would like to point out that both William as Fishacre (and Boethius) retained the basics of the Aristotelian causal model in positing that external objects must affect a perceiver's sense organs for perception to take place. What they do in addition, however, is to restrict this bodily affection, compensating the passivity it entails with the motion of the soul meeting and "fitting" the forms it finds within to those marks received from without.

The Dominican Robert Kilwardby (c. 1215–1279), who was probably a student of Fishacre's at Oxford, asks in his treatise *De spiritu fantastico* whether the sensory soul has images of sensible things prior to sense experience. "Someone might say", he remarks,

> 6 that he does not need the use of his senses for the acquisition of corporeal images, but for rousing them, so that he should notice what he has within himself. But this does not seem likely since neither Augustine nor Aristotle seems to agree with this.[35]

[31] The sentence he uses is equivocal, but I think it should be read in the way I propose: "Sic in anima naturaliter infinitae sunt similitudines rerum, et tamen unam earum intuemur actualiter sine alia", *InISent* 3, *25.

[32] "Vel melius: anima a creatione sua habet forte in se multas species rerum", *InISent* 3, *31.

[33] "Cum ergo species sensibiles veniunt ad cor, excitatur anima per has ad intuendum species intelligibiles in se ipsa", *InISent* 3, *31. This conception could be inspired by Augustine's analysis of the disembodied soul's punishment by fire in *City of God* 21. That is, at least, how John of la Rochelle understood it in stating it that one way the soul is punished by fire is when the fire of Hell conjures up in it (*excitentur in anima*) images of sufferance (*Summa*, 49, 157).

[34] Long (1968, p. 95).

[35] Robert Kilwardby (1987, p. 9), (hereafter, DSF), transl. A. Broadie 1993, p. 73.

After presenting this view in more detail and quoting (DSF 20–21) the passage from Boethius' *Consolation* quoted in (1), Kilwardby concludes:

> 7 Boethius seems to think that the species of all sensible things are within the mind, and that the mind is aroused by the passivity of sense to contemplating what it has within itself, and that a species coming by way of the senses from outside intermingles with those that are carried within (DSF 22, transl. Broadie 75)

Kilwardby understood Boethius' passage to be defending two main ideas (DSF 22):

(i) The causal action of sensible external objects does not provide the soul with perceptual content but has the role of exciting the soul and to make it search within itself for the images of those external objects
(ii) The soul has innate content of objects of the external world

Kilwardby objects to this view, pointing out that if that were the case, then the soul would either not receive images of external things and in that case all knowledge would be a fiction, or it would thereby duplicating the images by means of which things are cognized (DSF 10–1). In other words, it would make the soul perceive two types of species, those exciting the sense organs (*acquisitas*) and those the soul has within (*innatas*). Kilwardby refutes this view because he believed that all knowledge of external objects had to come from those objects. Although he had a serious contribution to make to this issue, and offers a detailed compatibilist account of Aristotle and Augustine's theory of sense perception, I will not pursue his arguments here, having done so elsewhere.[36]

John Pecham (1230–1292), a Franciscan, subscribes to Bacon's (and Grosseteste's and Alhacen's) account of radiating species as the effect of the action of a natural body on other bodies. Every point of every natural body multiplies its species/form "in a continuous straight line" in all directions, and these species are eventually received in a perceiver's sense organs.[37]

It is through the species that the thing comes to be known: the thing ("stone", *lapis*) is in the soul of the perceiver by means of the species (*species lapidis*).[38] There is no problem in stating that the species of the sensible thing comes to be in the organ because the species is corporeal, i.e. has dimensions, and is thus proportionate to the organ (which is also corporeal). The problem for Pecham lay in claiming that the species in the organ was the cause of the species in the soul because that would mean that an inferior cause (a physical thing) is able to produce a superior effect (a spiritual image) (TdA 3.4, 11). Pecham denies that any external thing could act upon the spiritual soul, being ontologically superior to the material object. He supports his claim against this sort of bottom-up causality with an array of references to Augustine.[39]

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[36] See especially Silva and Toivanen (2010, pp. 249–260) and Silva (2012, pp. 131–171.)

[37] Pecham (1970, I.27, p. 109).

[38] QdA 9, 85.9–11.

[39] Pecham (1989, 17.6, p. 214).

Pecham argues, instead, that the soul is able to know external things because it is directed to them,[40] and it has the essential capacity to assimilate itself into the species (thus the external things). When excited (*excitata*) by the presence of the species in the organ, the soul is able to transform itself so as to become like the thing: "the soul transforms itself into the likeness of the thing whose species is in the organ".[41] This, he states, is precisely Augustine's view in *De Genesi ad Litteram* 12.16.33, *De musica* 6.5.8, *De Trinitate* 10.5.7, and also what Aristotle meant in *De anima* III.8 in claiming that the soul is, in a certain way, all things—it is "assimilable" into all things (*assimilabilis omnibus*).[42] Pecham insists that the soul's desire to know all things explains the way it relates to the body. The following passage illustrates this point well:

> 8 The power of the soul in the organ, intimately united to it, perfects and moves [the organ]; and as the result of this natural surveillance it is necessary for the soul to be aware of all changes that take place in the organ and, to due to a natural connection, to transform itself and change itself proportionally to the body.[43]

The power of sight is the perfection of the sense organ in the same way as the soul is the perfection of the body, which it is by being as a whole in each part of the body (TdA 4.1, 12). The soul perfects the organ of sense through its power and due to this natural connection (*colligatio*) changes itself as soon as something causes a change in the organ. The proportionality of this change (i) is the result of this close connection between soul and sense organ and (ii) means that the result of the motion—the soul's becoming like the likeness of the object in the sense organ—is proportional in nature and appropriated to the nature of the soul.

The soul's proportionate transformation to the change in the organ means that perception is the result of the soul's attentive action (*attentius agere*) upon the bodily affections and its awareness of this action (TdA 4.3, 13). That the object needs to be present is clear: in discussing how the disembodied soul is able to perceive, Pecham remarks that the soul is able to transform itself into the likeness of the external thing by receiving the species of the external thing in its sense organs. If no thing is, however, present, no species is radiated, and no perception ensues (QdA 10, 92–3).

The likeness of the thing in the soul is not a material entity, like the species in the sense organ, it is the same spiritual being as the soul.[44] Pecham clearly equates the soul's becoming like the species (in the organ) to its becoming like the thing that

[40] Pecham 1918, 10, 89.8–9 (hereafter, QdA).

[41] "Anima transformat se in similitudinem rei cuius species est in organo", TdA 4.4, 14. See also *Quodlibet IV*, 17.6, 213.

[42] TdA 3.2–3; and *Quodlibet IV*, 17.7, 214.

[43] "Vis igitur animae organum, sibi intimae unitum, perficit et movet; et ideo naturali perlustratione necesse est animam advertere omnes mutationes factas in organo et naturali colligatione in illius similitudinem se transformare, et proportionaliter corpori se immutat", *Tractatus de anima*, ed. G. Melani (Florence: Biblioteca di Studi Franciscani, 1948), 4.2, 13 (hereafter, TdA). All the translations are mine, except when otherwise indicated.

[44] This can be said even without considering the question of whether the image is distinct from the act itself.

generated the species and that the species represents by way of resemblance. This representation, the formation of which he describes in his works on optics according to a mathematical model, is also guaranteed here in this psychological work.

Pecham also makes clear that in any cognitive act there is a passive and an active aspect. In the case of perception, the organ is passive whereas the power (which is part of the soul) is active (QdA 1, 95). The object is necessary, but it is the assimilative capacity of the soul that is the essential requirement. Here, then, is the adoption of the two central Augustinian principles—EP and MP—together with an array of authoritative texts in support of the claim.

One of the most interesting late medieval presentations of the theory of what I have been calling the Augustinian tradition on the philosophy of perception, in particular the excitation version, is that of the Franciscan Matthew of Aquasparta (1240–1302). In question 3 of his *Quaestiones disputatae de cognitione*, written around 1278–1279, Matthew asks whether the knower receives the species from things or makes them from itself and in itself.[45]

In his response he first presents evidence that supports the claim that the process of sense perception is characterized by an active nature.[46] He considers the ways in which, according to the Philosopher, the soul relates to the body. It relates as:

(1) A formal cause, i.e. insofar as it perfects the body
(2) An efficient cause, i.e. insofar as it moves the body
(3) A final cause, i.e. insofar as the body is appropriate and ordained to the soul.

With respect to none of the above can the soul be said to receive something from the body: on the contrary, as a cause the soul is active upon the body and all passivity with respect to it must be denied. Matthew then draws from Augustine a series of arguments based on the ontological inferiority of the body,[47] according to which no corporeal thing can act upon that which is immaterial at the risk of upsetting the ontological hierarchy of the world. In fact, as he points out,

> 9 it does not agree with reason that what is corporeal acts or imprints by a natural action upon an incorporeal thing, as such would bespeak against the nobility of a spiritual substance.[48]

On the basis of this supporting evidence Matthew states that the soul cannot receive anything from the body.[49]

In his reply Matthew directs his attention (and criticism) to two theories. The first is Plato's reminiscence theory (the "famous error of Plato", as he calls it),

[45] Although in this question Matthew is primarily concerned with the intellect and the role of intelligible species in cognition, there is enough evidence of sensory cognition.

[46] Matthew of Aquasparta (1957), 3, ad 23, 288 (hereafter, QdA6). See Rohmer (1928), 161–178; see also Beha (1960) and (1961).

[47] Matthew dwells longer on this question in QdA6, 239–240.

[48] "Et quod corporeum in rem incorpoream agat aut imprimat actione naturali, non videtur multum consonum rationi, et multum videtur derogare nobilitati substantiae spiritualis." Matthew of Aquasparta, Qdfc 3, responsio, 257.

[49] See also QdA6 3, ad 23, 288.

according to which souls arrive at their bodies with their knowledge of things acquired in another world, making all knowledge mere recollection.

The second theory, to which Matthew's criticism is particularly directed, is that of those who followed what he calls the *viam Aristotelis*, claiming that exterior objects are able to impress their species (*imagines*) not only into the senses, but also into the imagination and the intellect.[50] Among these followers, some even state, in defense, that through this action sensible things bring about the actuality of the intellect, and others that sensible things are able not only to impress their species but also to bring them forth from the potentiality of the intellect, in the same way as natural forms are educed from the potency of matter. In each of these cases, sensible things have the role of an external agent efficaciously acting upon and bringing about the actuality of cognitive powers. All these accounts, Matthew claims, are false because they go against the order of the universe built on the superiority of the spiritual over what is corporeal, as Augustine repeatedly remarks (Matthew *dixit*).

Arguing against these two theories stressing the passivity of the soul with respect to external things, Matthew presents two other theories sharing the common thesis that the soul does not receive anything from external objects, but is excited by them.[51] In another text (*Quaestiones de anima*), he explains what he means by something acting by excitement in contrast with being the efficient cause: an agent acting *per modum excitantis* does not induce the form to the thing changed, but excites the form that exists inchoately in it. Therefore, the "exciting" agent need not have in itself that form because it only supports the form in the thing changed coming into actuality.[52] Let us now go back to *Quaestiones de cognitione* and Matthew's description of the two theories.

According to the first theory, (ii.1) the rational soul, when created, is endowed with the active potencies of all intelligible species constituting all arts and sciences, in the same way as natural matter is endowed with seminal reasons of all things to come. Once excited by an external agent, the sensible thing acting upon the sense power, these inchoate active potencies come into full actuality.[53] Although Matthew

[50] A similar description of the Aristotelian way is to be found in Robert Kilwardby—see Silva and Toivanen (2010), for references. The attribution proposed by the editors of Matthew's text and followed by Beha (1961, p. 9) of this first theory to Bonaventure and the second to Thomas Aquinas and Roger Bacon seems to some extent at least, misplaced, as Mazzarella (1969) convincingly shows.

[51] "Ideo alii dicunt quod anima sive intellectus nihil omnino a rebus recipit, nisi *sola excitationem*", Qdfc 257. See also Matthew of Aquasparta, *Quaestiones disputatae de anima separate*, ed. PP. Collegii and S. Bonaventurae, in *Quaestiones disputatae de anima separate, de anima beata, de ieiunio et de legibus* (Florence: Quaracchi, 1959), 4, 65.

[52] "Agens per modum efficientis vel inducentis habet utique formam quam efficit, sed agens per modum excitantis non; verbi gratia, ova confota calore solis pullifficant acsi cubarentur a gallina, sed ille calor non efficit aut formam inducit, sed tantum excitat formam quae latebat, et ideo non oportet quod habeat illam formam", Matthew of Aquasparta, QdA6, 4, ad 8, 303.

[53] This could be the theory of Robert Grosseteste (1168/1175–1253). See his Grosseteste (1981, p. 216): the *aspectus, excitatus* by the corporeal things turns itself towards its own light. See Spruit (1994), 125–126. Beha refers to Thomas of York (9) but a clear proponent of such a theory was Richard Fishacre.

does not completely dismiss this theory, recognizing its explanatory power with respect to the angelic rational soul, he nevertheless points out two objections. First, it goes against the conception of the intellect as being created as a blank tablet in supposing it to have hidden some sort of intelligible truths in a latent state—here Augustine is used as the authority against such a view, and is taken as stating that the intellect is naturally endowed with a natural power to understand, but is "contentless".[54] The second and major objection is the following: the need for excitement implies that the actualization taking place in the soul is the result of the action of an external agent, thus asserting precisely what this theory was suppose to avoid—the external thing's causal efficacy.

According to a second theory (ii.2), the soul is bereft of species prior to sense experience, and the species of sensible things are the occasion for the soul to form inner images of them. No change takes place in the soul that is caused by anything external but, due to the natural connection (*colligantia*) of its faculties with the sense organs,[55] when some change (*immutatio*) takes place in the organ, the soul, excited (*commonita et excitata*) by this change, configures and assimilates itself (*assimulat et configurat se*) proportionally into it.[56] According to Matthew, this theory has the obvious advantage of not accepting that the soul can be acted upon by what is inferior and less worthy, the object and its species. As a result it is the one defended by the majority of the Masters who were his contemporaries. It is not without problems however: if the soul, aroused by the sense object, likens itself like the species in the sense organ, then, "by that likeness it would more likely come to the knowledge of the likeness than to the knowledge of the thing",[57] as a likeness made by an agent must primarily represent that same agent. The objection, as the text goes on to make clear, applies more to the intellectual than to the sensory aspects of the theory. In fact, when he clarifies his own view he retains essentially the same points.[58]

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[54] The point, discussed by other authors, refers to the capacity to understand the truth of a proposition when considering it—such as when the soul understands the proposition "the whole is bigger than its part" and its truth. Matthew stresses here that knowledge of the terms of the proposition ("whole" and "part") needs to be acquired through perception (Matthew of Aquasparta, Qdfc 3, 259).

[55] Matthew notes that the soul is connected, united, with the body and not mixed—a mixture implies a change in that which is changed, which clearly does not take place with the soul in its union or colligantia with the body (QdA6 3, ad 9, 283).

[56] "Quando ergo fit aliqua immutatio in organo sensus, puta in organo virtutis visivae, per aliquam speciem alicuius visibilis, anima, quae secundum illam virtutem est perfectio et motrix organi illius, commonita, excitat et pulsate ex organi immutatione, configurat se et assimilate sive coaptat illi motui proportionaliter et immutatur consimili immutatione; et illud est quod dicitur 'sentire'", Matthew of Aquasparta, Qdfc 3, 260. Beha identifies this theory with John Pecham and William of Auvergne.

[57] "Praetera, si anima format de se talem speciem sive similitudinem, per talem similitudinem potius deveniret in cognitionem sui quam in cognitionem rei, quia similitudo ab aliquo originata magis representat suum originale principium quam aliquid aliud", Matthew of Aquasparta, Qdfc 261.

[58] For a different account (although with similar conclusions), see Beha (1961), 4–11. Her account is sometimes misleading because it tends not to distinguish which operations belong to the intellect

In any case and given what he thought was the strength of his objections, Matthew proposed yet another theory that, in his mind, was more in line with both Aristotle and Augustine. According to this third theory (iii), one must distinguish between the cognition of corporeal and incorporeal objects. With respect to incorporeal objects, the soul knows them directly, in other words only receives them through "seeing them in itself" (*in semetipsa videt*).[59] With respect to corporeal and sensible things, the soul knows them through the use of the senses, but not in the same way as it receives something from them as a patient receives something from an agent (*non ab ipsis rebus aliquid patiendo*).[60] The way the soul knows sensible objects follows from the mode of its presence in the body: it is connected (*colligata*) to the body as its perfection and exists wholly in every part of the body (*tota toti et tota cuilibet parti*),[61] being connected to the different organs through its dispositions and powers.[62] He describes the process as follows:

> 10 When a change is made in a sense organ by some species, it cannot be concealed from the soul as the organ's perfective and moving power; rather, the soul steadfastly perceives it. In perceiving it forms it [the species] in itself, proportionally to the organ, so that it is either sensible or imaginable.[63]

According to this account, the origin of which he links to Augustine and Avicenna,[64] when a sense organ is affected by a species, the soul perceives this species and forms in itself an image of the object proportionate to the way the organ is affected. This image is more spiritual in nature than the one in the sense organ.[65]

Take the case of sight: when the eye is affected by the species of the visible thing—color or light—the power that vivifies the eye, the power of sight (*vis visiva*), makes an image in itself of the species. The soul and its sensitive powers are therefore active rather than passive with respect to external objects, and the proof of this statement is that when the soul is distracted by something it does not perceive

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and which to the sensory soul—a distinction that is quite clear in the text.

[59] See Augustine, *De Trinitate* 9.3.

[60] This expression can be found in Thomas Aquinas, e.g., *Quodlibet* 8, 2.1c: "Anima humana similitudines rerum quibus cognoscit, accipit a rebus illo modo accipiendi quo patiens accipit ab agente". See Pasnau (1997), 126–130.

[61] Spruit (1994), 127, remarks that the "colligatio" is found already in John of la Rochelle 1995, p. 194 (hereafter, Sda).

[62] "Homo enim intelligit ex intellectu coniuncto et ideo oportet quod habeat organa et instrumenta corpori apta ad exequendum opera intellectus", Matthew of Aquasparta, QdA6 245. See also question III, ad 16, 286.

[63] "Quando autem fit immutatio in aliquo organo corporeo per aliquam speciem, non potest latere animam secundum illam potentiam organi perfectricem et motricem, sed statim percipit eam; percipiendo vero format eam in se secundum illius organi proportionem, ita quod vel sensibilem vel imaginabilem." Matthew of Aquasparta, Qdfc 3, 262.

[64] "Nam, ut vult Augustinus et videtur velle Avicenna, potentiae sensitivae non tantum sunt passivae, immo et activae." Matthew of Aquasparta, Qdfc 3, 262–263.

[65] Matthew of Aquasparta, Qdfc 3, 263.

other things, even when these other things affect the sense organs.[66] Therefore, the soul is not acted upon by sensible corporeal things but rather makes from them and about them spiritual images that are proportionate to the thing's affection of the sense organs and the powers that make the very same images.

The image that is made by the soul according to the affection of the sense organ generates new images throughout the several levels of faculties in the soul—the common sense, the imagination, and so on.[67] In other words, that image that reaches the intellect is not the same as that which was originally made by the sense power connected to a specific sense organ: a species is proportionate (*proportionata*) to the power making it. According to Matthew, all things have the natural capacity to generate (*diffundere et multiplicare*) species—no external thing is in the soul except through the species it generates.[68] However, he adds, there are two ways of talking about species: *qua* species they refer to the thing that generated them, but *qua* sensible, imaginative, or intelligible they refer to the power that makes them. This means that the species received from the external things are received not in the way that the things act upon the soul, but so that the soul has the power to receive them, making a spiritual image from them that is about them and thus being epistemologically relevant.[69] Matthew is arguing for a hierarchy or chain of species: sensible species, imaginative species and intelligible species.

The importance of Matthew's text cannot be overstated: it shows, first of all the existence of specific terminology—"excitacio", "assimilatio", "colligantia"—shared among a variety of theories; and second, that the frequent references to Augustine and to a certain number of key Augustinian texts clearly warrants speculation that such a theory identified by medieval authors originated in Augustine. The variety of theoretical possibilities also shows that such an account cannot be reduced to anti-Aristotelianism, but is rather a theory in its own right.

The text also shows—although I cannot address this issue in detail here—a shift in the discussion on the active nature of the soul from mainly concerning the sensory soul to concern the intellectual part of the soul, or to be more precise, to include the account of sense perception in a general account of the operations/functions of the human rational soul. How this shift could be made to fit into the on-going discussions concerning the nature of the intellect and the plurality of substantial forms, both central issues in the thirteenth and fourteenth centuries, requires a separate study.[70]

Thus far the argument in favour of activity has rested on the superiority of what is spiritual with respect to what is material. Peter John Olivi (1248–1298) shifts the argument to concern the superiority of what is active with respect to what is pas-

[66] However, this seems to prove the opposite in that the soul is unable to concentrate (in itself) because it is distracted by images that are presented to the senses (see Qda6 283).

[67] On Augustine on this chain of species, see *De Trinitate* 11.9.16.

[68] Matthew of Aquasparta, Qdfc 3, 265. According to Matthew, we know things because all things generate and diffuse the species or likenesses, which are that by means of which they can be cognized (Ibid., 266).

[69] Matthew of Aquasparta, Qdfc 3, 267.

[70] See footnote 7 above.

sive.[71] According to Olivi, the sense powers are not assimilated into the forms of material things as the result of the action of such forms upon the perceiver's sensory powers. This was the view of Aristotle and his followers (*Aristotelis et sequacium eius*), in claiming that the soul, conjoined with the body, is acted upon by external physical objects through their own power (QInIIS 73, 12). Olivi insists that objects are not causally efficacious with respect to cognitive acts: if they were, the object's action would go beyond its power, being repugnant to its corporeal nature (QInIIS 72, 101). Augustine (*De musica* 6.5; *De Genesi ad Litteram* 12.16.33; *De Trinitate* 10.5) is called upon as an authority arguing against this bottom-up causality, denying all action of corporeal things upon the soul (QInIIS 73, 15–7).

Olivi points out that there are four ways in which acting upon and being affected should be considered: first, there must be proportionality between the agent (and its power to act) and the patient (and its receptivity to be acted upon) (QInIIS 72, 6); second, the agent, although higher in the ontological hierarchy than the patient, can voluntarily subject itself to the action of the patient (III.72, 6); third, when what is affected is affected indirectly by being intimately related to something that is directly subject to this affection (QInIIS 72, 6–8); and fourth,

> 11 when an agent acts within itself, by directing its active force to an extrinsic object and in doing so also exposing and applying its passive power toward that object, as if it were going to grasp that object within itself. And it is in this way that the immediate principle of an apprehensive or volitional action acts within the soul's power. (QInIIS 72, 9, transl. Pasnau 1997)

The above text reveals Olivi's opposing view to the idea that perceptual acts are brought about by the mere presence of the object and its affection on the senses. He advances his counter-claim that what makes perception possible, in addition to this presence of the object to the senses, is the pre-experiential "intentional attention" directed to the object.[72] It seems to me that Olivi establishes here a distinction between determinate and indeterminate attention, i.e. attention to a particular object and attention not directed to a particular object (QInIIS 72, 75). It is this distinction that leads him to the double consideration of the perceptual act: as an act of the sensory principle that shares the properties of the soul from which it flows ("content-free", general, undetermined); and as the likeness that results from conforming (i.e. from being determined by being directed at) to the particular object perceived (QInIIS 72, 83). In giving to the object the role of terminative cause, meaning what the perceptual act is about, he refutes the view of those who insist on giving the object the role of efficient cause (QInIIS 72, 10), at least not in a strict sense: the object is the end point (the *terminus*) of the soul's attention (or intentionality) in that it determines the act of the sensory power (QInIIS 72, 35).

Although one can admit to the passive nature of a power, its spiritual (thus, simple) nature does not allow for it to be acted upon by anything material (QInIIS 72, 22): the attention of the soul must be turned to the object in order for it to be perceived (QInIIS 72, 26–7). Olivi does without either the species (*in medio* and in

[71] Peter John Olivi 1922–1926, tom. III, question 72, 1 (hereafter, QInIIS).

[72] QInIIS 72, 9; see also QInIIS 72, 11.

the sense organs) or the inner image. Our perception of external objects is direct, unmediated, and caused by the power of the soul.[73] The final aspect deserves to be stressed: Olivi is adamant in his claim that, as Augustine upheld, the cognitive powers of the soul are the principles of their own operations (QInIIS 58, 462), that is to say, is internally driven.

The principle of operations such as perception is the same as the principle of life, and this implies its ontological superiority over material things: they are not independently able to direct the attention of the soul to themselves (QInIIS 72, 22–3); instead, that attention must be there for them to be perceived. Moreover, the principle of life cannot be directed by what is non-living (QInIIS 72, 23): a perceptual act is a vital act, thus making it impossible to be caused by an external thing (QInIIS 72, 24–5). As I have shown, Augustine hinted at this aspect in *De Libero Arbitrio*, but Augustinians such as Olivi developed the association in the context of demonstrating the ontological superiority of the agent-subject with respect to the object.

I cannot or do not wish to go much deeper into Olivi's arguments—especially given that there is enough recent scholarship on the subject[74]—but I would like to emphasize how these arguments are informed by Augustine's theory. Olivi develops epistemological arguments on the basis of Augustine's ontological intuition, according to which material things cannot act upon spiritual things, thus making it impossible for material external objects to bring about perceptual acts about themselves.[75] Although Olivi, like most of the authors mentioned thus far, had no problems (on the contrary) in accepting that the action of objects upon the sense organs was essential to the intentional nature of perceptual acts (and in some cases "mental" species)[76]—in other words for those perceptual acts (and/or species) to be about those objects—he denies that this action is causally efficacious with respect to the perceptual acts. The species impressed in the senses are ontologically inferior to the form of the object that generated them and which they are supposed to represent (QInIIS 72, 22; see also QInIIS 72, 24).

Equally relevant for my purposes here is the explicit reference to Augustine as the source of this account and the use of some key passages in his works as authoritative in this regard. This holds true with respect to Olivi, and even if, as Juhana Toivanen has convincingly shown, he strongly criticizes the species theory as well as some aspects of Augustine's theory, he was notwithstanding committed to many of Augustine's major theses.[77] After stating his view on the matter, he presents Au-

[73] See Perler (2001, p. 49).

[74] See especially Tachau (1988); Pasnau (1997); Perler (2001); and Toivanen (2009).

[75] This is precisely the issue in question 72: "an corpora possint agere in spiritum et in eius potentias apprehensivas et appetitivas" (QInIIS, 1–51).

[76] According to Olivi, the representation of the object is the result of the perceptual act conforming to the object present to the attention of the soul (QInIIS 72, 82). In other words, by being directed to (and determined by) the object, the perceptual act becomes the likeness of the terminative object. This is very close to Augustine's intention.

[77] Olivi had a narrow understanding of sensible species in that he took them to be material—i.e. extended (QInIIS 72, 31)—and to be representative only of part of the object (QInIIS 72, 40–6). This was part of his attempt to reject them (see QInIIS 72, 47–8).

gustine's view, which he describes as being based on the impossibility of a body's acting upon the soul directly, and extensively quotes (QInIIS 74, 112–13) from Augustine's *De musica*, as well as from *De Genesi ad Litteram* and *De Trinitate*. On the other hand, his radical departure from traditional species theory did not stop Olivi from recognizing the need for some kind of inner mental representation in the form of memorial species that make available for knowledge information about external things (QInIIS 74, 115–16). What is clear, however, is that the species are not caused by external things even though they represent them.

Although Olivi was adamant in his criticism of the species doctrine(s), some of his contemporaries had no problem in asserting that whatever is known must make itself present to the knower through a species. This was the case of James of Viterbo (1255–1308), who claimed that modern authors used species as the term to denote the *likeness of a thing* (*similitudine rei*) in the soul, either in the senses or in the intellect.[78] The species has a different ontological status in the known thing, where it is material, and in the senses, where it is immaterial. This transition requires the depuration of the materiality of the material species such that it becomes immaterial in the senses. This "purification" takes place in the sensory powers as it means the very act of perception, which is the act of an immaterial entity directed to the external thing. James preferred to think of the species not as a likeness of an external thing in addition to the act of the soul but as the soul assimilated into the external thing.[79]

According to James, things can be in the soul through conformation (*per conformationem*), in other words through the soul's conforming to and resembling them. In this sense the soul is, in a way, all sensible things.[80] However, James was less interested in the ontological status of the species than in the notion of causality implied in cognition, in other words whether the species could be the cause of cognitive acts or whether the cognitive powers themselves are the cause of their own acts. He opts for the latter option, claiming that the soul is, in its operations of understanding, willing and sensing the cause of its acts.[81] As an authority supporting his argument James refers to Boethius and his critique of the Stoics' theory, according to which "the soul is, in knowing, both intellectual as sensory, passive in the same way matter [is with] respect to forms and the mirror with respect to the images".[82]

James refers to two kinds of actions—transitive and immanent—of which the latter is the one that applies to the operations of the human soul. These operations are perfective of the powers, and therefore the soul must be active (because the principle of motion must be internal to the thing moved).[83] The sense power is

[78] James of Viterbo (1968), *Quodlibet* 1 (hereafter, Q.1), q.13, 184.

[79] One could call this the "proportionality and similarity principle".

[80] Q.1, q.7, 91.402–5.

[81] This principle does not preclude that each of the soul's powers (intellect, senses and will) has passive and active aspects. A power is more active the higher its place in the hierarchy of the soul (Q.1, q.12, 168.371–74), in which the will comes first, then the intellect and finally the senses.

[82] Q.1, q.12, 166.313–16.

[83] "Sed huiusmodi actiones animae sunt manentes in anima, et ipsam perficientes." Q.1, q.12, 166.321–22.

ontologically superior to the sensible thing because it is a living power or a power of life (*virtus vitalis*): it is therefore impossible for the act of perception to be caused by the sensible thing.[84] The acts of the soul are vital operations, and this applies to all operations, be it perception or intellection. In that vital operations follow from a vital principle, the soul, which is an internal principle, none of them can have an external cause.[85] This is especially the case with actions that are not transitive (meaning that the effect is felt in another) but immanent, in other words that take place in the soul and perfect it.[86] Things contribute to our knowledge of them because they arouse the action of the soul and are the end of the cognitive act in the sense that the cognitive act is about them.[87] However, perception cannot be caused by an external thing, but must be internally driven as it is an operation of the soul not of the objects, with respect to which it is active. The soul is the efficient cause and the agent of its own operations.[88]

James justifies his active view by connecting the soul's inclination for becoming all things to its state of incomplete actuality. The starting point for his account of the soul's activity is the definition of cognitive power as a natural potency in a state of un-fulfillment:

> 12 It is a certain incomplete actuality, a natural potency belonging to the second species of quality, considered the starting point with respect to the posterior actuality—this is why it is called aptitude (*aptitudo*) and natural capacity (*idoneitas*) to complete actuality. Moreover, that which is potency in so far as it is incomplete actuality moves itself into complete actuality not efficiently, but formally.[89]

The powers of the soul by means of which it perceives and understands have a natural aptitude to the complete act and are able to bring themselves into full actuality,

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[84] "… sensus excedit sensibile, quia sensus est virtus vitalis. Sensibile autem est non vivum, et sensibile est cum material; sensus autem suscipit sine materia. Aeque enim videtur inconveniens dicere quod actio sensus causetur a sensibili secundum se", Q.1, q.12, 164.237–40.

[85] This says nothing, of course, about the vital operation to be determined by a particular thing, although James is not arguing against external things playing any role—he just dismisses their role as the cause of such acts of the soul.

[86] Q.1, q.12, 166.319–24.

[87] "A rebus vero causatur scientia in nobis dupliciter. Uno modo, in quantum mediantibus potentiis sensitivis, ipsae res sensibiles excitant intellectum ad hoc ut se moveat. Alio modo, in quantum anima movetur, ut ipsis rebus assimiletur et conformetur in actu. Et sic causa cognitionis per modum termini, et inde sequitur quia anima assimilatur rebus, non autem res animae assimilantur." Q.1, q.12, 177.663–68.

[88] "… anima se habet respectu ipsarum [actiones] sicut efficiens et agens", Q.1, q.12, 166.317–18.

[89] "Quod patet, si consideretur qualis est illa potentia, secundum quam dicitur anima potentia intelligens vel sentiens. Est enim quaedam actualitas incompleta, pertinens ad secundam speciem qualitatis, quae est potentia naturalis, considerata secundum exordium et praeparationem quandam respectu actus ulterioris. Unde dicitur aptitudo et idoneitas naturalis ad completum actum. Illud autem, quod sic est in potentia secundum actum quemdam incompletum, movetur ex se ad completum actum, non quidem efficienter, sed formaliter", Q.1, q.12, 166–67.329–36, (emphasis added). There is an equivalence between aptitude (aptitudo), natural potency (potentia naturalis), and incomplete act (actus incompletus) (Q.1, q.12, 170.461–62).

that is into the act of cognizing.[90] His reference to formal causality is attributable to the fact that this process is the result of what the thing is—in other words naturally capable of this sort of operation.

James refers in this context to the distinction between instrument, special aptitudes and the use of the instrument.[91] The instrument (of the soul, one is led to conclude) is the power or potency, such as the sense of sight; the special aptitudes are, I assume, the kinds of operation the power is able (has the inclination) to realize; and the use of the instrument is the act or operation of the power, such as seeing.[92] The full actualization of the incomplete act is nothing else than the power to realize its aptitudes through its operations.[93] James refers to "full actuality" because this is a case of completion and not one of going from pure potentiality to actuality.

Thus, James' argument rests on (i) the definition of the species as the actuality of the powers and (ii) the definition of the powers as incomplete actualities that have an inclination to cognize certain kinds of objects. However, this leaves unsolved the question of how to explain the quasi-actuality of the soul's powers. James resolves this by pointing out that the soul is endowed not only with general aptitudes, in other words the cognitive powers, but also with natural aptitudes (*aptitudines naturales*), in other words the likeness of things to be known existing in an inchoate state that can be fully actualized.[94] This justifies his reasoning that objects do not properly cause perceptual acts because these acts exist already at a low kind of actuality, and that their content is nothing but the power as assimilated into (or made to be like) the object. This is connected to his characterization of the soul as being created with the power to conform itself (*conformari*) to all things (Q.1, q.7, 93).

In response to the question of how to conciliate Aristotle's known statement that the soul is like a blank tablet on which nothing has yet been written with his own view that it is endowed with potencies and aptitudes, James argues that to be in the incomplete act of cognizing is the natural default state of the soul, thus one should not say that the soul is in potency to the act but rather that it is in potency to the complete act. Thus, nothing has been written on the tablet because nothing has yet been actually cognized.[95] The difference might seem slight but it is significant: the soul does not go from empty to understanding x, it goes from potentially understanding x to actually understanding x.

The problem with this view, as another objection goes, is that it seems to imply the existence of innate content, making it a version of Plato's theory of ideas and

[90] Q.1, q.7, 92. They are called potencies because (i) they dispose the power to act and (ii) are perfected by the acts (Q.1, q.7, 93.472–73); and dispositions because of their permanence (Q.1, q.7, 94.479–80).

[91] Q.1, q. 12, 167.344–50.

[92] Q.1, q.12, 167.344–50.

[93] "… nata est perfici per ulteriores actus", Q.1, q.12, 167.355–56. The soul is naturally endowed with an aptitude to be perfected by the full knowledge of sciences and the virtues (Q.1, q.7, 92). On James of Viterbo on aptitudes, see Coté (2009).

[94] "Et hoc modo ponere scientiam innatam vel habitualem, scilicet secundum idoneitatem et aptitudinem, quae est actualitas quedam incompleta, non est inconveniens." Q.1, q.12, 171.493–95.

[95] Q.1, q.12, 170.459–66.

thus requiring the existence of the human soul prior to its infusion into the body. It is to the latter aspect (the pre-existence of the soul) that James object, otherwise, he finds nothing wrong with Plato's theory.[96] James' problem with Platonism, as Antoine Coté (2009, 26) clearly points out, is the actuality of innate ideas, not their existence *per se* in another state of being: if the mind had actual ideas it would be permanently thinking about them, and even all of them simultaneously, which experience seems to have proved false. However, were these ideas not actual but each brought into actuality at different times, then the problem would be non-existent. James' solution runs along these lines. Ideas exist in the mind in an incomplete state of actuality and are brought into the state of full actuality on the occasion of a sensible thing's affecting the sense organs, made present to the intellect via the phantasm.

James insists that all his theory is committed to is the soul's natural endowment with "certain natural aptitudes to knowledge, by means of which it moves itself to actual understanding". What is innate is the general potency to knowledge (the power) and its special aptitudes, which are, as noted, incomplete acts.[97]

With regard to the senses, the theory raises two concerns. First, if sensible things do not move the senses but the senses move themselves,[98] one could be led to think that the senses operate without the existence of any corresponding thing to be known outside the mind. Second and conversely: if external things fully actualize natural aptitudes, then, they are causally efficacious with respect to the soul's operations.

James' solution allows him to address both objections at the same time: the action of sensible things upon the soul and its cognitive powers is to move them not in the sense of imprinting the form by means of which they are to be known, but by way of inclination and excitation (*per modum inclinationis et excitationis*).[99] Sensible external things need to be present in order to cause this excitation, as Boethius correctly indicates in his objections to the Stoic passive account of perception, but as Augustine states in Book twelve of *De Genesi ad Litteram* and in the sixth Book of *De musica*, without the activity of the soul no perceptual act takes place.

> 13 Sensible things change the sense organs. Once changed, on account of the conjugation of the organ with the power and the likeness that is made in the organ, and with the aptitude that is in the sense (that with which the sense is endowed to move itself), the sense is inclined or excited to move to actual cognition.[100]

[96] A major axiom of thirteenth-century natural philosophy is that God creates and infuses the human soul at a certain moment of foetal development; in this context, the soul cannot pre-exist.

[97] Q.1, q.12, 171.481–95.

[98] Q.1, q.12, 168–69.399–408.

[99] "*Anima autem movetur* principaliter, a Deo quidem efficienter, qui ipsam producit, a se ipsa vero formaliter; *a sensibus vero et a sensibilibus movetur non principaliter, sed per modum excitationis et inclinationis cuiusdam*, ut dictum est", Q.1, q.12, 175.614–16, (emphasis added).

[100] "Sensibilia autem immutant organa sensuum; quibus immutatis, propter coniunctionem organi cum potentia, et propter similitudinem ipsius immutationis, quae facta est in organo, cum aptitudine quae est in sensu, sive cum eo ad quod sensos natus est se movere, sensos ipse inclinatur et excitatur ut se moveat ad cognitionem actualem." Q.1, q.12, 172.515–20.

External objects act upon the sense powers by arousing the power to perfect its natural inclination (incomplete actuality) for knowing. James defines this in the following way:

> 14 for some thing to move another in this way, it is necessary for what moves to be conjoined with what is moved, and to be in a certain [state of] actuality that agrees with the actuality with which the thing to be moved is born.[101]

Both cognitive power and external thing are in states of actuality that vary in the level of completeness. Without the power's incomplete actuality no change can take place because change is precisely the full actualization of this incomplete actuality. It is in this context that the causality that objects exercise upon the soul is strongly limited and the passive nature of the process is questioned. Instead, the object's action is followed by the reaction of the power, a reaction that is defined as the exercise or realization of its potential.[102]

The cleverness of James' theory is that it works equally well regardless of whether the content of perceptual acts is identified with the act (as in Olivi and later in Ockham) or with the species in addition to the act. In both cases the thing to be known must somehow be present in the soul in an incomplete state, or in a state of quasi-actuality, the completion or full actualization of which depends on its excitation by an external thing (*a rebus excitata per sensus*).

> 15 Thus, if one accepts [the existence of] such species in the soul, it is not necessary to posit, in addition to the operations and the acts, species that are to be acquired. Indeed, it is not necessary [to posit them] because the hidden aptitudes together with the exciting phantasms suffice for representation and the intellect's motion.[103]

The theory thus offers an original approach to the traditional Augustinian account in that it takes the general capacity for assimilation advocated by Augustine and earlier Augustinians such as Pecham, and pre-determines it to a specific (set of) object(s).[104]

In a way, James' theory has many aspects in common with traditional medieval Aristotelian accounts of perception, but his Augustinian-inspired notion of "incomplete acts" does not fit into the metaphysical account of medieval perceptual Aristotelianism. On the other hand, his theory deviates from Augustine and much of the

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[101] "Ad hoc autem, quod aliquid moveat aliud hoc modo, requiritur quod id quod movet, sit coniunctum ei quod movetur, et sit in actum secundum aliquid, quod habeat convenientiam vel habitudinem aliquam ad id, secundum quod illud, quod movetur, natum est esse in actum." *Quod*. I, q. 12, 172.

[102] "Attentione autem dignum est ne forte intelligere et videre non sint pati et informari solum. Sed habent quandam intrinsecus excitatam operationem, secundum quam fit perceptio", Q.1, q.12, 174–75.596–98. See also Q.1, q.12, 174.583–84.

[103] "Si autem positis speciebus in anima, non est necessarium ponere alias species acquisitas, praeter operationes et actus. Non enim est necessarium propter repraesentationem et motionem ipsius intellectus; quia ad hoc sufficiunt aptitudines inditae cum fantasmatibus excitantibus." James of Viterbo, *Quod*. I, q.13, 187.

[104] Phantasms are likenesses of particular things, hence being endowed with material conditions (Q.1, q.12).

Augustinian tradition in the direction of a stronger Platonism. It contrasts with the traditional Augustinian account that takes human knowledge of the external world to derive from the general capacity of the soul to become like external things, a capacity that is determined by one particular object or feature at a time.

Durandus of St. Pourçain (1275–1332/1334) was another late-medieval author who strongly advocated the application of the metaphysical principle according to which that which acts is more noble than that which is only receptive to the epistemological context.[105] He did not consider the sensible quality by means of which the sensible thing acts upon the senses any more noble or perfect than the sensory power. Therefore, he claims, the object cannot cause in the senses the act of perceiving.[106] At this point it should come as no surprise that the authority Durandus quotes in support of his claim is Augustine, and in particular the passage from *De musica* concerning the impossibility of the object's efficacious action upon the soul. After quoting another passage in *De musica* in which Augustine defines sensation as "an awareness of a bodily change", Durandus explains:

> 16 This means (…) that the sensible [thing] acts not upon the sensible power but upon the organ by reason of its disposing quality. The action [of the thing] when it presents itself to the senses does not go unnoticed and is thus perceived; to perceive is simply the presence of the sensible [thing] not going unnoticed by the sense.[107]

After this—again not surprisingly—Durandus returns to a point he made earlier, that operations such as perceiving (and understanding) are constitutive of a living being, in the sense of following from what the thing is.[108]

According to this earlier point, perception is to be understood as an immanent activity of the being that is alive—as an "actus vitalis" (S II.3, q.5, 155). Therefore, perceiving cannot have its cause in something that is external to the living thing itself. Perception is an immanent activity of a living being taking place in and by means of the agent. The determination of the act—what it is about—depends on the existence of an external thing affecting/acting upon the sense organs. Determination is not efficient causality however, and therefore one cannot take the object as the cause of the perceptual act. Durandus also points out that if the sensible species were able to bring about a perceptual act, then, the medium would also be able to perceive, which clearly is not the case. What makes perception possible, one is led to conclude, is precisely the existence of a living being endowed with the power to perceive on the occasion offered by the presence of an external thing making itself present via the species in his sense organs. This leads to the essential distinction Durandus makes between forms informing that in which they inhere and

[105] For an analysis of Durandus' theory of perception, see Solère (2012).

[106] Durand of St. Pourçain (2012), (hereafter, S) II.3, q.5, 152.

[107] "Vult dicere (…) quod sensibile non agit in potentiam sensitiuam, set in organum ratione qualitatum disponentium ipsum, que actio, cum sit presens sensui, non latet ipsum, et ideo sentitur, nec est aliud sentire nisi sensibile presens not latere sensum", S II.3, q.5, 162.

[108] The argument Augustine uses in *De Libero Arbitrio* (see Silva's chapter on Augustine in this volume).

forms changing that in which they inhere: the sensible quality by means of which the sensible thing acts on the sense organ acts by informing the sense organ rather than changing the sense power and bringing it into a perceptual state. The sensible species comes to be in the organ but it has no causal efficacy on the power that performs the perceptual act.

The two most important aspects of Durandus' account of perception for the purposes of this article therefore are: first, that perceiving is an essential operation of a living thing that cannot therefore have its cause in something external to the living thing, and second, that the object is necessary to determine the content of the perceptual act. If perception is awareness of an external thing, that external thing must be present to the perceiver in the appropriate manner that is conducive to a cognitive relation.

All the authors under discussion thus far share a number of essential theoretical commitments that argue for the activity of the soul in the process of sense perception, while at the same time explicitly dwelling on Augustine's works and thought as their inspiration and source of authority. However, these accounts are embedded in language that is far removed from that of Augustine, and even diverges from the omnipresent Aristotelian philosophy of perception. Nevertheless, I would suggest, authors following the latter tradition also take in influences from the Augustinian debate. A good example is the Franciscan Vital du Four (1260–1337).

According to Vital, sensible things are in the state of active potentiality to generate likenesses of themselves in the medium and through the medium in a perceiver's sense organs. In the case of sight, the species of color is generated by light acting upon a colored object that is then diffused through the medium.[109] In addition to color, the medium and light, for perception to take place there must be a perceiver who is endowed with proper senses. This means that the likeness must be received in the sensory apparatus of the one doing the seeing.

Reflecting the analogy between perceiving and understanding, Vital defines passive power as that which has the potential to receive *in ratione cognoscentis* the object that is to be cognized. According to basic Aristotelian metaphysics, the power can only be actualized by something already in act, which applied to sensing means that the senses are moved into actuality (i.e. into actually perceiving) by the external sensible thing. The change that the species brings about in the sense organ is less spiritual than that which takes place in the intellect but more spiritual than the change in the medium caused by the generation of the species from the object. The species is impressed in the organ of sense *in ratione cognoscendi* and it is without matter in the soul, just as that which is known is in the knower (*sicut cognitum in cognoscente*). Vital's intention was, first, to diminish the materiality of the species through the chain of its multiplication—from the more material way of being in the thing to the more spiritual way of being in the soul—and to assert the

[109] The species is (i) the natural form of the thing, (ii) the likeness of the natural thing impressed in the sensory part of the soul, (iii) the quiddity or the essence of the thing: Vital du Four (1927), question II, section 1, 199 (hereafter, Qd). The action of light is also necessary for allowing the medium to receive the impressed species (Qd II.1, 191).

nature of the change in the sense organ and in the power as epistemological rather than physical.[110]

Vital thus regarded the affection (*passio*) by means of which the senses are brought into actuality as double-sided: on the one hand it is the reception of the species in the organ of the senses, and on the other it is the inclination of the sensitive power to perceive. Neither of these in itself is conducive to perception—the reception of the species without the soul's being inclined to perceive, as in sleep, and the inclination of the soul without the reception of the species. There is perception only when the naturally inclined power is excited by the species impressed in the sense organ: this arousal turns the power to the object. The sensory powers, although properly suited to perceiving, require that the sense organs receive the appropriated species, and these species must have a sufficient degree of intensity (*magno et forti sensibili*) to incline the power to perceive (to make the power attend to the object).[111]

"Excitation" terminology is used here in order to stress the reactive nature of the power with respect to the affection of the sense organ, that is the reception in the organ of the species.[112] Vital was also adamant in stressing that the species informing the sense organ was not enough to bring about the perceptual act, and therefore that the species was not the cause of perception (Qd II.3, 210). One is led to conclude that only the inclination of the power is given that role. The decisive argument he presents for this is probably the most persuasive. He claims that the relation between an agent and a patient must always be proportionate. Thus, the (species in the) thing cannot be the cause of the species in the senses because the former is more material than the latter. It is necessary to posit a chain of mediating species through which the materiality is somehow purified (Qd II.2, 199). The same applies in some degree to the chain of species in the inner senses.

Vital's choice of terminology—*intentio, elicere, excitare, inclinare*—clear reflects the Augustinian influences in his account, and at the same time he wanted to show how the terminology fitted into the Aristotelian account of perception. This, I believe, substantiates the view that late medieval theories of perception were dynamic: not only did Augustinians integrate elements of the Aristotelian theory of perception into their own theory, Aristotelians also took Augustinian elements into their Aristotelian-based accounts.

[110] Vital du Four 1927, Qd II.1, p. 189.

[111] "facit eam [potentia] esse intentam ad percipiendum", Qd II.1, 187.

[112] This is also how the "excitation" of visual power by the reception of the seen object is understood in the Anonymi Magistri Artium, *Lectura in librum de anima*, II.10.3, 277.

7.3 Conclusion

After one moment of disorientation and a second one of resistance, authors of the Augustinian tradition started to attempt the integration of Aristotelian elements into their theories. They acknowledged that perception included changes in the bodily sense organs, but denied that such changes could in any way be the cause of perceptual acts. There is no sense perception without sensory stimulation but the sensory stimuli do not cause sense perception, therefore the stimulation of the sense organs is dissociated from the inner image of the object that caused it. The first consequence is thus the limitation of the role objects play in the process of perception, from the efficient cause to a necessary but not sufficient condition. Resorting to active perception allowed philosophers of the Augustinian persuasion to maintain an ontological hierarchy according to which the spiritual soul cannot be affected by material and hence inferior objects—which also complies with the principle that the effect (the image in the soul, a spiritual entity) cannot be superior to its cause (the object, a material entity).

The authors included in this overview show the dynamism and variety in the tradition concerning the activity of the soul in perception. It is clear from Matthew Aquasparta's description of some of the theories of his time that the terminology and underlying ideas that were common to such a tradition were in full use by the last quarter of the thirteenth century. Vital du Four's texts, in turn, reveal an attempt to incorporate some of this terminology into the Aristotelian model, in the same way as Augustinians found it necessary to import much of the terminology from Aristotelian-inspired accounts at the beginning of the century. By the first quarter of the fourteenth century the question of the active versus the passive nature of the senses had turned into a debate about the existence of the agent sense. This was not about the active nature of the soul, it was about the existence, in addition to the traditional list of inner senses, of a power that was responsible for de-materializing (or spiritualizing) the sensible species. Such an account represented an attempt to enclose Augustinian activity (its commitment to MP/EP) within the model of Aristotelian faculty psychology.

Of particular scholarly interest in the period under study is the excitation theory. The reasons for its appeal are obvious: it allows the retention of the objective nature of perception without compromising the superiority (and agency) of the soul. The object provides the occasion for the perceptual act without being its cause. The problem, however, is how to convincingly avoid considering the "exciting thing" the cause of the act if the act is determined by the thing's acting upon the senses. This is precisely the criticism Matthew of Aquasparta timidly put forward, and that would be fully developed by Duns Scotus, and one may well doubt that any Augustinian could have offered a satisfactory response. Be that as it may, the fact that theories of active perception continued to be fashionable in the Renaissance and late scholasticism makes it clear that the notion of perceivers as agents struck a cord in the philosophical thought. Although the influence of the Augustinian tradition of perception on later periods has been noted in recent scholarship, further research

needs to be done in order to shed further light on the evolution of these ideas. What seems clear, however, is the need for a serious re-evaluation of traditional overviews of medieval perceptual theories.

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Chapter 8
Agent Sense in Averroes and Latin Averroism

Jean-Baptiste Brenet

8.1 Averroes and the Agent Sense

The idea of an agent sense—which Averroes never names as such—appears solely in the *Long commentary* on the *De Anima* of Aristotle,[1] when the Cordovan comments on *De an.* II, 5, 417b22-29 (com. 60).[2] In this passage, Aristotle emphasizes a difference between the act of sensing (τὸ αἰσθάνεσθαι κατ' ἐνέργειαν; *sensus in actu*), and the act of knowing (ἐπιστήμη; *scientia*). While they are similar (since sensing is, in its primary state, equal to possessing knowledge, and, in its later per-

[1] We refer here to what the scholastic tradition will call *sensus agens*, namely, in the order of the sensible, the equivalent of what the agent intellect is on the order of the sensible. Certainly, however, the idea that sense is "agent", and not purely passive, can be understood differently: see, for instance, the fundamental development of *De anima* II, 5, 417b2–16 on the ambiguity of sensory "passion", demonstrating that the reception of form in sense can be equated to an unfolding of its being, a growth, a "progress" (*additio* in the Arabo-Latin text) of potency towards itself. On the "passivity" of sense and intellect in Averroes, see Geoffroy (2006). Moreover, the sense may be regarded as "active" in so far as it acts on the outside: see Aristotle, *De insom*., 2, 429b26 sq.; and Averroes, for example, his *Colliget*, III, 38, in *Aristotelis opera cum Averrois commentariis* (1962a), suppl. 1, f. 54vM ff.; for the Arabic, cf. Ibn Rušd, *Kitāb al-Kullīyyāt fī l-ṭibb*, ed. J. M. F. Besteiro and C. A. Morales (Madrid: Consejo Superior de Investigaciones Científicas-Escuela de Estudios árabes de Granada 1987, pp. 173–177). See also his *Talḫīṣ al-ḥiss wa-l-maḥsūs*: for the Arabic, see *Averrois Cordubensis Compendia librorum Aristotelis qui Parva naturalia vocantur*, ed. H. Blumberg (1972), 80, 4 sq.; for the Latin, *Compendia librorum Aristotelis qui Parva naturalia vocantur*, ed. A. L. Shields and H. Blumberg (1949), 98, 71 sq.

[2] For the text, see *Averrois Cordubensis commentarium magnum in Aristotelis de anima libros* (below: LCDA), ed. F. S. Crawford (1953, pp. 219–221). Cf. here, Averroes, *Middle Commentary on Aristotle's De anima,* ed. and trans. A. L. Ivry (2002, p. 63, § 167).

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fection, equal to θεωρεῖν, its full exercise)[3], their "agents" show a distinctive characteristic: if, on the one hand, the sensibles are "extrinsic" (ἔξωθεν; *extrinseca*), i.e. in the world, and therefore outside the soul, then, on the other hand, knowing only has a psychic existence, within the knower. What can explain this and what then results? The answers are in Aristotle's text, here in its arabo-latin version:[4]

> The reason for this is that sense in act apprehends particulars, while science <apprehends> universals existing, as it were, in the soul itself. For this reason a human being can exercise understanding when he wishes, but not sense, because he requires a sensible object. That disposition is also in the knowledge of sensible things, for that cause is a cause of them, namely, that sensibles are from particular external things. But we will speak of these and expound on them later, and it will have <its> time.[5]

First, then, the "agents" of sensation are "extrinsic", because sense perceives "particulars" (*particularia*), individual items, which are realities of the world; however, the agents of knowing are *not* extrinsic, because the act relates to universals (*universalia*) and these are "somehow within the soul" (*quasi in ipsa anima*).[6] Secondly, it follows that man does not have an equal degree of control over either of these acts. If, in order to be sensed, a *worldly* object has to be presented, it means that sensing does not depend on a human being's who senses, but is outside one's control: one requires that a thing, independent from human beings, be presented to the senses. As for science, almost the opposite is true. The knower is not dependant on a chance meeting. The object of human sensation can be found, almost in autarchy, within the human soul, and is ever available, so that one can think at will (*cum voluerit*).[7]

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[3] See Averroes, LCDA, II, c. 59, 219, 14 sq.: "Idest, ita quod, cum prima virtus fuerit facta, statim sentiet, nisi aliquid impediat, aut sensibilia non sint presentia. Et hoc est simile scientie que est in sciente qui non utitur scientia. Deinde dixit: *et sentire est sicut scire*. Idest, et ultima perfectio sensus, que est comprehendere sensibilia in actu et considerare in eius, simile est uti scientia et consideratione. Deinde dixit: *Et quod est in actu est simile ad considerare*. Idest, sentire in actu simile est ad considerare et scire" (cf. trans. Taylor, 171).

[4] See Averroes, LCDA, II, c. 59, 219, 14 sq.: "Idest, ita quod, cum prima virtus fuerit facta, statim sentiet, nisi aliquid impediat, aut sensibilia non sint presentia. Et hoc est simile scientie que est in sciente qui non utitur scientia. Deinde dixit: *et sentire est sicut scire*. Idest, et ultima perfectio sensus, que est comprehendere sensibilia in actu et considerare in eius, simile est uti scientia et consideratione. Deinde dixit: *Et quod est in actu est simile ad considerare*. Idest, sentire in actu simile est ad considerare et scire" (cf. trans. Taylor, 171).

[5] Aristote, *De an.* II, 5, 417b22 sq., in Averroes, *Long Commentary on the De anima*, trans. Taylor, 171; Latin text, see Averroes, LCDA, II, 60, p. 219–220: "sensus in actu comprehendit particularia, scientia autem universalia, quasi essent in ipsa anima. Et ideo homo potest intelligere cum voluerit, sed non sentire, quia indiget sensato. Et ista dispositio est etiam in scientia sensibilium; ista enim causa est causa eorum, scilicet quod sensibilia sunt ex rebus particularibus extrinsecis. Sed loqui de istis et exponere ea erit post, et habebit horam"; cf. Hamlyn's translation from Greek: "The reason is that actual perception is of particulars, while knowledge is of universals; and these are somehow in the soul itself. For this reason it is open to us to think when we wish, but perceiving is not similarly open to us; for there must be the object of perception. The situation is similar with sciences dealing with objects of perception, and for the same reason, that objects of perfection are particular and external things".

[6] Cf. Aristote, *An. Sec*., I, 13, 81b6–7; 31, 87b28–30 et 37, 88b7.

[7] Cf. the commentary of Averroes, LCDA, II, c. 60, 220, 10 sq.: "Et causa huius diversitatis inter sensum et intellectum in acquirendo ultimam perfectionem est in hoc quod motor est in sensu extrinsecus, et in intellectu intrinsecus est; quia sensus in actu non movetur nisi motu qui dici-

In Aristotle's noetic system, this latter point is paramount. Indeed, it is through the voluntary handling of his images[8] (necessary correlates of concepts) that the individual, by "acquisition", will suitably receive attribution of the act of an ontologically separate intellect.[9] However, in this passage we also find the other point that Averroes insists on, thereby tackling the problem of the physically extrinsic nature of the agents of sensation, rather than the implications (moral and anthropological) of the psychologically intrinsic nature of the movers of thought.

Where does this problem come from and how can it be qualified? It relates to Aristotle's definition of sensation, given in *De anima* II, 12: "In general", writes the Stagirite, "with regard to all sense-perception, we must take it that the sense is that which can receive perceptible forms without their matter".[10] He illustrates this further with a famous example: "It is not the stone which is in the soul, but its form".[11] To sense, in other words, is not to receive the thing itself in its materiality, but only its form, dissociated and separated from the thing's very matter. As Averroes emphasizes in his commentary, this means that the *sensed*, i.e. what is exclusively

tur comprehensio a rebus particularibus sensibilibus, et iste sunt extra animam; intellectus autem movetur ad ultimam perfectionem a rebus universalibus, et iste sunt in anima. Et dixit: *et ista quasi sunt in anima*, quia post declarabit quod ea que sunt de prima perfectione in intellectu quasi sensibilia de prima perfectione sensus, scilicet in hoc quod ambo movent, sunt intentiones ymaginabiles, et iste sunt universales potentia, licet non actu; et ideo dixit: *et iste quasi sunt in anima*, et non dixit *sunt*, quia intentio universalis est alia ab intentione ymaginata. Deinde dixit: *Et ideo potest homo intelligere*, etc. Idest, et quia moventia virtuem rationalem sunt intra animam et habita a nobis semper in actu, ideo homo potest considerare in eis cum voluerit, et hoc dicitur formare; et non potest sentire cum voluerit, quia indiget necessario sensibilibus, que sunt extra animam" (cf. trans. Taylor, 171).

[8] For it *is* the images we're talking about here, and not, directly, the universals: this is why, Averroes says, Aristotle then declares the agents of intellect "quasi sunt in anima". The Commentator addresses this passage thus: "Et dixit: *et ista quasi sunt in anima*, quia post declarabit quod ea que sunt de prima perfectione in intellectu quasi sensibilia de prima perfectione sensus, scilicet in hoc quod ambo movent, sunt intentiones ymaginabiles, et iste sunt universales potentia, licet non actu; et ideo dixit: *et iste quasi sunt in anima*, et non dixit *sunt*, quia intentio universalis est alia ab intentione ymaginata" (LCDA, II, c. 60, 220, 17 sq.).

[9] On this topic, see Brenet (2012).

[10] Aristote, *De anima*, II, 12, 424a17–19 (trans. Hamlyn); cf. Arabo-Latin *textus* (c. 121, 316): "et dicendum est universaliter de omni sensu quod sensus est recipiens formas sensibilium sine materia". Averroes comments (c. 121, 317, 13 sq.): "*Et dicendum est de omni sensu*, etc. Idest, et opinandum est quod receptio formarum sensibilium ab unoquoque sensu est receptio abstracta a materia. Si enim reciperet eas cum materia, tunc idem esse haberent in anima et extra animam. Et ideo in anima sunt intentiones et comprehensiones, et extra animam non sunt neque intentiones neque comprehensiones, sed res materiales non comprehense omnino".

[11] Aristote, *De anima*, III, 8, 431b29–432a1 (trans. Hamlyn); cf. Arabo-Latin textus (LCDA, III, c. 38, 503, 5–6): "lapis enim non existit in anima, sed forma". Averroes comments (c. 38, 504, 25 sq.): "impossibile ut ipsum ens sit intellectum aut sensatum, scilicet per suam formam et suam materiam, ut Antiqui opinabantur, (tunc enim, quando lapidem intelligeret, anima esset lapis, et si lignum, esset lignum), remanet igitur ut illud quod existit in anima de entibus sit forma tantum, non materia. Et hoc intendebat cum dixit: *lapis enim*, etc. Idest, lapis enim non existit in anima, sed tantum forma eius".

received from the thing, has a different "being" (*esse*) from the *sensible* which itself is the real hylomorphic compound:[12]

> Si enim reciperet eas cum materia, tunc idem esse haberent in anima et extra animam. Et ideo in anima sunt intentiones et comprehensiones, et extra animam non sunt neque intentiones neque comprehensiones, sed res materiales non comprehense omnino.[13]

Therein lies the difficulty: how do we go from one to the other? How does the transfer[14] from the worldly thing to its sense-moving form (in Averroes' arabo-latin: its "intention" (*ma'nā*),[15] or, from a more ancient formula partially inherited from Ibn Bāğğa,[16] to its "spiritual" being (*spiritualis; rūḥānī*)[17] take place?To say that sense is moved by the sensible is not enough. Indeed. While the sensible does move the sense, it only does so inasmuch as it exists in another mode in addition to its extra-psychic reality: it moves the sense as *intentio*, and more precisely as *actual* "intentio", intention in act which implies that this sensible is detached from physical matter where intentionality is only potential. Consequently, if sensation is only present under the effect of an actualized sensible intention, i.e. made mobile after dematerialisation, this raises the question of what operates this actualisation, which conditions the mobility of sense. If Averroes, then, extracts from Aristotle's text the concept that will become that of "agent sense" with the scholastic tradition, it is because "to sense" means not only to be affected by the sensible (i.e. to receive

[12] For other excerpts from Averroes on the distinction between real form and intentional form (in different contexts), see Averroes, *In XII Metaph*., c. 14, in *Aristotelis opera cum Averrois commentariis* (1962b), f. 301vG; c. 23, f. 309BC, c. 36, f. 318L–M.

[13] Averroes, LCDA, II, c. 121, 317, 15 sq.

[14] This is precisely the right word; cf. Averroes, LCDA, III, c. 18, p. 439, 76–81: "Abstrahere enim nichil est aliud quam facere intentiones ymaginatas intellectas in actu postquam erant in potentia; intelligere autem nichil aliud est quam recipere has intentiones. Cum enim invenimus idem transferri in suo esse de ordine in ordinem, scilicet intentiones ymaginatas, diximus quod necesse est ut hoc sit a causa agenti et recipienti".

[15] As we know, this notion (not universally used) has several meanings: *intentio*, for instance, can be a synonym for form, or refer to form in its *spiritual* dimension, as opposed to its *real* being, or the object of some internal sense—in this case, for Averroes, this is what the cogitative power separates from the image and deposits in memory. In her article, Black (2011) is right to refer to *an*. II, 12, 424a24–28, to remind us that it is sense, first, that is *logos* for Aristotle, i.e. in the Arabo-Latin: *intentio* (see Averroes, LCDA, II, c. 122, 318). On *intentio*, see also Black (1996, 2004, 2010). Also see Brenet (2003), 213 *sq*.; and di Martino (2008).

[16] It is Ibn Bâjja (Avempace), indeed, that Averroes first follows in his exegesis of Aristotle (see for instance Geoffroy's introduction in *Averroes, La Béatitude de l'âme* (Paris: Vrin, 2001). As we know, the notion of "spiritual form" is at the heart of the Saragossa philosopher's system. His sources, however, are varied: they come from the Arabic "re-writing" of the *Parva naturalia* as well as the Greek conception of *pneuma*, and even, quite differently, from the immateriality accorded to certain beings by the pseudo-Alexander of Aphrodisias' treatise, *Spiritual forms* (actually, an Arabic version of propositions 15–17 from Proclus' *Elements of theology*). On this point which is beyond the limits of the present article, see for instance the introduction of Genequand, in Avempace, *La Conduite de l'isolé et deux autres épîtres*, introduction, critical edition of the Arabic text, translation and commentary by Ch. Genequand (2010, p. 23).

[17] This is the recurrent term that Averroes uses in his *Talḫīṣ al-ḥiss wa-l-maḥsūs*; see for the Arabic, ed. Blumberg, 24, 6; for the Latin, ed. Shields-Blumberg, 30, 24; cf. *Epitome of Parva naturalia*, trans. H. Blumberg (1961, p. 16).

sensible intentions or forms), but also (a) to be moved by those intentions in act, and (b) that in themselves, i.e. in nature these intentions are inscribed in matter and only potential.[18]

The object that conditions the effectuation of sensing goes through a change of state: how so? Averroes answers in this text, which is the basis for the major part of the debate:

> Et non potest aliquis dicere quod ista diversitas accidit per diversitatem subiecti, ita quod fiant intentiones propter materiam spiritualem que est sensus, non propter motorem extrinsecum. Melius est enim existimare quod causa in diversitate materie est diversitas formarum, non quod diversitas materie sit causa in diversitate formarum. Et cum ita sit, necesse est ponere motorem extrinsecum in sensibus alium a sensibilibus, sicut fuit necesse in intellectu. Visum est igitur quod, si concesserimus, quod diversitas formarum est causa diversitatis materie, quod necesse erit motorem extrinsecum esse. Sed Aristoteles tacuit hoc in sensu, quia latet, et apparet in intellectu. Et tu debes hoc considerare, quoniam indiget perscrutatione.[19]

A first possibility is discarded, according to which everything would depend on the nature of the "substrate" receiving the sensible. The difference (*diversitas*) between the mode of being of the sensible outside the soul and that of the apprehended *intentio* would result from the sensible's subjection in sense, which is "spiritual" matter, i.e. incorporeal. The sensible would not only be *intentio* as it is received within sense (itself *intentio*), but would be transformed into *intentio* by this very reception. According to the nature of sense, sensorial reception would produce a spiritualization of the sensible that results in the sensed intention.

Averroes, however, refutes this. He does not refute the typical medieval model wherein the received (*receptum*) is received according to the mode of the receiver (*per modum recipientis*)—he agrees that to every type of matter corresponds a type of form. What he is at odds with is the idea that this homogenization results from the receiver, as this would imply reverting the order of dependency between matter and form. If the sensible (material form) had to become an *intentio* (an immaterial form) in order to be received by a spiritual matter, it would mean that the diversity of forms could be explained by that of matters; in other words, a form would be material *because* a body acts as its substrate, and it would be immaterial *because* a spiritual body receives it. Yet, hierarchically, we must consider the opposite: matter is but for the sake of form (*propter formam* to the scholastic), so that we must rigorously conclude that there are different matters because there are different forms, not different forms because of different matters. In other words, if sense is a spiritual substrate, it is in order to receive, in a well-ordered nature, a sensible that has already become a spiritual form. The reception itself is not what gives the object a mode of being adapted to the subject: the subject is adapted to the specific mode of the object that must be received. The sensible does not become *intentio* by being received, but must have already become so in order to come to be in the recipient subject.

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[18] See Averroes, LCDA, II, c. 60, 221, 40 sq: "Et potest aliquis dicere quod sensibilia non movent sensus illo modo quo existunt extra animam; movent enim sensus secundum quod sunt intentiones, cum in materia non sint intentiones in actu, sed in potentia".

[19] Averroes, LCDA, II, c. 60, 221, 44 sq. (cf. trans. Taylor, 172).

But if it is so, Averroes says, then we must posit the existence of an "extrinsic motor" (*motor extrinsecum*) other than the sensibles. Indeed, if these only move sense as intentions, and do not become intentions either by themselves or by being received into sense, then it implies the intervention of another motor that grants them the spiritual mode required by sensation.

Sensing assumes more than the meeting under satisfactory conditions of a sensible object, a medium and a *sensorium* (perception in Aristotle is however far from being simple; see for example Caston 2005). In addition to this it seems that a third term needs to intervene, that will first transform what will then modify sense. It is the precise nature and role of this *motor extrinsecum* that the Scholastics will long dispute. While Averroes says very little about this, justifying Aristotle's silence by its own obscurity, he does offer a considerable hint: a comparison with intellectual order. We need to posit an extrinsic motor to shed light on sensation in the same way that we had to resort to one to explain thought. In other words, the *motor extrinsecum* needed to effect sensation would be the lesser analogue of what Averroes calls, in book III, the "agent intellect" (*intellectus agens*).

Let us then briefly explore what Averroes says about the "agent intellect" in *Long Commentary* on *De anima* (how he justifies its existence, what role he affords it, etc.) to try to better understand what its equivalent in sensation could be.

Averroes subscribes to the anti-Platonic empiricist notion of Aristotle's system and considers, like the Stagirite, that the soul, practically as well as strictly theoretically cannot think without images.[20] The intellect possesses neither *a priori* knowledge nor infused science, and can only draw knowledge of the world from the world itself through imagination. Without experiencing things, without their image, the intellect would be empty, devoid of content. It is the image that gives thought its formal specification. Only the image can do so, given that human beings relate to the things of the world, since the universal (which does not exist in act as a Platonic Idea) is nothing but what can be universalized in an imagined "intention": "Et ideo anima rationalis", writes the Commentator, "indiget considerare intentiones que sunt in virtute ymaginativa, sicut sensus indiget inspicere sensibilia".[21]

Thought is therefore not the product of an illumination or direct outpouring of the agent intellect onto the material intellect. It starts with the image, *through it*. Avicenna's mistake was to only assign to the image one other function: that of causing an act in and of itself strictly intellectual. For him, through the study of sensible data, the soul only aquires the ability to unite with the agent intellect, i.e. becomes able to receive from it its intelligible forms literally as infused science. In this system, the sensible never is the intelligible's true source, but only the trigger of an extrinsic donation. On the contrary, Averroes is insistent that the image is a true mover of the process of intellection, and this is what must be understood from his theory of the "two subjects" (*duo subiecta*).

[20] On this point, theoretically, see Brenet (2012).

[21] Averroes, LCDA, III, c. 4, 384, 45–47 (cf. trans. Taylor, 301); cf. Id., *L'intelligence et la pensée*, 55: "De là vient que l'âme rationnelle a besoin de considérer les 'intentions' existant dans la faculté imaginative, tout comme les sens ont besoin d'inspecter les sensibles".

To the Cordovan, thought in act has two subjects.[22] The first, the "material" intellect, constitutes its substrate and allows it to exist as such. The second, the image, enables it to be true by relating it to things. Clearly, the image is not "subject" in the way the material intellect is, i.e. as a receiver (and this is, according to Averroes, the mistake Avempace made, by making the imagined forms the material intellect, thus turning the mover into the moved); it is, on the contrary, its "mover", or, in non-Averroan terminology, its object. It is thus within the image that the thinkable resides, and this is how the image can move the material intellect.

However, the image could not achieve this motor function of its own accord by acting upon the material intellect: the latter can only be moved by a universal form intelligible in act, whereas the image is an individual form, only potentially intelligible. If the image, then, can move the material intellect, it can only do so once relieved of its "imaginality". What moves the intellect is not the image itself but its abstract intelligible, i.e. the intelligible actualised by this abstraction: since the concept is not the fantasy, for the image to move, *another* mover needs to intervene to extract its universal dimension and elevate it to the level of intelligibility in act. It is the product of their cooperation that will settle in the material intellect:

> Since it seems that the forms of exterior things move this power [the rational soul] in such a way that the mind [previously] abstracts them from matters and makes them first to be intelligibles in act after they were intelligibles in potency. (trans. Taylor, pp. 301–302)[23]

Like Aristotle before him, Averroes uses the model of light in the process of vision to illustrate this point:

> For just as the subject of vision moving, which is color, moves it only when vision is made to exist in act through the presence of light after it was in potency, so too the imagined intentions move the material intellect only when the intelligibles are made to exist in act after they were in potency. For this reason Aristotle had to posit the agent intellect […], [which] draws out these intentions from potency into act. (trans. Taylor, p. 316)[24]

We find this again further on:

> For just as sight is not moved by colors except when they are in act, which is not realized unless light is present since it is what draws them from potency into act, so too the imagined intentions do not move the material intellect except when the intelligibles are in act, because it is not actualized by there unless something else is present, namely, the intellect in act. (trans. Taylor, p. 351)[25]

Indeed,

> neither can we say that the imagined intentions are solely what move the material intellect and draw it out from potency into act. For if it were so, then there would be no difference between the universal and the individual, and then the intellect would be of the genus of the imaginative power. Hence, in view of our having asserted that the relation of the imaginative intentions to the material intellect is just as the relation of the sensibles to the senses (as Aristotle will say later), it is necessary to suppose that there is another mover which

[22] On this, see Brenet (2003, 2005, pp. 311–328).

[23] Averroes, LCDA, III, c. 4, 384–385, 47–50; cf. Id., *L'intelligence*…, 55.

[24] Averroes, LCDA, III, c. 5, 401, 405–410; cf. Id., *L'intelligence*…, 70.

[25] Averroes, LCDA, III, c. 18, 439, 66–71; cf. Id., *L'intelligence*…, 108.

> makes [the intentions] move the material intellect in act, and this is nothing but to make [the intentions] intelligible in act by separating them from matter. (trans. Taylor, pp. 350–351)[26]

We can now come back to Averroes' mention of the intellect in II, 60. He suggests that sensation basically presents a problem similar to that which, in intellection, leads us to posit the existence and intervention of an agent intellect. The relation of the sensibles to sense is indeed equivalent to the relation of images to material intellect. This analogy is well-known,[27] and allows several readings. On the basis of our understanding of thought, it means this: just as the image is not in and of itself the material intellect's mover, the sensible, outside the soul, is not sense's mover. More specifically: just as the image, because of its individuality, cannot actuate the material intellect (a universal's substrate), and is only mobile by virtue of the agent intellect, which makes it intelligible in act through abstraction, so too the sensible outside the soul cannot act upon sense (a spiritual substrate receiving intentions) because of its material mode of being, and therefore requires the intervention of a mover that would, through dematerialisation, grant it the adequate mode of being. Averroes, in other words, warns the reader of a possible misunderstanding: the idea that sensation, unlike intellection (the principle of which is "separate", "not mixed", etc.), is a psycho-somatic process that can easily be explained. Although Aristotle does not mention it, his recurrent analogy between sensing and thinking must be extended, it seems, to this issue of the object's elaboration (or pre-formation). The sensible form is not given at once either, nor is it produced by filtering a medium or being received by a power. The journey from a material extra-mental form to the specific spirituality it possesses within sense is no less problematic than what we traditionally focus on exclusively: the transfer from the image's individual spirituality to the concept's general spirituality. For a movement to lead from the *particular* intention (in the soul) to the *universal* intention (in the intellect), the movement of the *form* (worldly) to the *intention* (psychological) was needed first. Conceptualisation needs at once, i.e. as soon as sensation occurs, a kind of abstraction that transfers the real into the spiritual order, and this is what we should bear in mind as we consider a related process akin to mental abstraction.

But then, what is this extrinsic mover in sensation? Averroes does not address it at all, and his analogy, rather than clarifying the concept, actually muddles it.

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[26] Averroes, LCDA, III, c. 18, 438–439, 46–57; cf. Id., *L'intelligence*..., 107.

[27] We can find various formulations of this, sometimes serving different objects; cf. Averroes, LCDA, III, c. 5, 398, 334–338: "intentiones enim ymaginate sunt moventes intellectum, non mote. Declaratur enim quod sunt illud cuius proportio ad virtutem distinctivam rationabilem est sicut proportio sensati ad sentiens…" (cf. Taylor, 314: "The imagined intentions are what move the intellect, not what are moved. For it is explined that they are such that their relation to the discernig rational power is just as the relation of what is sensed to what senses…"; cf. Id., *L'intelligence*…, 68); cf. Id., LCDA, III, c. 30, 469, 22–23: "et quia proportio ymaginum ad intellectum materialem est sicut proportio sensibilium ad sensum…"; cf. trans. Taylor, 374: "That is, because the relation of the images to the material intellect is just as the relation of the sensibles to sense…"; *L'intelligence..,* 138); cf. Id., LCDA, III, c. 39, 506, 36–38: "Ymagines enim sunt aliqua sensibilia intellectui, et sunt ei loco sensibilium apud absentiam sensibilium"; cf. trans. Taylor, 405: "…images are certain sensibles for the intellect and exist for it in place of sensibles during the absence of sensibles…"; Id., *L'intelligence*…, 172.

Justifying the existence *in sensibus* of a *motor extrinsecum* to the sensibles in the way that we would justify an agent principle in intellect is difficult, since the latter (the intellect) is, as we saw, compared by Aristotle to the sensory act of vision. As it happens, this comparison is (at least) doubly problematic: (a) First, as an analogue to light, it is hard to determine what "activates" this mover of the intelligible that is the "agent" intellect (and, consequently, hard to establish what, in sensation, the "extrinsic mover" must "do" by itself.), (b) The analogy also gives rise to a vicious circle: the "extrinsic mover" in sense (of which Aristotle says nothing, but that, according to Averroes, we must apparently accept) is compared to the intellectual mover that the agent intellect is, but the latter, in order to be explained, is itself associated with the (extrinsic) mover that is light in the process of sensation of colours.

Let us start by going back to the famous text (430a10 *sq*.) in which Aristotle bases his representation of *an all-producing intellect*—what tradition will name "agent intellect"—on an analogy with light:

> Since <just as> in the whole on nature there is something which is matter to each kind of thing (and this is what is potentially all of them), while on the other hand there is something else which is their cause and is productive by producing them all—these being related as an art to its material—so there must also be these differences in the soul. And there is an intellect which is of this kind by becoming all things, and there is another which is so by producing all things, as a king of disposition, like light, does; for in a way light too makes colours which are potential into actual colors.[28]

Averroes, on the basis of a very altered *textus* (probably contaminated by Alexander of Aphrodisias' noetic typology),[29] returns to this analogy whenever he can, comparing the relation of the intellect to images (when they are thought) with that of light to colours (when they are seen).[30] But as noted above, this comparison the Commentator implicitely uses as a model for sensation in II, 60 is a poor clarifier of this agent intellect's action, or "motion", because of the complexity of the light paradigm.

Let us first recall that for Aristotle, light never "does" anything, strictly speaking. In *De anima*, he writes that light is neither fire nor a body generally nor the efflux from any body, "but the presence (*parousia*) of fire or something resembling fire in what is transparent".[31] Light, in other words, is the "entelechy" (419a11) of

[28] Aristotle, *De anima*, III, 5, 430a10–17; trans. Hamlyn.

[29] See indeed Averroes, LCDA, III, t. 17, 436, 1–7 (for 430a10–14): "Et quia, quemadmodum in Natura, est aliquid in unoquoque genere quod est materia (et est illud quod est illa omnia in potentia), et aliud quod est causa et agens (et hoc est illud propter quod agit quidlibet, sicut dispositio artificii apud materiam), necesse est ut in anima existant hee differentie"; and, for 430a14–17, t. 18, 437, 1–7: "Oportet igitur ut in ea sit intellectus qui est intellectus secundum quod efficitur omne, et intellectus qui est intellectus secundum quod facit ipsum intelligere omne, et intellectus secundum quod intelligit omne, quasi habitus, qui est quasi lux. Lux enim quoquo modo etiam facit colores qui sunt in potentia colores in actu". On the text's alteration, see A. de Libera's notes in his translation. The *Middle commentary* does not contain the same divergences; cf. Averroes, *Middle Commentary on Aristotle's De anima*, ed. Ivry, § 295–296, 115–116.

[30] The metaphor, serving various conceptualisations, is not always understood in the same way. On this point, see Brenet (2011).

[31] See Aristotle, *On the soul*, II, 7, 418b16–17; cf. Id., *De sens*., 3, 439a20.

the transparent as presence;[32] its "act" (418b9) "in" the transparent (418b16-17) is (only) presence.[33] Put another way, whenever fire or something ignited is present in the transparent, the latter is actuated and, we could say, there is light, which is but the transparent in act, its actuated state. Only then, Aristotle says, can colour manifest itself: each object's colour reveals itself in light, because colour, by its very nature, can only move the transparent in act.

Throughout his career, Averroes was unsure as to the meaning of this system's dynamics,[34] and precisely what role light plays in it. Indeed, what does it mean to say that a colour can only be seen in the presence of light? Does it mean that light needs to act on the very being of colour to make it visible, or only, colour being visible in itself, to act upon the transparent, to actuate it, and in doing so to make its manifestation effective? By the time he writes his *Long Commentary* on *De anima*, Averroes has decided in favor of the second solution. We can read it clearly here:

> Manifestum est quod impossibile est dicere quod lux est illud quod largitur colori habitum et formam qua fit visibilis.[35]

And:

> Et non potest aliquis dicere quod color non invenitur in actu nisi luce presente. Color enim est ultimum diaffoni terminati; lux autem non est ultimum diaffoni terminati, et ideo necessaria non est in essendo colorem, sed in essendo visibilem.[36]

And further on:

> Lux intrat in visionem secundum quod largitur diaffono preparationem ut moveatur a coloribus, non quod largitur coloribus habitum.[37]

But under these conditions, as we were saying earlier, the comparison with the agent intellect becomes unsteady.[38] While colour, on the one hand, is visible in and of

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[32] Also appears the term *hexis*, which, as we know, will return to characterize the agent intellect in *De an*. III, 5 (430a15: ὡς ἕξις τις, οἷον τὸ φῶς). See *De an*. II, 7, 418b18 *sq*.

[33] G. Rodier writes on this section that the term *parousia* "paraît donc s'appliquer à l'influence, sur un sujet, des conditions qui lui permettent de réaliser les puissances qu'il renferme", *Traité de l'âme. Commentaire par G. Rodier* (1985, p. 275).

[34] We can see in the com. II, 67 how heavily the readings of Alexander of Aphrodisias and Avempace, in very different ways, weigh on him (this is to be compared to his developments in the first treatise of his *Epitome* of *Parva Naturalia*; in his *Epitome* of *De anima, Talḫīṣ kitāb al-nafs*, ed. F. al-Ahwānī (Cairo: Maktabat al-Nahḍa al-Miṣriyya, 1950, pp. 29–34); and in his *Middle commentary* on *De anima*, ed. Ivry, 65–69). We shall elsewhere return to this point; see Gätje (1967) and Janssens (2011).

[35] Averroes, LCDA, II, c. 67, 233, 82 sq.

[36] Averroes, LCDA, II, 67, 234, 103 sq.

[37] Cf. Averroes, LCDA, II, 74, 244, 58 sq.: "et hoc demonstrat quod ipse non opinatur quod causa in essendo lucem in visione est ut faciat colores in actu, sicut quidam opinati sunt".

[38] A limit that, in truth, Averroes does not ignore; cf. LCDA, II, 67, 233, 92 sq.: "Et cum ita sit, lux non est necessaria in essendo colorem moventem in actu, nisi secundum quod dat subiecto sibi proprio receptionem motus a se. Et Aristoteles videtur quod non posuit hoc quod posuit nisi intendendo dissolutionem istius questionis. Et secundum hoc intelligendus est sermo eius quod colores movent visum in obscuro in potentia; lux enim est illud quod facit eos motivos in actu, unde assimilat lucem intelligentie agenti, et colores universalibus. Quod enim inducitur secundum exemplum et large non est simile ei quod inducitur secundum demonstrationem; *de exemplo autem non intenditur nisi manifestatio, non verificatio*" (my italics).

itself and only requires lighting for the transparent to be actuated, the image, on the other hand, is only potentially intelligible and therefore needs, in order to exist as thinkable, the agent intellect: the latter, then, is not only required as an actuator of a medium in charge of manifesting an object that is already present in act, but must first, through an act of ontological reach, intervene in the very constitution of the object that will be manifested.[39]

It then becomes difficult to understand sensation through Averroes' reference in II, 60. We cannot know what Averroes thinks this sensory mover should "do" to the sensibles, since it is unclear what the agent intellect, its implicit model, "does" to the images: the agent intellect is compared to light, which "does" nothing to, or at least does not properly speaking act upon, this object, that is, the thing's colour.The reference to light is also awkward, as we mentioned above, because of the vicious circle it induces. To put it simply, sense is being compared to the intellect, which in turn is being compared… to sense. Should we then transitively conclude that this "extrinsic mover" we are looking for in II, 60, to explain the spiritualization of sensible forms, simply is light, exterior to colours, and whose intervention conditions their reception in vision? Or rather, if light is only valid for vision, that there exists a version of it for each of the other four senses (taste, touch, hearing, smell), equivalent to this *lux*? This will be disputed by the Latins in the space Averroes' exegeses will leave open, without an answer.

Finally, let us mention that the texts from Averroes that the Latins read on this topic do not exactly overlap. The *Long Commentary* on *De anima* is itself not always homogeneous.[40] In the com. 59 (*De an.* 417b16-21), which precedes our text on the *motor extrinsecum in sensibus* (where it is surely a mature Averroes speaking), the Cordovan explains, with the use of a paradigm that will no longer be valid in his later philosophy, that the "primary perfection" of sense (*prima perfectio sensu*) is produced by (*fit ab*) the "agent intelligence" (*intelligentia agenti*).[41] This thesis is out of place in the *Long Commentary*, which only grants the agent intellect an epistemological function.[42] We can however find it in his earlier *Epitome* of

[39] Which makes the c. 18, already quoted, of book III, rather ambiguous: for instance, we read, in a comparison with the agent intellect, that *lux* is "extrahens eos [*i. e.* colors] de potentia in actum" (LCDA, III, c. 18, 439, 68). On the difficulty of harmonizing the text, see, with the editors' notes, Thomas Aquinas, *Sentencia libri de anima* (1984), II, Chap. 14 (418a27–418b19), 130, 342 *sq.*

[40] Let us not forget that the text edited by Crawford probably mixes layers of various redactions; on this problem, see Geoffroy and Sirat (2005, 2009).

[41] Cf. Averroes, LCDA, II, c. 59, 219, 7 sq.: "et prima transmutatio sentientis, que est similis transmutationi hominis de ignorantia ad scientiam per Doctorem, est transmutatio que fit per agens generans animal, non a sensibilibus. Et innuit differentiam inter primam perfectionem factam in sensu et ultimam. Opinatur enima quod prima perfectio sensus fit ab intelligentia agenti, ut declaratur in libro Animalium; secunda autem perfectio fit a sensibilibus". Cf. his third treatise (on sleep and waking) in his *Epitome* of *Parva Naturalia*, *Averrois Cordubensis Compendium Libri Aristotelis De sompno et vigilia*, ed. Shields-Blumberg, 110, 13 sq.: "Declaratum est enim quod intelligentia agens dat primas perfectiones virtutum anime particulares particularium, scilicet quinque sensus, et virtutis ymaginative. Dator enim ultimarum perfectionum in eis est res sensibilis"; ed. ar. Blumberg, 79, 13 sq. We have studied elsewhere different texts from his *Long Commentary on Metaphysics* contrary to this thesis; see Brenet (2010).

[42] On the evolution of Averroes' position on the agent intellect, see Davidson (1992, pp. 220–257). We can find several passages from the young Averroes on the agent intellect in his *Epitome* of the *Metaphysics;* see *Averroes: On Aristotle's 'Metaphysics' An Annotated Translation of the So-*

Parva Naturalia,[43] in which, unfortunately, it would be futile to try and relate it to the agent sense. In his "summary" of *De sensu et sensato*, Averroes distinguishes between several positions ("opiniones antiquorum") on the perception of sensibles ("in comprehensione sensibilium").[44] First, on the one side, (A) the Platonists (or almost), who argue that the the sensible forms are always already in act in the soul and that, properly speaking, one cannot acquire them from outside; on the other, (B) those who defend the idea that sensible forms are acquired from outside, who themselves are divided into two groups: (B1) those who see the acquisition as corporeal (*corporalis*), since the being of the sensible form does not change state (*dispositio*) when this form finds itself in the soul, and (B2), who, on the contrary, opt for a "spiritual" (*spiritualis*) acquisition.[45] This last group (B2) is comprised of those (B2a) who reject the need for a medium in this spiritual acquisition of form, and those (B2b) who defend it.

Schematically, this gives us:

A) Innate in act

Sensible forms — B1) Corporeal acquisition

B) Acquired from outside — B2a) Without intermediary

B2) Spiritual acquisition — B2b) By an intermediary

Who is right? Against the Platonists, it is the defenders of an extrinsic *acquisition* of the sensible forms; then against the defenders of a *corporeal* acquisition, it is those who opt for a *spiritual* dimension of this acquisition. It is indeed clear that the form of the thing and the *sensed* form of the thing aren't in the same *dispositio*, i.e. do not share the same mode of being: this is proven by the fact that sense is able to receive

called 'Epitome', ed. R. Arnzen (Berlin-New York: W. de Gruyter, 2010); for the Arabic text (not exactly the one translated by R. Arnzen), see Averroes, *Compendio de Metafisica*, Arabic text, trans. C. Q. Rodríguez (Madrid: Estanislo Maestre, 1919).

[43] Cf., again, his third treatise (on sleep and waking), *Epitome* of *De sompno et vigilia*, ed. Shields-Blumberg, 106, 31 sq.; ed. ar. Blumberg, 76, 14 sq.

[44] Cf. ed. Shields-Blumberg, 25, 31 sq.; ed. ar. Blumberg, 20, 5 sq.

[45] Here is the entire text: Averroes, *Epitome* of *De sensu et sensato,* ed. Shields-Blumberg, 25, 31 sq.: "Dicamus igitur quod opiniones antiquorum in comprehensione sensibilium sunt quauor, qurum una est opinio dicentium quod forme sensibilium sunt in anima et in actu, et quod non acquirit eas ab extrinseco, et quod forme extrinsece solummodo excitant et faciunt rememorari illud quod tenet ex eius. Et istud est opinio Platonis, aut fere. Secunda autem est opinio dicentium quod non est in anima aliquod sensibilium in actu, sed acquirit ea ab extrinseco. Et isti dividuntur in duo: quidam enim dicunt quod acquisitio formarum extrinsecarum est acquisitio corporalis non spiritualis, scilicet quod esse earum in anima erit secundum dispositionem secundum quam extra animam sunt. Illi autem qui dicunt quod comprehensio rerum extrinsecarum et acquisitio earum est acquisitio spiritualis sunt bipartiti. Quidam enim dicunt quod in comprehensione earum non indigent medio: dicunt enim quod anima comprehendit suum sensibile extrinsecum et movendo se ad ipsum et supponendo se illi. <…> Quidam autem dicunt quod anima recipit suum sensibile mediantibus mediis".

contrary forms or very large bodies.[46] The last alternative remains, asking whether the acquisition of sensible forms requires a *medium* or not. For Averroes, loyal to Aristotle,[47] the answer can only be positive, but it deserves to be quoted:

> Since it has been proved that this perception is spiritual, we can say to the one who denies that sense-perception is effected through a medium, that of the intentions which the soul perceives spiritually, some are universals, namely the intelligibles, and others are particulars, namely, the sensibles. And it is inevitable that these two types of intentions are perceived by the soul in either the same spiritual way, or in two different ways. If the objects were perceived in the same way, then universal and particular intentions would come about in the same way (*bi-jiḥa wāḥida*), which is absurd. Since this is so, the soul must therefore perceive universal intentions in one manner and particulars in a different manner. As for universal intentions, it will perceive them completely dissociated from matter, and therefore, in their case, the soul will not need a medium; but as for particular intentions, it will perceive them through objects that are associated with particulars, namely, the media. If this were not the case, the intentions that could be perceived would be only universals and not particulars. <…> It is therefore clear from the above discussion that the fact that these forms in the soul are spiritual particulars must be the cause that requires such perceptions to be brought into effect through a medium (*bi-tawassuṭ*).[48]

[46] Cf. Averroes, *Epitome* of *De sensu et sensato*, ed. Shields-Blumberg, 29, 15 sq. (cf. ed. ar. Blumberg, 23, 11 sq.): "sermo autem dicentium quod forme sensibilium imprimuntur in anima impressione corporali destruitur per hoc, quod anima recipit formas contrariorum insimul. Et hoc non tantum invenitur in anima sed in mediis: apparet enim quod per eandem partem aëris recipit videns contraria, album et nigrum. Et hoc etiam, quod videtur, quod maxima corpora comprehenduntur a visu per pupillam, licet sit ita parva adeo quod comprehendit medietatem sphere mundi, est signum quod non existunt colores in ea secundum existentiam corporalem, sed spiritualem". On the conceptual difficulties engendered by this conception of spiritual reception (which seems to exclude any physical alteration in th process of sensation), and on its sources (especially Ibn Bâjja), see again Black (2011). Let us quote her modified translation of Blumberg: "As for those who are of the opinion that the forms of sense-objects are imprinted upon the soul in a corporeal manner, the absurdity of their view can be shown by the fact that the soul can receive the forms of contraries (*ṣuwar al-mutaḍāddāt*) simultaneously (*maʿan*), whereas this is not possible for bodies. This will occur not only in the case of the soul, but also in the case of the media, for it is apparent that through a single part of air (*bi-juzʾin wāḥidin min al-hawāʾ*), the observer (*al-nāẓir*) can receive two contrary colours at the same time, [as] when it looks at two individual things, one of which is white and the other black. Furthermore, the fact that large bodies can be perceived by vision (*li-l-baṣari*) through the pupil of the eye, despite its being small, so that it can perceive the hemisphere of the world, is proof (*dalīl*) that colours and whatever follows upon them are not conveyed to sight materially, but rather, spiritually (*jismāniyya bal halūlān rūḥaniyya*). We say, therefore, that these senses perceive only (*innamā*) the intentions of the sensibles (*maʿānī al-maḥsūsāt*) abstracted from the matter".

[47] On the different positions of Aristotle, who himself varied, see Romeyer-Dherbey (1983), Chap. IV.

[48] Averroes, *Talḫīṣ al-ḥiss wa-l-maḥsūs*, ed. Blumberg, 24, 9 sq. (trans. Blumberg, quoted in Black 2011); cf. ed. Shields-Blumberg, 30, 29 sq.: "Et cum declaratum est hanc comprehensionem esse spiritualem, dicamus negantibus sensus comprehendere per medium quod intentiones quas anima comprehendit spiritualiter, quedam sunt universales, scilicet intelligibilia, et quedam particulares, scilicet sensibilia. Et isti duo modi intentionum aut comprehenduntur ab anima uno modo modorum spiritualium aut ambobus. Et si esset uno modo, tunc intentiones universales et particulares essent eedem, quod est impossibile. Comprehendit igitur intentiones universales uno modo et particulares alio modo. Universales autem comprehendit comprehensione non communicante cum materia omnino, et ideo non indigent medio. Particulares vero comprehendit per res convenientes rebus particularibus, scilicet per media. Et si hoc non esset, tunc intentiones comprehense essent

While this text and the *Long Commentary* on *De anima* share the thesis of the spiritual reception of the sensed forms, i.e. that of their "intentionality", they tackle different problems. In the *Epitome* of *De sensu et sensato*, it isn't the foundation, the operator or the mover of this intentionality that is dealt with, but the possibility of explaining the *individuality* of the sensed intention, thus distinguishing it from thought intention. If we are to characterize the sensed forms, it is not enough to argue that they are spiritually received in the soul, for this is also the mode under which concepts, which are universal forms, are present there. In other words, the *intentio* seized spiritually by the soul can be a sensed form ("this red") just as well as a thought form ("redness"). The fact they do not get confused is due to the *medium*.[49] The intention apprehended by the soul when it senses is not only spiritual but also *individual*, because the soul receives it through an intermediary, like air or water in the case of vision. The *medium* through which sense apprehends its object ensures the singularity of the intention it carries, while the intellect, aiming for the universal, requires no intermediary. Here was the problem, then, that for Latin readers was added to the question of the *Long Commentary*: not that of the spiritualization of the sensible form (wherein sense is like the intellect, and seems to require a mover to act on its object), but that of the singularisation of the spiritual intention (where sense is *not* like the intellect, and needs, it seems, a medium to limit the abstraction of the shape it receives).

8.2 Jean de Jandun (John of Jandun) and the Question of (the) Agent Sense

What, on the topic of the agent sense, was Averroes' heritage in what is commonly referred to as "Latin Averroism"?[50] We shall here limit ourselves to the opinion of one of sense agent's most famous defenders: John of Jandun (*Iohanes de Janduno*), "the prince of the averroists" who lived in Paris in the XVth century and died in 1328.[51]

The theme of sense agent is significant in this master's philosophical works. Besides an extended discussion in book II of his *Quaestiones de anima* (q.16),[52] he

universales, non particulares. <…> Manifestum est igitur ex homc seromine quod propter hoc, quod ista sunt in anima spiritualia particularia, ideo comprehensio est per medium".

[49] This issue is all the more problematic since the material intellect is not a separate substance.

[50] On this already discussed notion, that we use here for simplicity, see the introduction to Brenet (2003).

[51] On John of Jandun, see Weijers (2003, pp. 87–104). For a general study of his psychology/noetics, see Brenet (2003). On the question of agent sense, see MacClintock (1956), and the more complete presentation of Pattin (1988).

[52] Cf. *Ioannis de Ianduno philosophi acutissimi super libros Aristotelis de anima subtilissimae quaestiones* (below: QDA) (Venice, 1587; Minerva: Frankfurt a. M., 1966), II, q. 16, col. 129 sq.: "an praeter rei sensibilis speciem in sensu receptam, praeterquam sensum, qui subiectum sensationis est, sit aliqua virtus sensationis actiua, seu sensus agens". This text it to be ralted to a short es-

dedicated to it at least two treatises[53] that bear testimony to a strong disagreement with his colleague Bartholomaeus of Bruges,[54] as well as an anonymous *socius* that, although uncharacteristic, also descends from Averroes.[55] These texts are of remarkable interest. By the beginning of the XIVth century, the history of the agent sense is already long: its main options have been extracted, its arguments repeated and refined, but, on the basis of a meticulous exegesis of Averroes, John of Jandun offers a new reading.

His position is systematic and he presents it as a lesser analogue to the one he defends for intellection.[56] It is strongly influenced by Duns Scotus,[57] albeit implicitly, and uses several principles of his doctrine that we shall restate only briefly: first, the idea that the soul is not moved by the body in an absolute way;[58] secondly, that in every cognitive process, we must differentiate between the reception of the species and the act of cognition (which actuates the *species* by effectuating its representative dimension); and thirdly, that amongst the kinds of cause are the preparatory or dispositive (*disponens*) cause and the completing or perfecting (*perficiens*) cause, both interconnected.[59]

John of Jandun's thought follows this reasoning: the image is necessary and produces by itself an intelligible *species* by acting upon the material intellect;[60] but this passion is not the end of the intellectual process since the soul, then, triggers the immanent act of *intellection* that is its own. Indeed, the reception of the intelligible species in the intellect is not equal to the act of thinking—it only constitutes its preparatory cause. What completes the intellective process is the act of the agent intellect that abstracts the already intelligible species present in the material intellect, i.e. activates the dimension in which it is representative of a universal. To

say: *Quaestio de sensu agente*, ed. A. Pattin (from the manuscript *Vat. lat.*, 6768, fo 218ra–221vb), in Pattin (1988, pp. 223–234).

[53] The *Sophisma de sensu agente*, ed. A. Pattin (from the manuscripts in Paris, Bibl. nat. lat., 16089, fo 160ra–166r et Osimo, *Collegio Campana*, 39 [=18 L 38]), in Pattin (1988, pp. 118–165); and the *Tractatus de sensu agente*, ed. A. Pattin (from the manuscript Osimo given above), in Pattin (1988, pp. 166–222).

[54] The *De sensu agente* from Bartholomaeus, against the existence of an agent sense, is edited by Pattin (1988, pp. 46–94).

[55] The text (manuscript Paris, *Bibl. nat*., lat., 16089, f. 167ra–170ra) is edited by Pattin in (1988, pp. 332–335). Pattin identifies "Thomas de Wilton" (sic) as its origin. We have contested this attribution in Brenet (2009, pp. 336–339). (According to us, it could be Maino of Milan, whose edition of *Quaestiones de anima* the author is currently preparing, with I. Costa). The *socius*, critical of Batholomaeus as much as of Jandun (who will answer it…), clarifies, in the exegesis: "et haec est intentio exposita conveniens sermonibus Aristotelis et Averrois ubicumque", 349, 28–29).

[56] For the elements analogue to intellection, see Brenet (2003, pp. 165–167, 179, 278–279).

[57] This influence is also strong on this contemporary of John of Jandun, whom he copies over and over: Thomas Wylton; see Brenet (2013).

[58] This is why "augustinism" was used to refer to John of Jandun.

[59] On this, see Brenet (2003, pp. 278–283).

[60] This basically relocates the level of intervention of the agent intellect.

think is therefore not to be moved by an image, nor an intelligible species, but to "activate" such a species after receiving it by displaying the intelligible of which it is *intentio*.[61] An agent intellect is needed, then, to think, but its intervention is not on the image's level, its abstraction does not consist of stripping the phantasm of its specific characteristics; it "acts" on the already universalized species by actualizing its signifying potency.

The same is true for sense. It is clear an "agent sense" is needed—but John of Jandun warns of a possible misunderstanding: the agent sense, to him, is not a sense that would act upon the sensibles outside the soul and abstract their intentions, i.e. the species that can affect the medium and then the organs of sense. This, he says, would be absurd. The agent sense has no role in the birth of the *intentional* object likely to move sense. On the contrary, it acts at a later stage that *assumes* the production of this species and its reception within sense.[62] A cognitive process is indeed composed of two stages: the first one, passive, is the reception of an object's *intentio*, which prepares the faculty of knowing;[63] the second one, active, is the effectuation of the very act of knowing on the basis of what the *intentio* represents. Only in this second and last stage does the agent sense operate. Its action is therefore not to produce the *species* of an object (to sense, then, would only be to endure a particular species), but to activate sensation, i.e. the act of sensing, on the basis of the previously received species.[64] Therefore, there is this definition: "per sensum

[61] See John of Jandun, QDA II, 16, col. 136.

[62] The problem is not to explain the production of the species: this happens on its own, so to speak; the difficulty, once the species is produced, is to explain its activation, i.e. the arrival of knowledge. The sensible, in other words, is capable of producing its species, but not the knowledge of what it is; it can offer what intentionally represents it, but not operate what, effectively, makes it known. cf. Pattin (1988), 164, 6 sq.: "nec videtur valere quod communiter dicitur, exponendo quod phantasmata non sunt sufficienter proportionata intellectui ut povenant ipsum, et ideo oportet esse alium motorem. Sed sensibilia sunt sufficienter proportionata sensui ut agant in ipsum suas similitudines in quantum sensus coniunctus est organo immutabili ab ipsis sensibilibus. Sed quod sint sufficienter proportionata sensui ut efficient per seipsam cognitionem sensitivam, non video" But then, what causes the *species*? See ibid., p. 225, 88 sq.: "Sed tu dices quid est causans hanc speciem intentionalem in medio et in sensu? Respondeo quod est ipsum sensibile extrinsecum. Sed sensibile extrinsecum, ut color et sic de aliis, dupliciter potest accipi: uno modo ut facit unum cum materiali corpore in quo est, et sic non causat speciem immaterialem vel in medio vel in sensu cum ut sic sit forma materialis. Alio modo potest accipi color ut est divisibile essentiae et negatur ab essentia et natura materialis corporis et quia, ut sic, corporalem materiam non includit, ideo potest hoc modo causare speciem imaterialem et intentioalem in medio et in sensu. Ex quibus verbis apparet quid est illud agens quod causat formam intentionalem in medio vel sensu".

[63] We must make no mistake on the type of causality exercised by the sensible in sensation. Clearly, no sensation without sensible! But the sensible is required only as a *sine qua non* cause offering sense to the effectuation of its act: cf. Pattin (1988), 191, 63 sq.: "quamvis non sentiamus sensibus exterioribus sine praesentia sensibilium exteriorum, tamen non sequitur ex hoc quod sensibilia agunt sensationem nisi sicut agens dispositivum".

[64] Cf. Pattin (1988), 128, 98 sq.: "dicimus quod in anima sensitiva necesse est esse sensum agentem, sed non sic intelligimus quod ipse sensus agens protendatur vel egrediatur ad sensibilia ita quod ipse vel actio eius recipiatur in aliquo exteriori ab ipso sentiente et quod eo mediante vel actione eius ipsum sensibile suam speciem generet in medi et in organo. Hanc enim positionem sufficienter improba <n> t rationes philosophicae et inferius improbabitur. Sed ponemus sensum agentem principium effectivum immediatum sensationis quae recipitur in sensu passivo disposito

enim agentem intelligimus virtutem animae, quae immediate efficit sensationem in sensu passivo disposito per speciem a sensibili sibi impressam".[65] Thus the "active" or "agent" sense does not act upon the sensible. Or rather: it does not act upon it insofar as this sensible possesses an *esse reale*, i.e. as a corporeal reality, but only insofar as it already wears an *esse spirituale*, i.e. as *species* in sense.[66] The action of *sensus activus* is then not a spiritualization of the real sensible, but the "sensation" of the spiritual sensible, i.e. the cognitive effectuation of its representative dimension.[67] Once again: the act of sensing is different from the passion of the species since it is the soul's role, *via* the *sensus agens*, to rule over its effectuation. "Sentire accidit *in* quodam pati", writes Aristotle: sensation happens in a state of passivity, it follows it, but it *is not* this passivity itself:[68] it is added to it, completes it. A passion occurs to which the soul's act happens, thus granting this soul the status of "active cause" *per se*, removing it from the base accidentality of the things we sense.[69]

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per speciem rei sensibilis ei impressam a sensibili, et imaginatur per hunc modum quod sicut corpus luminosum praesens diaphano generat in ipso lumen quo disponitur ipsum diaphanum ad suceptionem intentionis coloris, sicut sensibile quocumque praesens ipsi sensui proprio agit in ipso suam speciem qua disponitur vis sensitiva ad receptionem sensationis a sensu activo et sicut color praesens aeri non generaret in istis diaphanis suam speciem nisi esset actu illuminata ut patet secundo De anima, sic sensus non produceret sensationem in sensu passivo nisi ipse sensus passivus esset informatus specie sensibili".

[65] Cf. Pattin (1988), 152, 43 sq.; if the adversaries, then, understand it in this way, it is perfect; see ibid., 151, 34 sq.: "quid igitur primo dicunt per nomen sensus agentis intelligi: virtutem animae quae facit sensibilia extra animam quae sunt potentia intentiones, actu intentiones? Si ipsi intelligunt per intentiones quas efficit sensus agens ipsas sensationes sensibilium quae sunt in sensibus in potentia pro tanto quia ipsa sensibilia non habent perfectam virtutem efficiendi huiusmodi sensationes, sed solum habent virtutem disponendi sensum passivum ad susceptionem ipsarum sensationum, ut prius visum fuit, sic bene capiunt sensum agentem".

[66] See John of Jandun, QDA II, 16, col. 139; cf. Pattin (1988), 143, 82 sq.: "et cum dicitur quod sensus agens non agit in sensibile nec e contrario, dicemus quod sensus agens non agit in sensibile secundum esse quod habet extra animam, ita quod actio eius recipiatur in sensibili extra animam existente, sed agit in sensibile secundum esse quod habet in anima, scilicet in quantum agit in speciem eius receptam in sensus, non tamquam in principali receptivo suae actionis, sed tamquam in immediata dispositione ad suam actionem recipiendam, sicut si diceremus quod color immutans medium illuminatum agit in lumen, non tamquam principale receptivum suae actionis, sed tamquam in praeparationem diaphani ad recipiendum intentionem coloris".

[67] Sensation is redefined: to sense is not to receive the species, but to produce sensation. Cf. Pattin (1988, pp. 148, 39): "sentire, id est efficere sensationem".

[68] On the topic of sensation, analogue to thought, cf. John of Jandun, *QDA* II, 14, col. 124: "Et multum notandus est modus loquendi Aristotelis. Dicit enim quod sentire accidit in quodam pati et moueri, quod sine dubio verum est. Non enim sentire est formaliter et essentialiter ipsum pati et moueri a sensibili". Cf. aussi *QDA* II, 31, col. 199: "Item illud est plane contra Commentatorem in isto 2 capitulo de sensu communi, ubi dicit, quod recipere colorem est aliud a iudicare colorem, et iudicare est ipsum cognoscere: quare etc. Et hoc est contra Aristotelem qui dicit, sentire accidit in quodam pati…". I know a color when I judge it, once its form is received. To know is therefore an *action* that we realize *at a second stage*.

[69] Cf., about sensation: "Nec est dicendum quod ipsa anima sit causa agens ipsum sentire per speciem rei sensibilis solum, quia, cum species rei sensibilis sit accidens aduentitium et separabile, ut manifestum est, sequeretur quod anima non esset actiua ipsius sentire nisi pure et omnino per accidens, quod est absurdum et omnino contra Aristoteles […]. Est ergo intentio plane quod anima est per se causa actiua ipsius sentire". (John of Jandun, *QDA* II, 14, col. 123). But it can only be

This is a far step from Averroes, although John repeatedly quotes him. The "averroist" doctrine of the agent sense that Jandun develops is not a repetition but an interpretation of the Commentator. Nevertheless, despite the differences, something striking appears, on which we shall finish: it concerns the theoretical implications of such a problematic. With Averroes, it is clear that the theory of the agent intellect is not only useful to explain the production of the intelligible on the basis of the image. It also, and more fundamentally, justifies the autonomy of the thinking being. The agent intellect is my form—perhaps not right away, nor entirely, but as soon as my thinking life starts, and more and more so. But then, since it is my form, I can think however I want to, and I am my thought's agent: we can think whenever we want to and are relatively independent not only because the images are within the soul, intrinsically; but, more radically, because it is through the agent intellect, inside us, that we can universalize the image. We must bear this in mind when considering the possible ramifications of the doctrine of sense as a "motor" analogue to the agent intellect: not only the explanation of the sensible's spiritualisation (in the way that the agent intellect explains the image's universalisation), but the foundation, even in sensation, of an autonomy of the human agent, advancing towards his being with every cognitive act.[70]

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so thanks to a *sensus agens*. For a strictly parallel response on intellection, cf. Jean de Jandun, *QDA* III, 23, col. 339 ("intelligere nostrum dependet ab aliquo principio per se actiuo immediato") and col. 341 ("necesse est esse intellectum agentem, quod sic probo, quia, si non esset intellectus agens, sequeretur quod intelligere non esset ab aliquo principio actiuo immediato et per se").

[70] I am grateful to R. C. Taylor for his revision of the English text.

ica; for the Latin, *Compendia librorum Aristotelis qui Parva naturalia vocantur*, A. L. Shields & H. Blumberg (Eds.). Cambridge (Mass.): The Medieval Academy of America, 1949; English trans. from the original Arabic and the Hebrew and Latin versions H. Blumberg, *Epitome of Parva naturalia*. Cambridge (Mass.): The Medieval Academy of America, 1961.

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Chapter 9
Active Perception from Nicholas of Cusa to Thomas Hobbes

Cees Leijenhorst

9.1 Introduction

This chapter gives an overview of the various ways in which philosophers in the Renaissance and early modern period dealt with the question of to what extent sense perception is an active mental process.[1] In this period, the vast majority of philosophers still defended the Aristotelian position that—at least to an important extent—"sensation consists in being moved and acted upon".[2] In order for us to perceive, we need sensory input generated by external objects. This means that at least in its initial stages, sense perception requires a receptive or passive mode on the part of the perceiver. However, most philosophers in this period were also convinced that this is indeed a necessary, but not a sufficient condition. In order to account for all relevant aspects of sense perception, we have to assume that the external stimuli are met by an internal response. In other words, we have to accept that the sensory input is processed by us.

Now, this is the point where the consensus ended and the debates started. This chapter tries to reconstruct these debates, focusing on the question to what extent and in what ways sense perception is an active process. This main question can in fact be subdivided into two sets of further questions. First, the way in which philosophers conceptualized sense perception as an active process depended on what they saw as the nature and the causal efficacy of sensory input. Should we think of sensory input in terms of sensible species or perhaps just motion? Can the external objects be causally efficacious with respect to the soul, or are they dependent on another agent? If so, what is the nature of this agent? Second, the way in which a philosopher thought of sense perception as an active process depended on his view

[1] This chapter is partially based on Leijenhorst (2002, 2004, 2007).

[2] Aristotle, *De Anima* II, 5, 416 b 33.

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of the processing of the sensory input. What are the mechanisms involved in the processing of external stimuli? What agent does the processing?

In order to get a grip on the overwhelming amount of relevant material in this period, this chapter will not only focus on the above-mentioned set of questions. It will also limit itself to four different groups of philosophers. Though this subdivision is obviously not exhaustive, it nevertheless tries to capture how at least the most important schools or groups of philosophers determined the question regarding the activity of sense perception. The first group is formed by secular philosophers on the one hand and theologians on the other, both groups working within the Aristotelian tradition. More in particular, we will take a close look at the aftermath of the discussion on agent sense that was started by Jean of Jandun[3]

The second group consists of Girolamo Fracastoro (1470–1553) and Bernardino Telesio (1509–1588). They represent a tradition that is usually referred to as "Italian Naturalism". These philosophers tried to understand nature "according to its own immanent principles" (*iuxta propria principia*), while rejecting transcendent explanatory devices. They took a largely anti-Aristotelian stance, fuelled by rival traditions such as Epicureanism and Stoicism. Inspired by the medical tradition, they developed a programme that explained mental phenomena in terms of material changes within the corporeal *spiritus* (spirit), instead of in terms of the activity of the incorporeal *anima* (soul). We will investigate to what extent these naturalist models left room for active sense perception.

The third group is formed by two representatives of the Neoplatonist tradition, namely Nicholas of Cusa (1401–1464) and Marsilio Ficino (1433–1499). While the Naturalists came very close to reducing all cognition to sense perception, these authors downplayed the role of sense perception in the cognitive process. We will study how, in their accounts, this minimal cognitive role of sense perception affected its active character.

Finally, we will treat two early modern philosophers, namely René Descartes (1596–1650) and Thomas Hobbes (1588–1679). Though they engaged in bitter disputes, these two philosophers were united by their common rejection of the Aristotelian tradition, most notably its theory of sense perception in terms of the reception of sensible species. To what extent did their anti-Aristotelianism lead to a different view of the activity of sense perception? This will be the main question of the final section of this chapter.

9.2 The Aftermath of the Debate on Agent Sense

As said, most scholastic philosophers subscribed to Aristotle's description of sense perception as a process in which the soul passively undergoes the action generated by the object. Nevertheless, they also raised various difficulties that made it seem difficult, if not impossible, to accept the *overall* passivity of sense perception, rather

[3] See the chapter by J.B. Brenet in this book. See also Pattin (1988).

than conceptualizing it as just an initial phase of reception of sensory input. The first worry was of an empirical nature and has to do with the phenomenon of selective attention: if I am too absorbed by the nice book I am reading, I may not hear the phone ringing. Now, we have to assume that the sensory input produced by the phone does enter my sensory system. But if we do not attend to the stimuli produced by the objects, we will not actually perceive them. Put in scholastic terms, sense perception seems to require more than just the passive reception of the sensible species emitted by the object. It also involves an active awareness or attention.[4]

The second worry was of a metaphysical nature. Most scholastics would stick to the metaphysical principle that a being of a higher ontological rank cannot be causally affected by a being that has a lower ontological standing. This principle generated two serious problems with respect to sense perception. First, most scholastics would hold that the sensible species emitted by the material objects are forms *in actu*, whereas in the object itself this form is only *in potentia*. In other words, the so-called intentional species seem to have a higher degree of spirituality than the substantial forms that are an intrinsic part of matter-form compounds. But how, then, can the material object produce species in the first place? How can a material entity produce something of a higher spiritual nature than itself? Second, regardless of the exact ontological status of the species, the spiritual soul seems in any case of a higher ontological rank. Again, this implies that the soul cannot be causally affected by the sensible species. Augustine had indeed stated that the spirituality of the immaterial soul prevented it from being directly affected by the material world, a statement that haunted all subsequent scholastic discussions of sense perception.[5] But if Augustine is right, does not that mean that the soul is unable to receive the sensible species emitted by the object?

These two questions led to the late medieval debate about agent sense, that was sparked off by Jean of Jandun (±1285–1328). Following a suggestion made by Averroes, Jandun claimed that since the sensible species were indeed of a lower ontological rank than the soul, they could not be the immediate cause of sense perception. In order to bridge the gap between the material world and the immaterial soul, he postulated a separate agent sense, besides the normal passive sense. This agent sense fulfilled the function of "spiritualizing" the sensible species in order to render them compatible with the incorporeal soul's spiritual nature.[6]

Jandun's suggestions started a debate that lasted well into the Renaissance, where our story begins. In this section we will investigate two pairs of philosophers. First, we will study the account of the Dominican Thomas de Vio, the later Cardinal Cajetan (1468–1534) and the critique on his doctrine of sense perception by Francisco Suarez (1548–1617), one of the best-known members of the *Societas Jesu*. Suarez was a prominent professor of philosophy at the Collegio Romano and other prestigious institutions of the Order, and author of the *Disputationes Metaphysicae*,

[4] On medieval accounts of selective attention, see Pasnau (1997, pp. 125–158). On later discussions, see Leijenhorst (2004).

[5] See Pattin (1988), vi, and the chapter by José Filipe Silva in this book.

[6] See Jandun's *Tractatus de sensu agente*, in Pattin (1988, p. 167).

probably the most widely read late scholastic manual of metaphysics. Then we will go into the treatise *De sensu agente* by the Averroist Agostino Nifo (1469/70–1538) and the rejection of his views by Jacopo Zabarella (1533–1589), one of Padua University's most famous philosophers.

Our first author is the Dominican Thomas de Vio, the later Cardinal Cajetan (1468–1534). Cajetan held a number of high offices within his order before rising to cardinalhood and also was a professor of philosophy and theology at the universities of Padua, Pavia and Milan and at Rome's Sapienza. In 1510 appeared his *Commentary on Aristotle's De Anima* in Florence, based on his previous teaching. Despite his somewhat controversial role in the Pomponazzi affair, Cajetan was a highly influential thinker, especially through his commentaries on Aquinas' *Summa* and his theological works. These proved to be a vital link between medieval scholasticism and the *Second Scholasticism* of the Counter-Reformation.

Given the two general questions outlined above, we shall first concentrate on Cajetan's views on the production of the sensible species, before considering his account of the way in which the soul processes sensory information.

Cajetan starts off by rejecting the Averroist view that we mentioned before, namely that since the lower cannot produce the higher, the material object cannot be the cause of its immaterial species. Therefore, the species will have to be produced by some other, higher agent. According to Cajetan, this argument is not only in conflict with Aristotle, but also with "the truth".[7] Having thus dispensed with Averroes, Cajetan concludes that in fact, the sensible object is the cause of its own species, but not insofar as it is a material object, but insofar as it participates in the separate substances, i.e. the heavenly intelligences.[8] In other words, the "lower", material object can produce its own "higher" or spiritual species, but only because it shares in the spirituality of higher substances.

Having seen how Cajetan deals with the production of the species by the material object, let us now turn to his account of the action of the sensible object on the soul.[9] Again, Cajetan starts by appealing to the problems surrounding upward causality. He warns against confounding the action of the sensible object with any physical interaction between natural bodies, such as the heating of water. Given the higher status of the soul, sensible cognition can never have the same level of passivity as the water that is heated by the fire.[10] Rejecting any form of innatism, Cajetan admits that for the soul to become one with the sensible object in a cognitive act, it has to undergo the action by the object and its sensible species. Nevertheless, sensation is more than just the passive reception of the sensible species. It requires an active awareness of this reception. If the soul does not actively attend to the species coming from the object, the object is not perceived by us. Given the nobility of the soul

[7] Cajetan (1510), Book 2, Chap. 11, § 266, p. 253.

[8] Ibid. Book 2, Chap. 11, § 267, pp. 253–254.

[9] For a good summary of Cajetan's position on this issue, see Simon (1933, pp. 229–252).

[10] Cajetan, *Commentaria in De Anima Aristotelis*, Book 2, Chap. 11, § 281, p. 263.

with respect to sensible objects, this awareness can never be caused by the objects themselves, but requires an activity by the sensitive soul itself.[11]

Cajetan's account is rather succinct, but other passages luckily give more information. Cajetan holds that in any form of cognition, the reception of the form is a "specification of the proper activity of the knower himself".[12] What exactly is this specification, and how does this activity combine with the soul's passivity in receiving the species emitted by the object? Cajetan answers these questions in another passage of his Commentary on Aquinas' *Prima Pars*, which deals with the question of the agent intellect but also has some interesting things to say about sense perception.[13] According to Cajetan every cognitive act presupposes that the knower becomes intentionally one with the known object. This becoming one is a matter of the knower identifying himself with the action that the known object exerts on the soul. This intentional self-transformation is an activity, for it is indeed a *self*-transformation—and at the same time a passivity—the soul is transformed into the known object that specifies the soul's vital activity. Hence follows Cajetan's final definition of both intellection and sense perception as "an active and passive vital operation of the soul".[14]

Cajetan's position was heavily criticized by Suarez in his *Commentarii una cum Quaestionibus in Libros Aristotelis De Anima*, the first edition of which appeared after his death.[15] In this case too, we shall first investigate the question of whether the object alone can be the cause of its species. Then, we will turn to the question of whether the sensible object can directly produce sensible knowledge in the soul. To begin with the first question, the third book of Suarez' commentary carries a separate *quaestio* "utrum ad productionem specierum sensibilium oporteat ponere sensum agentem" ("whether it is necessary to posit the existence of agent sense for the production of sensible species?"). This *quaestio* is actually largely a devastating critique of Cajetan, whose opinion Suarez calls "very difficult". According to Suarez, the sensible objects are perfectly able to produce the species themselves, so there is no need for any *higher* agent, neither an external agent such as the separate substances nor an internal agent sense. In this context, Suarez attacks the underlying assumption of Jandun's and Cajetan's views, namely that the species are of a higher ontological status than the object that emits them. Suarez, on the contrary, thinks that the species have a diminished being: they are mere "traces" (*vestigia*) of the sensible objects.[16]

[11] Ibid. Book 2, Chap. 11, § 281, pp. 264–265.

[12] Cajetan, *Commentaria in De Anima Aristotelis*, vol. 4, Question 14, Article 1, p. 168.

[13] Ibid., vol. 4, Question 79, Article 2, p. 263.

[14] Ibid.

[15] The *De Anima* commentary originated in Suarez' teaching at the University of Segovia between 1571 and 1574. He started rewriting the work shortly before his death, which interrupted its composition (only the first twelve chapters were ready). His pupil Alvarez reorganized and published the book in Lyons in 1621. There are significant differences between the original publication and the critical edition (Suarez 1978). Here, we use the Vivès edition of 1856, which reprints the Alvarez edition, since that is the one that was historically received (Suarez 1856).

[16] Suarez, *De Anima*, vol. 3, Book 3, Chap. 9, p. 647.

As for the second question, namely to what extent the processing of the sensory input is an active process, Suarez states that sense perception, like all other forms of cognition, is a perfect quality in the sense that its production does not involve the destruction of a contrary quality, such as in the case of heat, for example, where the cold is destroyed. Cognition is an immanent exercise of the cognitive powers of the soul. Now, given the principle that the lower cannot produce the higher, this "perfect quality" cannot be produced by something imperfect, such as the material *phantasma* in the case of intellectual cognition and the sensible species in the case of sense perception. Hence, the species cannot be the sole active cause of our knowledge.[17]

In fact, Suarez phrases his opinion on this matter again as a critique of Cajetan, whose views he seriously misrepresents here, According to Suarez, Cajetan had held that the species alone cause the act of sense perception. Suarez' first objection against this opinion invokes the phenomenon of selective attention: if the soul does not attend to the species it receives, no act of sense perception will follow. Hence, sense perception requires a proper activity of the soul.[18] Second, if, as Cajetan maintains, the soul "drinks in" (*imbibit*) the known object, transforming itself into it, one would rather think that it is the soul that plays the active part and not the species, as Cajetan claims (at least according to Suarez).[19]

Suarez' own answer to the question to what extent the soul is active in sense perception is based on a model provided by Scotus. In Suarez' view, Scotus had stated that the act of cognition is produced by two concurring causes, namely the species and the powers of the soul.[20] Following this model, Suarez states that the cognitive power of the soul and the species team up as two partial causes that form one total or integral cause. In other words, the species are not the direct or immediate cause of the act of cognition but depend on the joint effort of the cognitive power of the soul itself.[21]

One of the staunchest defenders of the Averroism in the Renaissance was Agostino Nifo, who wrote a separate treatise on agent sense in 1497, thirteen years before Cajetan's *Commentary on De Anima* came out. Nifo states that the purpose of his *De Sensu Agente* is to refute the doctrine of Jean of Jandun, whose authority according to Nifo is so great that one is considered an Averroist only if one follows Jandun himself.[22] In this sense, Nifo's treatise may be seen as an attempt to restore what he feels to be the original Averroist position, free from the distortions brought about by Jandun and his followers.

Nifo does not make a distinction between the two above-mentioned questions, namely that concerning the production of the species and the one concerning the reception of the species by the soul. The way he formulates the problem is as follows:

[17] Ibid., vol. 3, Book 3, Chap. 4, p. 627.

[18] Ibid., vol. 3, Book 3, Chap. 4, pp. 627–628.

[19] Ibid., vol. 3, Book 3, Chap. 4, p. 628.

[20] Ibid.

[21] Ibid., vol. 3, Book 3, Chap. 4, p. 630.

[22] Mahoney (1971, p. 123).

the sensibles in the soul have a spiritual being, which the sensibles in external reality have not. Now, given that the lower cannot causally affect the higher, how is this possible? Nifo is thus not so much concerned with the problem of how the soul as a higher entity could be passively undergoing the actions of lower agents such as the material object and the species. His focus is much more on the opposition between the soul which contains the sensible forms in act versus the material objects which only contain the forms in potency. Now, as we have seen, Jandun had thought that the agent sense is responsible for lifting up the sensible content coming from the material objects to the level of spiritual being. Agent sense actively endows the sensibles with the degree of spirituality that befits the soul.

Nifo points to the numerous contradictions and paradoxes to which this doctrine is subject. What is more interesting for our purposes is the doctrine he proposes as an alternative.[23] Interestingly enough, Nifo to a certain extent agrees with Jandun that material objects, *qua* lower beings, cannot produce the sensibles in the soul, which are of a more spiritual and higher nature. This means that another, higher, agent has to step in to endow the sensibles with the proper degree of spirituality. Thus, both Nifo and Jandun follow Averroes' suggestion that a higher agent is involved in the act of sensation, but they have different views on the nature of this higher agent. Unlike Jandun, Nifo thinks that this agent should external, not internal. Material objects cannot produce sensation on their own, but need divine intervention by the first and principal cause, the mover of the heavens, namely God. Only He can bestow the degree of spirituality on the species that is lacking in material objects themselves.[24] In Nifo's account, the combined action of the sensible species and God produces the act of sense perception. Most of Nifo's critics therefore draw the conclusion that according to Nifo the soul is passive with respect to sense perception.

One of Nifo's harshest critics was Zabarella.[25] According to Zabarella, Nifo misconstrues the causal relation between God as primary cause and secondary causes such as trees and other sensible objects.[26] God creates the nature of the tree, but is not causally responsible for its operation. Once the tree is created, it can happily emit species on its own, without support from God. Interestingly, he backs up this argument by making the same kind of move as Suarez, namely by lowering the ontological status of the species. Zabarella qualifies the species as "tenuous entities" that have a "lesser being" (*minor entitas*) than the material object. In that sense, their spirituality is in no way comparable to that of God and the separate substances. Consequently, no higher agent is needed to "spiritualize" the species.[27]

What does this mean for the sensory act? According to Zabarella sense perception involves more than just the passive reception of sensible species by the soul. It clearly also requires what Zabarella calls *iudicatio*, an active assent by the soul to

[23] Ibid., pp. 129–130.

[24] Ibid., p. 131.

[25] On Zabarella's doctrine of sense perception, see South (2002).

[26] Zabarella (1966, Chap. 3, p. 834).

[27] Ibid., Chap. 3, p. 841.

the incoming sensory information. It is this *iudicatio* that really constitutes sense perception. The reception of incoming sensible species is a necessary but not a sufficient condition for sense perception to take place.[28] It is not altogether clear what Zabarella means by the term "judgement", but in any case it seems to comprise a kind of first-order awareness. The reception of the species appears to take place at a sub-conscious level, whereas sensory judgement is the soul's active awareness of the perceived colour, sound or other sensible quality.

In fact, Zabarella invokes the phenomenon of selective attention as empirical proof for his thesis that sense perception involves more than just the passive reception of sensible species by the soul.[29] Now, how exactly does this sensory judgement come about, and how does it explain the phenomenon of selective attention? To judge means, according to Zabarella, to "drink in" (*imbibere*) the species which are received from the object. The soul transforms itself into the object in a spiritual way; it "becomes" (*fieri*) the object *spiritualiter*. Zabarella states that when the soul has judged a sense object, and hence has become that object, it cannot simultaneously become something else.[30] Take the example of not seeing an object right before us, because we are attentively listening to a beautiful piece of music: we have not only received the audible species sent out by the musicians, but we are also judging them. That is to say, the soul has "drunk in" the species, and through these species has become one with the piece of music in question. Having become one with the music excludes simultaneously becoming one with the object right before our eyes, despite the fact that it is insistently emitting its species. Paying attention to the music thus precludes paying attention to the visible object right before us.

In this fashion, Zabarella uses the phenomenon of selective attention and distraction in order to argue that sense perception involves more than the passive reception of species by the sense organs. According to him, the whole process of sense perception comprises three different elements: first, the reception of the species by the sense organ which is animated by the soul; second, the soul which has received the species judges the species in the afore-mentioned fashion; and third, this judgement is being received again by the animated sense organ. The soul is passive in the first and the third stages, while it is active and, so to speak, on its own in the second stage. The first stage may precede the second and third ones in time. The second one only logically precedes the third one, whereas in reality these two processes occur simultaneously.[31]

The upshot of this theory is that the psychological side of sense perception (awareness and judgement) and the "input"—or what we could call the physiological side of sense perception—are very closely intertwined. Zabarella affirms that it is the same soul which passively undergoes the action of the objects through their species and which actively processes the incoming information through sensory

[28] Ibid., Chap. 9, p. 851.

[29] Ibid., Chap. 9, p. 852.

[30] Ibid., Chapter 10, p. 854.

[31] Ibid., Chap. 10, pp. 854–855.

judgement. Though the phenomenon of selective attention illustrates that the "input" of sensory information and sensory awareness are two different factors in the process of sense perception, these two processes do not take place at two completely different epistemological and ontological levels, but are different functions which are performed by one and the same soul. Hence, according to Zabarella, there is no need for a separate agent sense: one and the same soul performs both the active and the passive roles in sense perception.[32] In this way, Zabarella stresses the activity of the soul in sense perception, while at the same time retaining the causal role of the sensible species that need to mediate between the sensory objects and us. Zabarella thus avoids the Neoplatonist position that underlines the soul's activity in sense perception at the expense of the causal role of the sensible species. In the next section we will discuss two representatives of Renaissance Neoplatonism, namely Marsilio Ficino and Nicholas of Cusa.

9.3 The Neoplatonists

Marsilio Ficino (1433–1499) translated the *Corpus Hermeticum* and Plato's *Opera Omnia.*[33] His book on the immortality of the soul, the *Theologia Platonica* dominated Platonist philosophy well into the nineteenth century. Through Ficino was generally very critical of Aristotelianism, more in particular of Aristotelian conceptions of the soul and its operations, he shares an important principle with the Aristotelians we just discussed. Ficino is also convinced that a higher entity cannot be causally affected by a lower entity. According to Ficino this implies that the soul can move and steer the body, but that the body can never have a direct impact on the soul.[34]

Now, as we have seen with respect to sense perception, this higher agency principle led some of the Aristotelian we just discussed to the assumption of a higher agent (God, the Celestial Intelligences or the agent sense) that had the task of "spiritualizing" the sensible species. Inspired by his Neoplatonist metaphysics, Ficino took a different path. He placed an intermediate layer between the incorporeal soul and the body, namely the spirit (*spiritus*). Ficino described the spirit as a "warm living vapour which is in a sense the knot of the soul and the body".[35]

The spirit undergoes the action by the sensible objects, which imprint their colours, sounds and other qualities on it. Thus, the first phase in sense perception is the stirring of the spirit. However, this process does not yet constitute the full sensory act. For Ficino thinks that sense perception is not a passive mode of the spirit but an activity of the incorporeal soul. If the soul attends to the effect that objects have on the spirit, it subsequently shifts its attention to its corresponding innate ideas

[32] Ibid., Chap. 9, p. 851.

[33] On Ficino, see Allen and Rees (2002).

[34] Ficino (1964, vol. 2, Book 9, Chap. 5, p. 30).

[35] Ibid. On Ficino's notion of spirit, see Corrias (2012).

(*formulae innatae*) of sensible qualities that exist latently in the soul. Triggered by the stirring of the spirit, the soul either directs its attention to these innate ideas themselves or it recovers from its memory older notions of them. In sum, the stirring of the spirit by the external objects is a necessary requirement for sense perception, but should not be identified with it.[36]

The fact that sense perception is an inner activity of the incorporeal soul is also proved by the phenomenon of selective attention. If we are immersed in deep contemplation we will not see the man standing right before our eyes. In this case the soul does not attend to the stirring of the spirit and hence no sensory act will follow.[37]

In contrast to Ficino, the famous German Cardinal Nicholas of Cusa emphatically rejects the existence of innate ideas.[38] Against Plato, he agrees with Aristotle that the human mind needs the input coming from the senses. Sensory knowledge, therefore, does not require pre-existing ideas of sensible qualities.[39] However, Nicholas agrees with Ficino that sense perception is an essentially active process, and that it requires the activity of the spirit that is ontologically located between the body and the incorporeal mind (*mens*). Nevertheless, Nicholas' account of how the spirit and the mind operate differs from that of Ficino.

To begin with, Cusanus thinks of the mind as a unified power that in the process of knowledge acquisition "descends" or "unfolds" itself into various mental powers.[40] More importantly, he retains the scholastic theory that sensible objects are accessible to us though the sensible species they emit. Now, when the mind animates the spirit, the spirit can create images of external objects, helped by the sensible species. The mind then produces a "judgement" (*iudicium*) of external objects, based on these images.[41] Nicholas does not specify what the exact nature of this judgement is, but in any case it involves awareness and attention. This attention is not directed at the innate ideas, as Ficino thought, but at the external objects themselves.[42] According to Nicholas no sensory act can be produced without us attending to external objects.[43] Hence, though sense perception requires a passive reception of the species in the spirit, it is fundamentally an active process in which the soul "assimilates" itself to external objects.[44]

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[36] Ficino, *Théologie platonicienne*, vol. 2, Book 9, Chap. 5, pp. 30–31. On the term "formulae innatae", see Spruit (1995, p. 34).

[37] Ficino, *Théologie platonicienne*, vol. 2, Book 9, Chap. 5, p. 31.

[38] On Nicholas of Cusa, see Flasch (2001).

[39] Nicholas of Cusa (1995, Chap. 6, § 77, p. 30).

[40] See Spruit (1995, p. 20).

[41] Nicholas of Cusa, *Idiota de Mente*, Chap. 7, § 100, p. 56.

[42] Nicholas of Cusa (1970, Chap. 13, § 41, p. 52).

[43] Nicholas of Cusa, *Compendium*, Chap. 13, § 40, p. 50.

[44] Nicholas of Cusa, *Idiota de Mente*, Chap. 3, § 72, pp. 25–26.

9.4 The Italian Naturalists: Fracastoro and Telesio

We have seen that Neoplatonists typically stated that sense perception is eminently located in the incorporeal soul, stressing its high ontological status. By contrast, Italian naturalist philosophers such as Fracastoro and Telesio attempted to explain sense perception exclusively in terms of external bodies impinging on the corporeal *spiritus*. As we shall see, this shared programme did not result in a common view of the active nature of sense perception.

Girolamo Fracastoro (1476/1478–1553) studied medicine, natural philosophy and mathematics in Padua under the great Aristotelians Leonico Tomeo and Pietro Pomponazzi. Today, he is mainly known as one of the first writers on epidemiology and more particularly as the author of a quasi-mythological didactical poem on the origin and cure of the dreaded "French disease": *Syphilis, sive de morbo gallico* (first edition, Verona 1530). The work was so immensely popular that the name Fracastoro coined for the disease, namely syphilis, ultimately replaced the older term *morbus gallicus*.

Fracastoro's epistemology is contained in the *Turrius, sive de intellectione*, which forms part of a series of dialogues which Fracastoro seems to have worked on over a relatively lengthy period.[45] Fracastoro's epistemology still betrays the influence of the Paduan Aristotelianism he was imbibed with as a student. Nevertheless, he combines this with Epicurean (or Lucretian) and Stoic elements, following a quite independent and unique path within Renaissance philosophy. The starting point of Fracastoro's epistemology is that all cognition (*intellectio*) is a change (*mutatio*) from not-knowing to knowing. This change can neither be brought about by the soul itself, nor by the external object, since the latter does not touch the soul. Therefore the object must send out representative species or *simulachra*, which are received by the soul. In this process the species play an active role, whereas the soul remains purely passive.[46]

Fracastoro acknowledges that the mere presence of the species in the soul does not suffice for cognition. Another requirement is a certain attention or "application of the soul", which explains why sometimes we do not perceive what is right before our eyes: the species are there, but our attention ("intentio") is not.[47] According to Fracastoro, this phenomenon of selective attention does not involve a spontaneous, unsolicited activity of the soul. He gives two reasons for this. First, some species have greater force than others, and our attention is drawn to those that are stronger or more "in act" than others. In other words, selective attention is explained in terms of the relative force of external stimuli, not in terms of an autonomous activity of the soul.[48] Second, attention is not a question of the soul moving itself. Rather, the

[45] On the *Turrius*, see Boenke (2005, pp. 74–119).

[46] Fracastoro (1555, 166C–D).

[47] Fracastoro, *Turrius*, 170B.

[48] Ibid.

instrumenta of the soul, i.e. the animal spirits and the nerves, are moved by the species coming from the objects. In other words, the objects do literally draw our attention to them, some of them being stronger and hence more successful in doing this than others.[49]

In that sense, Fracastoro's basic conviction that sense perception comes about in a passive way is not contradicted by the seemingly "active" or "spontaneous" character of mental acts such as selective attention. In fact, Fracastoro takes up these seemingly active phenomena as challenges that can be met by his physiological programme.

Bernardino Telesio (1509–1588)[50] built on the foundations laid by Fracastoro. Telesio studied at Padua, but soon became dissatisfied with Aristotelian philosophy. Telesio worked almost his entire life on his *De Rerum Natura iuxta Propria Principia* that appeared in Naples in 1586. This work developed a naturalistic view of nature and man and was meant as an alternative for Aristotelian natural philosophy.

Unlike Fracastoro, Telesio fully rejected the Aristotelian doctrine of sensible species. Instead, he spoke of the external objects causing real motion in the soul. Telesio did not speak of an incorporeal soul here but of the *spiritus*, a subtle body that resides in the nervous system and uses the body as a shield (*tegumentum*) against external harmful influences. Like any natural object the spirit, too, has an inherent drive for self-preservation. Self-preservation guides sense perception, which shows us what is beneficial or harmful in nature.[51]

Sense perception is the product of the motion coming from external objects. The peripheral parts of the spirit transport this motion to its central part, which is located in the brain. Since perception consists in the spirit being moved, all kinds of reception can be reduced to the sense of touch.[52]

In contrast to Fracastoro, Telesio does not qualify sense perception as a completely passive process. In fact, Telesio maintains a stimulus-response model: under the influence of the motion that is caused in it, and depending on whether that motion is beneficial or not, the spirit either contracts or dilates itself. According to Telesio, the spirit's perception of its own movement of contraction or dilation is what fully constitutes sense perception. In other words, sense perception is perception of perception.[53] Sense perception is not, as the Aristotelians had it, an intentional act directed at real sensible qualities in the external world. Rather, sense perception is basically the spirit's self-reflexive act by which it actively registers in itself those effects of external things that either help or hinder its self-preservation. Though we do not have any explicit statement to this effect, modern commentators have rightfully concluded that according to Telesio sense perception is indeed active.[54] Though

[49] Ibid., 170B–C. Fracastoro here clearly draws from Aristotle's *Parva Naturalia.* On this connection see Leijenhorst (2004, p. 213).

[50] On Telesio, see Leijenhorst (2010).

[51] Telesio (1965–1976, vol. 3, p. 30).

[52] Ibid., vol. 3, p. 6.

[53] Ibid., vol. 3, p. 6.

[54] See Boenke (2005, p. 151).

Telesio's psychology is more materialist and physiological than that of Fracastoro, he does not endorse the latter's view that all knowledge, including sense perception, is a *passio*.

9.5 The Moderni: Descartes and Hobbes

As is well-known, Descartes mechanized the lower (vegetative and sensitive) functions of the mind. Descartes *Traité de l'Homme* offers a physiological model in which the nerves are responsible for the transmission of impulses. However, he did not speak of electric impulses, but of mechanical ones. According to Descartes the nerves consist of hollow tubes which are filled with small fibres and with the animal spirits, i.e. extremely mobile tenuous matter. The external objects pull the fibres, the motion of which is transmitted to the brain. By this pulling, the pores of the brain, more in particular of the pineal gland, open, letting out animal spirits that leave material traces on the surface of the brain and the pineal gland. Another possible effect is that the animal spirits move through the hollow spaces in the nerves, putting the muscles into motion.[55]

Now, this may be an adequate explanation of the machinery of sense perception and of animal motion, but it cannot be an exhaustive one. Descartes thinks that unlike in the case of animals, human sense perception is more than just a physiological process. We humans have perceptual awareness: we are able to experience qualia. Where does this perceptual awareness come from? Here the intellective soul (*l'Ame Raissonable*) steps in. As is well-known, according to Descartes this soul is united to the body through the pineal gland. In fact, both in the *Traité de l'Homme* and elsewhere we find passages stating that a particular material trace left on the surface of the pineal gland occasions the soul to experience the given adequate type of perception.[56] In short, the soul decodes the brain patterns into the relevant mental states. In this context, Descartes often speaks of the mind "applying itself" (*applicare*) to the patterns left on the brain.

As Leen Spruit has showed, this concept of mental application bears striking similarities to the Neoplatonist models of Nicholas of Cusa and Marsilio Ficino and to certain Averroist strands within the Aristotelian tradition.[57] There are even passages in Descartes in which he seems to offer a Neoplatonist theory of anamnesis that comes quite close to Ficino: the motion coming from the sense objects "occasions" the mind to actualise its own innate sensory ideas.[58]

[55] Descartes (1996c, pp. 185–186). Given the limits of space available here, this summary of Descartes' account of perceptual mechanisms has to remain brief and generalising. For a more in-depth treatment, see Hatfield (1992); and Yolton (1981, pp. 63–83). See also Spruit (1995, pp. 352–390).

[56] See Spruit (1999, pp. 271–291), for a discussion of the relevant passages.

[57] Spruit (1999).

[58] Descartes (1996b, p. 359).

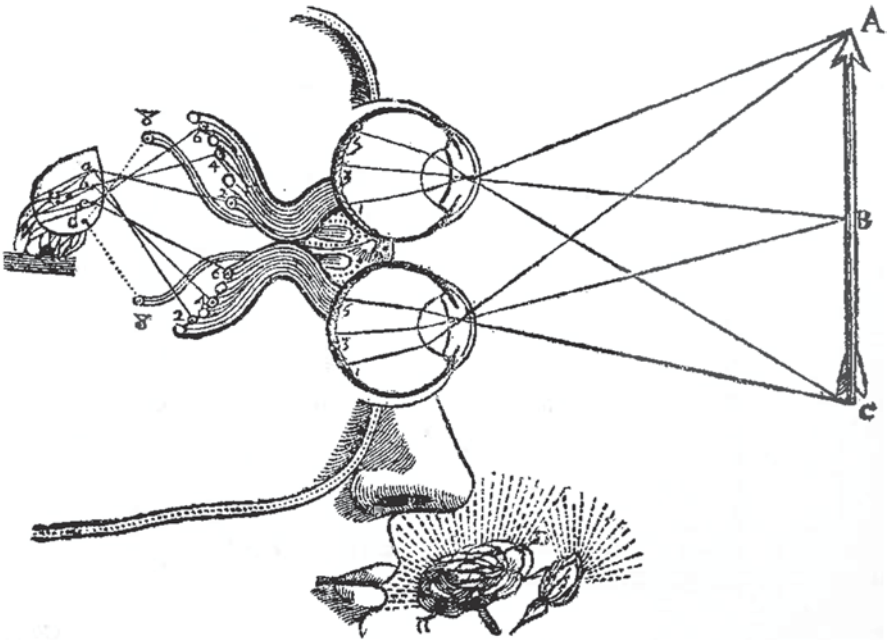

Fig. 9.1 Illustration from Traité de l'Homme (c) Radboud University Library

What consequences does Descartes' model have for the question of whether the soul is passive or active in sense perception? The best way to answer this question is to look at Descartes' account of the phenomenon of selective attention, which as we have seen was often taken as proof for the thesis that sense perception involves active mental awareness on top of the passive reception of sensory input.

Descartes has in fact three different accounts of selective attention. We find the first one in his *Traité de l'Homme* (Fig. 9.1):

Descartes offers here a mechanistic explanation of the fact that visual perception may even block the wonderful smell of a rose. By the force of the visual object, the pineal gland is literally drawn in its direction, so that not enough spirits can be issued from point d. This in turn, prevents us from perceiving D. The impression made by the arrow simply overpowers the impression made by the rose.[59] Rather reminiscent of Fracastoro, in this passage Descartes does not explain selective attention in terms of the activity of the mind, but in terms of the relative strength of external stimuli.

This, however, is not the only explanation we find in Descartes's work. Selective attention comes up again in his *Dioptrique* of 1637, one of the essays that were prefaced by the *Discours de la méthode*, and in his final work the *Passions*

[59] Descartes (1996c, pp. 185–186).

de l'âme.[60] In these two works, selective attention is the effect of an activity of the incorporeal soul. In the *Discours,* Descartes uses selective attention as a proof for his thesis that sense perception in the strict sense does not take place in our body, but that it is rather an activity of the incorporeal soul. If the soul is too preoccupied with a deep thought, it will not take notice of whatever sense object, even though these objects affect our bodies.[61] Nevertheless, Descartes adds that insofar as the soul exerts sense perception, it does not do this in conjunction with our sense organs or other part of our bodies, but insofar as it is linked with the brain. For injuries in the brain may completely block our senses, while other parts of the body may still continue to function. Here, we are rather reminded of Ficino, who also used the example of deep meditation as proof for the thesis that sense perception requires an active awareness on the part of the soul.

Clearly, Descartes' otherwise highly problematic dualism gives him the opportunity to employ two seemingly conflicting models of attention. On the one hand, we find a purely mechanistic theory of attention in terms of the relative force that objects have on us. The second model speaks of attention in terms of the soul actively attending to sensory input. While the first theory leaves us completely passive, the second model underlines our mental activity.

By contrast, Descartes' archenemy Thomas Hobbes (1588–1679) resolutely chose for an all-encompassing mechanistic model. Hobbes is now mainly known for his political philosophy, notably his classic *Leviathan* (1651). However, in his own time he was equally known for his natural philosophy.[62] Like Descartes, Hobbes formed part of the Circle of Father Marin Mersenne, the centre of the new science in the first half of the seventeenth century. At Mersenne's instigation, Hobbes composed comments on Descartes' *Meditations* and the *Dioptrique*, which led to a short and very bitter exchange between the two philosophers.

Nevertheless, Hobbes shared a number of basic assumptions with Descartes. One of these is the total rejection of scholastic psychology, especially the doctrine of sensible and intelligible species, which according to Hobbes is "worse than any paradox".[63] Like Descartes, Hobbes portrays the species as "little images flying through the sky".[64] By way of alternative, Hobbes offered a mechanistic model that reduced all perception to local motion in the sense organs and the brain.[65]

We find Hobbes's most complete treatment of sense perception in his *De corpore* (1655). According to Hobbes, local motion coming from the sense object is mediated by the medium and transmitted through the organs of sense and the brain to the heart, where it causes a countermovement or "rebound", back to the organs of sense. Because this motion is directed outwards, we believe that sensible qualities actually exist outside of us, whereas in reality they are nothing but a reactive motion within

[60] Descartes (1996d, p. 361).

[61] Descartes (1996a, p. 109).

[62] On Hobbes' natural philosophy, see Leijenhorst (2002).

[63] Hobbes (1962, Chap. 2, Sect. 4, p. 4).

[64] Hobbes (1963, pp. 151).

[65] On Hobbes' doctrine of sense perception, see Leijenhorst (2002, pp. 56–100).

us.[66] Though Hobbes speaks about sense perception as an inner activity which is triggered by external objects, this does not mean that we should understand sense perception as a spontaneous, independent activity of an incorporeal soul. First of all, Hobbes emphasises that sense perception is nothing but local motion occurring in the organs of sense, i.e. the nerves and the corporeal *animal spirits*. Second, perception is a countermovement, which can be fully understood by the laws of mechanics: the pressure exerted by the external objects is countered by a contrary pressure of the pumping heart. Sense perception is thus just another case of regular mechanical interaction between natural bodies.

Given this mechanistic model, one would think that a seemingly "active" mental phenomenon such as selective attention would constitute a formidable challenge to Hobbes' philosophy. However, Hobbes has no problems in answering this challenge. If we concentrate on one object, our organs of sense, notably our spirits, are strongly moved by the motion originating in that object. The fact that our inner organs are stirred by this object, makes them more or less "immune" to the motion coming from other objects, because of the "contumacy" of the organ moving one way. In other words, the sense organs are subject to a form of inertia. The motion of the object we are concentrating on eclipses all other motion, in the same way as the light of the sun eclipses the light of the stars by its excess of force.[67] Once again, we witness the principle of the relative force of external stimuli, which we already saw at work in Fracastoro and in Descartes' *Traité de l'homme.* In contradistinction to Descartes, Hobbes does not acknowledge the active role of the soul in selective attention, as described by Descartes in his *Dioptrique* and in the *Passions de l'âme*. In a parallel move, Hobbes completely mechanizes the mind and abolishes the incorporeal soul, stating that the body is the seat of sense perception, not the soul.[68]

This account of sense perception also motivates yet another discussion of a seemingly active phenomenon, namely sensory judgement (*iudicatio*). We have seen so far that some Aristotelian interpret this term in the sense of perceptual awareness. Hobbes, by contrast, focuses on another meaning of this Aristotelian term, namely as the activity of the common sense (*sensus communis*). According to Hobbes, "by sense, we commonly understand the judgement we make of objects by their phantasms".[69] Hobbes' approving citation of this "common view" is, unsurprisingly enough, scholastic. According to scholastic *opinion reçue*, sense perception not only receives sensible species, but also judges to what extent sensible objects do or do not differ from each other. Usually, the formation of this judgement was seen as the proper task of the *sensus communis*, as the common centre of sense. Scholastic philosophers generally agreed that each individual external sense can only perceive the sensible qualities to which it is geared (i.e., vision to light and colour; hearing to sound etc.). Vision, for instance, cannot perceive the difference between a colour and a sound. Therefore, a higher faculty is necessary to judge these differences. Late

[66] Hobbes (1961, Chap. 25, pp. 317–319).

[67] Ibid., Chap. 25, pp. 321–322.

[68] Hobbes, *Tractatus*, 208.

[69] Hobbes, *De corpore*, Chap. 25, p. 320.

Aristotelians usually considered this judgement to be the proper activity of the soul. Zabarella is one of the most noteworthy defenders of this view.[70]

Hobbes clearly opposes this doctrine. First of all, the "observation of differences is not perception made by a common organ of sense, distinct from sense or perception properly so called".[71] In other words, *judicatio* does not involve the existence of a separate *sensus communis*. To compare different pieces of sensory imagination, only memory is necessary. Thus, the distinction between hotness and lucidness is nothing but "the memory both of a heating, and of an enlightening object".[72]

According to Hobbes, memory is not separate from sense perception, for to remember is nothing more than "to perceive that one has perceived".[73] Perceptual judgement, therefore, does not exceed the general physiological framework of sense perception, and hence is not to be conceived as a proper activity of the immaterial soul or an actualisation of an inner faculty. By claiming that sense is commonly understood as the "judgement we make of objects by their phantasms", Hobbes invokes the traditional scholastic view that sense perception involves a judgement. However, he simultaneously gives his own mechanistic explanation as to how this *iudicium* comes about, which does not allow for any form of proper mental activity.

9.6 Conclusion

In this chapter we have looked at two related questions. First, we investigated the way in which philosophers talked about the nature and the causal efficacy of sensory input. Second, we treated accounts of the processing of the sensory input. Whereas we saw great diversity with respect to the first issue, we witnessed a remarkable continuity with regard to the second issue. As regards the sensory input, we came across sensible species, the reduction of all sense to touch, and real motion. Moreover, philosophers differed on the question of whether material objects could produce species on their own. As to the issue of the processing of sensory input, we have seen quite striking parallels across the period we investigated. For instance, Descartes' model of active perception is quite like that of Nicholas of Cusa, while Fracastoro and Hobbes offer a joint alternative for this model. In other words, active perception is clearly an issue that nicely demonstrates that familiar historiographic divisions need serious revision.

[70] Zabarella, *Liber de sensu agente*, Chap. 9, p. 851.

[71] Hobbes, *De corpore*, Chap. 25, p. 325.

[72] Ibid.

[73] Ibid., Chap. 25, p. 317.

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Chapter 10
Seeing Distance

Mikko Yrjönsuuri

We appear to see a three-dimensional world, but this vision is based on two-dimensional images. In this paper, I consider the historically most important theories of how visual perception is made spatial in the cognitive processing of the sensory input to the eye. In all of them, active engagement of the mind is necessary in order to make visual perception genuinely spatial. The three main models are the following:

1. The brain receives separated three-dimensional visual images, which the mind takes to represent a consistently organized and unified three-dimensional world (Alhacen).
2. The brain receives a unified two-dimensional visual image, which the mind innately takes to represent a three-dimensional world (Descartes).
3. The brain receives two-dimensional visual images, which the mind associates to the experience of a three-dimensional world given by the proprioceptive senses (Berkeley).

The first model can be found from medieval authors. My example is the Persian author Alhacen (965–1039), whose major work in optics, *De aspectibus* had a very strong influence on later developments.[1] The second model was put forward by René Descartes (1596–1650). He worked soon after Johannes Kepler's (1571–1630) association of neuronal registration of the visual information to the retina. Descartes undertakes in his *Optics* (1637),[2] among other things, the task of explaining how the two-dimensional image on the retina can give rise to the visual perception of a three- dimensional world. Descartes's solution became widely accepted but it was also rejected by some, most famously by George Berkeley, who

[1] For *De aspectibus*, I use A. Mark Smith's edition, translation and commentary, see Alhacen (2001). References give the page numbers of the translation, which I have used for quotes, and the book and chapter numbers.

[2] References to Descartes are to the standard Adam & Tannery edition AT with volume and page numbers. Translations are mine.

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published *An Essay Towards a New Theory of Vision* in 1709.[3] Ville Paukkonen discusses Berkeley's theory in detail below, and thus I consider it only shortly and in relation to Descartes's theory.

Before Kepler, it was generally thought that visual images are three-dimensional perhaps already in the eye. The soul was taken to receive them in the crystalline lens, which was a space rather than a surface. It was, nevertheless, widely recognized already before Kepler that the world given by sight is not a straightforward Euclidian three-dimensional space but a space construed on the basis of a projection on the eye. Also, of objects we see only the surfaces facing us. Furthermore, problems related to the apparent sizes of objects varying with their distance were a regular part of all serious theories of vision at least since Galen (c. 130–c. 210 AD). That stereoscopic vision was needed for perceiving the real size of an object was a received view already in the middle ages. Another issue still is that of seeing how far an object is. Kepler does not really tackle the problem of why we in the first place connect visual perception to a three-dimensional rather than a flat or, for instance, cone-shaped world.

Perspectival painting was one cultural development that obviously influenced Descartes strongly in his theory of visual perception. It sprung from considerations of how a flat two-dimensional surface can directly represent spatial, three dimensional reality and had already in the seventeenth-century art a history several centuries old. Representations were of course important for medieval paintings too, but while medieval paintings can be said to represent objects, or even Aristotelian substances like people, and their characteristics, perspectival painting represents space and things located in space in a much more obvious sense.

The crucial problem encountered by Descartes and other scholars writing after Kepler is to explain why two-dimensional visual imagery at the bottom of the eye produces a perception of a three-dimensional world. Even when looking at something obviously flat like a perspectival painting, our mind goes to thinking about a three-dimensional landscape in a manner very different from what happens when we look at text, for example. Why don't we just see a surface? In a sense, this is a case where we are active in our perception, but we are not quite free to choose between seeing a surface or seeing a space.

Descartes thought that we have an innate idea of spatiality, and our intellectual preconception with all visual perception is that everything we see must be located in a three-dimensional space. George Berkeley rejected this model and argued that we learn spatiality with what he calls the sense of touch, which includes proprioceptive senses and even experiences like walking through distances. As we learn to connect visual perception to the objects that we touch, or to objects we reach by walking to them, we learn to connect visual perception to the space we experience through touch. In this theory, spatiality is not innately known nor is it literally seen, but through experience we learn how to connect visual experiences with experiences of our own bodily movements.

[3] References to Berkeley are to *The Works of George Berkeley Bishop of Cloyne* edited by A. A. Luce and T. E. Jessop, vol. I, with page and paragraph numbers (Berkeley 1948).

10.1 Nature of Light

One of the classical problems in explaining vision is the fact that there appears to be no contact between the eye and the seen object. Senses of touch and taste are obviously contact senses. But even in the cases of smell and hearing, it is relatively easy to show how something physically real reaches the sense organ from the external thing to which the sense quality is attributed. Rose emits its scent to the whole room, and the scent has a quite clear physical presence in the room. Similarly, the vibrations heard as sound can easily be seen to be a real physical phenomenon. In sight, however, the seen object is remote, and no physical change appears to take place between the eye and the object. Indeed, visual rays carrying opposite colours can intersect without any causal interaction. Smells get mixed, but having walls of different colours does not produce any such effect in the room.

In the first discourse of his *Optics*, Descartes rejects out of hand the Aristotelian theory of how visible things transmit their visible species to the eye through an illuminated transparent medium. Descartes's formulation of the theory is that there are "little images flying through the air, called 'intentional species'" (AT VI, 85.) In more serious terms, Aristotelian theories gave light a role in vision that differs fundamentally from how it is understood nowadays. Instead of speaking of rays of light influencing the eye, Aristotle thought that light is a quality of the medium that enables the visible species (eg. colour) of the object to influence the eye. To find ancient authors really speaking about little images flying in the air, one would have to turn to the Epicureans. It is however, not wrong to say that the Aristotelian theories of the medieval scholastics claimed that the visible species is in vision transmitted from the object to the eye.[4] A notable exception to this kind of theory is William Ockham, who denied the species at the cost of admitting that vision takes place through remote causation without any physical or material contact between the seen object and the eye.[5] This view never gained popularity.

It was well noted by the late medieval scholastics that the "intentional species", which Descartes mentions, is ontologically a very special kind of entity both in the medium (air) and in the eye. As Aquinas carefully formulates, when the intentional species appears in the eye, there need not be any change at the level of the four basic elements (fire, air, earth, and water) nor any local motion of any matter.[6] As I have argued elsewhere,[7] it seems appropriate to put this in modern terms as claiming that there is no physical change in the eye. Visual images do not supervene on the physical, but come and go without any change at the physical level. The intentional species has however, a very exact location both in the eye and in the air as it is transmitted from the seen object to the eye. Medieval scholastics even disagreed whether its movement takes time. In such sense, it had very intimate connection to

[4] See e.g. Lindberg (1981).

[5] See Knuuttila (2008, p. 14) and the references there. See also Silva's chapter in this volume.

[6] See *Sentencia de anima* II, 14, 20, and ST I, q. 78 a. 1, resp. and a. 3 resp.

[7] Yrjönsuuri (2007, pp. 75–82); see also Burnyeat (2001).

materiality of the world. Intentional species clearly was not an abstract entity, nor was it a universal belonging to the level of the intellect. Its material place was in the medium and in the organ.

Descartes chose to call the intentional species "little image" (*petite image*) (AT VI, 85). This choice implies that Aristotelian scholastics would have thought that the actual shape, perhaps even three-dimensional shape of the seen object is transmitted to the eye through a similarity being formed and travelling through the air. This would, however, be a misunderstanding of the more serious medieval optical tradition. If we look at Alhacen's *De aspectibus*, for example, we find a clear theory of how the image is formed in the visual organs. What travels through the air, is light and colour. The image is built in an active manner by the sense of sight by careful use of the organ. Indeed, perception of shape requires active contribution by the soul and it does not belong to the brute sensation. The core property of light that vision relies on is the directness of a ray of light. As Alhacen explains vision, rays of light carry the relevant colours from the seen object to the surface of the eye in an orderly manner. Because of the exactness of the order, the various colours of the seen object reorganize themselves into a similarity or an image of the seen object in the lens of the eye. In Alhacen's theory, there is no "image" in the air between the object and the eye. In this respect, his theory does not differ from Descartes's account or from the most recent optical theories of our time.[8]

The more problematic issue is of course what light is, or how we should ontologically think of the direct visual ray. What is it that flows in a ray of light, and in which direction? From the ancient discussions, medieval scholars inherited the question whether the visual ray comes from the object to the eye or from the eye to the object. Does the soul reach out for the object, or does the light from object reach into the eye? Ptolemy and Galen had presented theories of sight that were active even in the sense of reaching out, while Aristotle clearly posited an inflow of the species and in that sense a theory of passivity in vision. Alhacen both agrees and disagrees with all the three mentioned ancient authors with his theory based on intromission of perceivable light.[9] Although Alhacen's *De aspectibus* was very influential, the topic was far from settled and the scholastics continued to think that at least the eyes of some animals have light in themselves so that they can see in the dark with their own visual rays. Indeed, even Descartes hesitates on the issue. To see how, we must however consider his theory of light with a little more detail.

Descartes puts forward dual theories of light. On the one hand, he treats light as an influx of particles, especially when explaining reflection of light on a mirror or other such surface. The leading metaphor in this respect is the tennis ball bouncing on a hard surface (introduced at AT VI, 93), but he also mentions the unhappy example of artillery pieces bouncing off the surface of a river to hit people on the other side, when the idea was to aim at the bottom of the river (AT VI, 99). Light cannot however in Descartes's view be treated only as particles. It must also be approached as a kind of field of pressure. The leading metaphors in this respect are the wine-vat full of half-pressed wine and the stick of the blind man. Thus, if the surface of the

[8] Alhacen (2001, pp. 343–416); I, 1–7.

[9] See A. Mark Smith's elaborate and very illuminative introduction in Alhacen (2001).

half-pressed wine in the vat is pressed, there is pressure at the holes at the bottom of the vat. (AT VI, 86–87) Similarly, the blind man moves and presses his stick slightly against different surfaces and gets thereby a feel of how the surfaces are like. Even the slightest pressure at one end of the stick is immediately moved to the other end. Interestingly enough, Descartes shows with obvious satisfaction that the stick metaphor shows how light can travel instantaneously—but still he continues to use the particle metaphor where instantaneous travel is not that easily conceivable. (AT VI, 85–86.)

As Descartes explains with reference to the stick, "in the bodies called luminous, light is just a certain very rapid and lively movement, which is passed to our eyes through the mediation of the air and other transparent bodies in the same way as the movement or resistance of the bodies met by this blind man is passed to his hand by the mediation of his stick". (AT VI, 84.) That is, air is transparent because it allows the particular kind of movement that we call light to be transferred with direct rays to all directions, including towards our eyes, where this movement is registered to produce a visual perception.

Blind man's stick can be moved from both ends. Curiously enough, Descartes notes that although human vision works only so that the eye passively registers light from the seen object, cats have extramissive vision. They have light in their eyes enabling them to see in the dark. Apparently Descartes's idea is that even if the object has no movement to be called light, the activity in cat's eyes works in an even more literal way like the blind man's stick, allowing the cat to swipe through external surfaces with its eyes so that it sees them by physical activity that is to be called light. (AT VI, 86.)

Descartes seems to be very satisfied by his ability to explain light without reference to anything but mechanical movement in the transparent medium. Light reduces to mere matter in motion in this explanation. Even more, no intentional species is needed. Even the species of colour is explained away: Descartes suggests that colours are "just different ways in which bodies receive and send light to our eyes". (AT VI, 85.) He even speculates with the idea that colours are registered on the ray of light as a twist in different directions and different strengths (AT VI, 95). Thinking of the tennis ball or even the blind man's stick metaphor of the nature of light, the idea of a twist seems to make sense, but in terms of the half-pressed wine, it seems rather hard to understand what could such a twist be. It seems understandable if some of his readers thought that the scholastic theory of the ray of light being coloured in an unperceivable way is more sensible.

10.2 Passivity of the Eye

There is a very clear domain of activity of the eye in Descartes's theory. The person or the brain can make the eye move in order to look towards the object and to accommodate so that the image becomes sharp. But in the actual image formation, the eye is a passive object in which the light coming from outside draws an image on the retina. The formation of the image in an eye that is looking at the same immobile

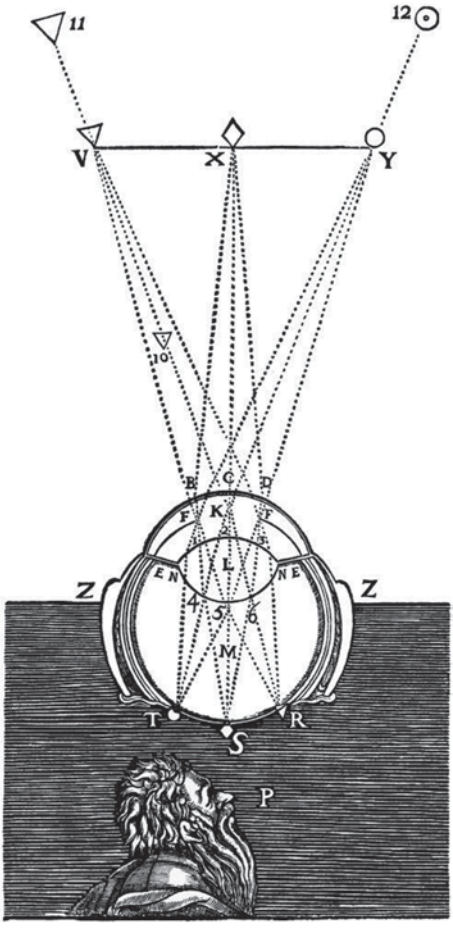

Fig. 10.1 A person observing an image at the bottom of the eye. (© The National Library of Finland and Gaudeamus)

object is completely passive. Indeed, Descartes spends considerable part of his *Optics* explaining the comparison of the eye to a *camera obscura* in which an image of the outside is passively produced on the inside.

More exactly, Descartes advices his reader to build a special *camera obscura*. One must take an eye of a recently deceased person, or if such cannot be found, a cow. The rear side of the carefully loosened eye is to be removed so that none of the liquid escapes, and then the back of the eye is covered with an eggshell. Now, if this prepared eye is assembled in the middle of an otherwise covered only window of a room, and the eggshell is observed from the darkness behind the eye, an image of the outside in full colour can be seen to form on the eggshell. As Descartes argues, such an image forms on a healthy eye of a living person, and the image is very relevant for visual perception. Figure 10.1. reproduces an image from the first edition of the Latin translation of Descartes' *Optics* (1644). It shows how a person is observing an image being geometrically formed at the eggshell replacing the bottom of the eye. (AT VI, 115–116.)

Descartes is in effect explaining an experimental setting that shows Kepler to be right. The eye has such a material structure that it can passively produce a unified two-dimensional image of the outside world on the retina. The scholastic theories, like that by Alhacen, discussed the visual image formation on the basis of projection of the visible scene at the front of the eye.[10] This is of course problematic since there is no way to make such an image visible in itself, except in the very faint sense in which it is possible to see reflections on the eyes of another person. According to Alhacen's theory, the image is in the crystalline lens (*glacialis*) and not really on the surface of the eye.[11] As Alhacen explains, this image is then transmitted with optical regularity to the rear of the eye and to the optical nerve, which was taken to be hollow, and then to the brain where the final sensation takes place.[12] While this explanation leaves considerable gaps in relation to the formation of the image, it seems reasonable in the sense that the image gets formed in the living substance so that it has a route through which it can be transferred to the brain, where actual processing of visual imagery was taken to happen. It is also quite clear that Alhacen's explanation concerns the visual image of a single object. In this respect, Alhacen's approach differs from Descartes's story, where the whole landscape is formed as a single image.

Alhacen's theory thus posits visual imagery being produced in the lens—which is a space and not a surface. This makes the images three-dimensional entities. It is hard to find from Alhacen's *De aspectibus* any account of how clearly he thought the visual images convey spatiality of the seen objects. Seeing a cube, we do not form a square image, but is the visual image a cube, or more like a cube projected on paper? Perhaps he did not put the question to himself in an exact manner, but as his reader I get the impression that perhaps the image in the eye is more like a lamina while the brain actively produces something like a three-dimensional model of the visually observed object to be processed in the brain chambers.

On the one hand, Alhacen makes it very clear that the three-dimensionality of an object is perceivable by vision only in a mediated way. When we see an opaque surface, we do not see through it, and thus we cannot directly see whether it is the

[10] Alhacen (2001, p. 358) (I, 6): "The reason is that when it perceives the color of a single point at only one point of surface, it will perceive the color of one part of the visible object at one part of its surface, and it will perceive the color of another part [of the object] at another part of its surface. And it will perceive each part of visible objects at a spot on its surface different from the spot where it will perceive another visible object; so [different] visible objects will be perceived by it in proper arrangement and distinctly, as will the parts of each of them".

[11] Alhacen (2001, p. 359) (I, 6): "We shall therefore say that, if the visual sensation of the color and light that are in a visible object arises from the form coming to the surface of the eye from visible objects, and if this sensation occurs by means of the glacialis alone, then sight will not sense that form at the surface of the eye itself but only after it passes through the eye's surface and reaches the glacialis".

[12] Alhacen (2001, p. 376) (I, 6): "After occurring at the glacialis, this sensation spreads through the hollow [optic] nerve and arrives at the front of the brain where sensation culminates and where the final sensor is located, this latter being the sensitive faculty at the front of the brain, and this faculty will perceive all sensibles".

surface of a three dimensional thing or just a convex or concave surface.[13] This would make one think that the visual image is just a two-dimensional lamina. On the other hand, the visual image travels from the eye to the brain through the hollow optical nerve. The nerve is not straight, and the image is not assumed to travel like light travels but more like things travel.[14] This gives a feel to the theory that the image is to be understood as a separable three-dimensional object—even if it is more like a lamina than a scale model.

The experiment of the prepared eye described by Descartes makes it clear that he did not think of the visual images in the eye as separable objects that could move by themselves. Instead, the visual image on the retina is ontologically more like a shadow.

10.3 Imagery in the Brain

Descartes follows the scholastic theorizing in believing that cognitive processing of the brain is located in the brain chambers that house animal spirits. His main argument for giving the pineal gland a central role is that it is suitably located in the middle of the chambers and that it is single while most other parts of the brain come in pairs. Descartes even uses the Aristotelian term "common sense" (*sens commun*) for the functions performed at the pineal gland. (AT VI, 129; letter to Meyssonnier 29.1.1640; AT III, 18–21.) The theory presented in *Optics* is that the nerves transmit visual images to the inner walls of the brain chambers. In that location, they have an influence on the movements of the animal spirits in the chambers and are thereby moved to the surface of the pineal gland.

Contrary to his practice in the *Meditations* or other later works, in *Optics* Descartes uses the word "idea" (*idea*) so that ideas are located in the imagination or common sense—in the brain and not in the mind. Occasionally he even uses the expression "corporeal idea" (e.g. AT VI, 55; cf. also AT X, 443). It seems that when composing the *Discourse on Method* and *Optics* he thought that there is something

[13] Alhacen (2001, p. 469) (II, 3): "But sight perceives the extension of all bodies according to length and breadth on the basis of the perception of the surfaces of bodies that face it. Therefore, when it perceives the surface of a body, thereby realizing that this visible object is a body, it will immediately perceive the extension of that body according to length and breadth. So only the third dimension is left. Now some bodies are enveloped by plane surfaces that intersect each other to form corners, some are enveloped by concave or convex surfaces, some are enveloped by surfaces of various shapes that intersect one another to form corners, and some are enveloped by one [continuous] curved surface".

[14] Alhacen (2001, p. 422) (II, 2): "Since this is the case, when the form reaches a given point on the surface of the vitreous [humor], it will run along a continuous line, and it will not change its [relative] position in the hollow of the nerve through which the sensitive body extends. And all the lines along which all the points in the form run will be uniformly arranged with respect to one another, and all these lines will bend at the bend of the nerve, and at the point of bending all will be arranged as they were before bending, and afterward as well, because of the sensitive quality of this body. Accordingly, the form will reach the common nerve properly arranged, and it is not possible for the forms of visible objects to extend to the final sensor in any way other than this, for it is not possible for forms to reach the common nerve properly arranged unless their passage occurs in this way".

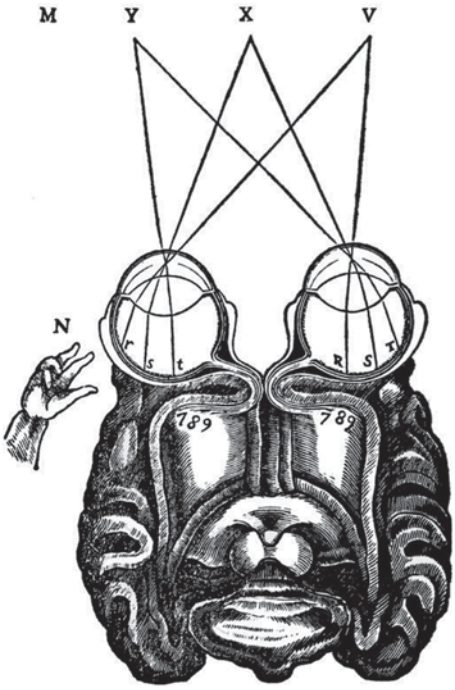

Fig. 10.2 The configuration YXV transmitted to the brain as the double configuration 789. (© The National Library of Finland and Gaudeamus)

very corporeal to serve as the basis of the contents treated in the imagination and that the word "idea" suits well to refer to such imagery. At the beginning of the sixth *Meditation*, he seems to be still committed to the view that imagination works by attention being guided by corporeal imagery, but in that work he has reserved the word "idea" for a different usage that he describes in the "Preface to the reader". (AT VII, 8.)

It may be difficult to see how Descartes would have accounted for the visual imagery moving from the wall of the brain chamber to the pineal gland. It is clear, however, that he accepted the idea that these images can somehow become independent entities that float around in the system. He claims in *Optics* that visual imagery can be the origin of birthmarks (AT VI, 129). In a letter, he even claims that this kind of event is the explanation why there are little images of dogs in the urine of people who have caught rabies (Letter to Meyssonier 29.1.1640; AT III, 21). From our view, the most interesting images are nevertheless on the inner surface of the brain. They are marked as "789" in Fig. 10.2, which is reproduced from the first Latin edition of *Optics* (1644).

According to the Cartesian explanation of how nerves function, there is a wire-like filament in the middle of the nerve surrounded by animal spirits that allow the wire to move easily. In the eye, light moves the end of the wire, and the structure of the nerve allows this movement to be transmitted to the other end of the nerve. Since there is a plurality of nerve endings at the bottom of the eye, and all these nerves have their other end in a systematic order at the inner surface of the brain, the image at the bottom of the eye gets transmitted to the brain in a systematic manner, though not necessarily retaining all shapes as such. (AT VI, 106–108.)

In a very interesting passage of the fourth discourse in the *Optics*, Descartes distances his theory from that of his predecessors. He rejects almost out of hand the idea that sensory perception could take place at the skin or other surfaces of the body. As he sees it, the little filaments in the nerves transmit mechanical movements to the brain, where perception really happens. Then he rejects in a more argumentative manner the view that in perception the soul observes imagery located in the brain. "At least the nature of those images must be conceived in a manner very different from the usual one", as he says. (AT VI, 112.)

Descartes continues, "in order to keep as close to received views as possible", it can be admitted that there are images in the brain, but it must be noticed that these images need not be similar to the things they represent. Having just revoked the fact that not only similarities but also signs (*signes*) and words (*paroles*) make us think about certain things, he continues to describe how a printed line-engraving (*taille-douce*), for example, is very different from the landscape represented. Some ink at certain parts of the paper manages to represent us forests, towns, people, and even battles and storms. There is some similarity in the form, but if you compare the form of the ink on the paper to the mountain or the battle, you may notice that perspectival regularities are more important than actual similarity. (AT VI, 112–113.)

Engraving is an interesting metaphor given that Descartes thought the image in the brain to be formed by the neural filaments transferring movements caused by light at the bottom of the eye in a systematic manner to the brain. The word that appears to have caught readers attention at the time seems however to be "painting" (*peinture*). In a letter, Marin Mersenne asked what Descartes actually means by the word. Descartes's answer is rather disappointing: "just the configuration 789 as the nerves produce it on the inside of the brain". (AT II, 591.) Here "789" seems to refer to the formation on the inside of the brain as depicted and marked 789 in Fig. 10.2 above.

A careful reader of Descartes's *Optics* cannot escape the importance of perspectival paintings for the work. Descartes clearly admits that there are images in the brain, but tries to understand their role with reference to perspectival paintings. He is impressed by the fact that we automatically decode two-dimensional perspectival paintings into thoughts concerning three-dimensional world. He takes something like this to happen also when we actively produce spatial vision from two-dimensional imagery in the eyes and brain. We do not have actual three-dimensional miniature models of the seen objects in the brain, nor any exact similarity, but such a formation on the inner surface of the brain that it has semiotic markers for all the relevant three-dimensional features that we actually see in the landscape we look at.

10.4 Visual Perception in the Mind

The sixth discourse in Descartes's *Optics* begins with the warning that we should not think that we would be looking at the imagery inside our brains with a second pair of eyes. Instead, there is just a natural connection between the imagery and the sensations (*sentiments*) that the soul has. He goes on to explain that different sense

qualities are all caused by movements of the nerve endings. The idea seems to be that while the neural movements are rather similar in the case of, say, sound and taste, the perceptual qualities associated with hearing and taste are very different. Yet the difference seems to be due only to the difference between which nerves move, not on how they move.

Descartes gives at the beginning of the sixth discourse on *Optics* a list of what are the primary things perceived visually: light, colour, position, distance, size and figure. In a very traditional way adopted also by Alhacen, light and colour are the primary sensibles on which perception of the others is based. Descartes's idea seems to be that if there is movement at a nerve ending at the inside of the brain connected to the light receptors at the bottom of the eye, the soul perceives light. Depending of how the ending moves, the mind perceives colours. Also Alhazen gives a theory in which everything we see is based on seeing light and colour and then performing mental operations on what is seen with them.[15] Alhacen distinguishes altogether 22 visible properties to which everything that can be seen can be reduced. The list starts with light, colour, distance, spatial disposition, corporeity, shape and size, which are rather close to what Descartes gives as primary visible things.[16]

In the following I will take a careful look at the explanation of how we see distance, or at the visual systems allowing us to see how far a seen object is. Alhacen spends considerable energy showing how we know that there is a distance between the eye and the object before turning to discussion of we see the magnitude of the distance. Basically, Alhacen's argument is to show that what we see is spatially external to us because we recognize the difference between what we appear to see eyes closed and what we actually see eyes open.[17]

Both Alhacen and Descartes take, in their theories of vision, for granted that we live in a three-dimensional world. Alhacen makes this view explicit in his discussion of how the corporeity of an object is seen. As he writes "Still, according to human judgment, it is an absolute given that only a body can be perceived by sense, and so, when someone perceives a visible object, he will immediately realize that it is a body, even though he may not perceive its extension according to three dimensions".[18] The challenge the active mind faces in his theory of vision is thus that one knows that the seen object is three-dimensional, but one only sees its surface. As Alhacen notes, the surface can either be convex or concave, and understandably he points out that seeing the corporeity, or the depth behind the surface is easier in the case of convex surfaces. In his discussion, the problem of seeing corporeity comes after the discussion of seeing distance, and thus he takes as already achieved that we can see the convexity or concavity of the surface.

[15] Alhacen (2001, pp. 439–440) (II, 3): "Thus, when the eye faces some visible object, the form of the light and color on that visible object reaches the surface of the eye and the surface of the glacialis, and it extends along the determinate paths that we described … Then, when it reaches the hollow of the common nerve, it is perceived by the final sensor, and the faculty of discrimination differentiates all the [visible] properties it possesses".

[16] Alhacen (2001, p. 438); II, 3.

[17] Ibid., 450–451; II, 3

[18] Alhacen (2001, p. 469); II, 3.

As is well known, Descartes did not take it for granted in his metaphysics that there is a corporeal world. Nevertheless, he seems to share Alhacen's assumption that in vision, we take it for granted that whatever we see is a three-dimensional body. To understand how he comes to share this view, it is necessary to recognize certain issues in how he proves that there indeed are bodies. In all three main general treatments of his metaphysics he makes the point that the idea of three-dimensional extension as the object studied in geometry is a very clearly given innate idea. We need not construct three-dimensionality on the basis of two-dimensionality, but we have an innate understanding of three-dimensional space as a possibly existing object of pure mathematics. This idea is then applied to the material world.

In part four of the *Discourse on Method* he conceives the object studied in geometry "as a continuous body, or a space indefinitely extended in length, breadth, and height or depth". (AT VI, 36.) As he notes, at this stage there is doubt whether any such body exists. A little bit later he however reaches the rule that clear and distinct ideas are true, which in effect also means that there is something about which geometry is true, i.e., the material world, and that the material world thus exists.

This implication is developed in a careful way in *Meditation* 6, where we find a careful proof of the existence of the material world. It begins with the statement that spatial, three-dimensional world can at least exist as the object of pure mathematics. *Meditation* 5 has indeed discussed the exemplary certainty of geometry, and the thing remaining to be proved is that there really exist objects of the type studied in geometry. *Meditation* 6 starts with the consideration that "imagination seems to be just a kind of application of the cognitive faculty to a body that is internally present to it" (AT VII, 71). As is well known, the meditation continues to a full-fledged proof of the existence of the material world.

The *Principles of Philosophy* tells essentially the same story. Descartes takes quite directly the view that geometry as he knows it, i.e. Euclidian geometry of the three-dimensional space, is true about the material things. (AT VIII, 41.) This result concerns directly the systematic order of science: in all study of the material world we can assume that geometry is true of it. It seems that in his theory of vision Descartes accepts even a stronger application of the result. In looking at things, even in ordinary life, we innately know that the real objects we see accord with the Euclidian geometry of three-dimensional space. Although out visual imagery is two-dimensional, we know that the world it represents is three-dimensional. To gain three-dimensional visual experience, we have to combine our visual images with the innate knowledge of three-dimensionality.

Descartes's claim that spatiality is a dimension added to the visual experiences by the mind has lead many scholars to think that its addition is a matter of mathematical exercise. In my view, Descartes did not mean quite this. Rather, his point is that there is nothing in the brain that would build three-dimensional visual images. Visual images are in the brain on surfaces just like in the eye. The extent to which such an image is three-dimensional in the mind, is a product of active engagement by the mind based on the innate knowledge that the world is three-dimensional (and not flat).

The challenge the active mind faces in Descartes's theory of vision is thus just the same as in Alhacen's theory. We know that the world we are looking at is a

Euclidian three-dimensional space, and our task is to understand what the object that we see is really like and how far it is. Although its image in the eye and in the brain is, for Descartes, on a surface and thus lacks third dimension completely, we must judge depth and distance. However, it is important to note that it is not solely or even typically by trigonometric calculations, but through much more straightforward and so to say automatic systems that we judge the shapes and distances of the objects we see.

Descartes distinguishes altogether four ways in which we perceive distance. In the following, I discuss them one by one with comparison to earlier theories.

1. *Accomodation*. The first and principal means for perceiving distance in Descartes's theory is the feel of the shape of the eye. He thought the eye accommodates to distance through actively changing the distance between the lens and the retina. He did not think that the lens itself would accommodate. We do not normally pay attention to the accommodation even when we do pay attention to how far our eyes are gazing. Descartes compares this to taking an object to one's hand to estimate its weight. One does not pay attention to the movements of the hand, but only to the weight of the object. As Descartes saw it, the neural impulses that produce the accommodation of the eye "are instituted by Nature to make our soul to perceive the distance". (AT VI, 137.) It is noteworthy that Descartes thought that this way of perceiving distance is available only for objects that are rather close. There is no considerable accommodation needed for objects lying at a distance of more than four or five feet.

   In visual theories before Kepler there was nothing to correspond to the accommodation of the eye. In those theories, however, where vision was thought to be based on actively stretching a visual ray from the eye to the object, there was occasionally recognition of some kind of basic feel of how far the visual ray is being stretched. Such theories bear an interesting similarity to Descartes's view.
2. *Natural geometry of the two visual axes.* Second, there is something "like a natural geometry" (*geometrie naturalle*)(AT VI, 137) that allows us to estimate the distance of the object. Descartes's *Optics* has several images of the blind man with two sticks. Even when the blind man does not know the lengths of his sticks, he still can feel the distance between his hands and the angle in which he holds the sticks in his hands. By those means, he can estimate the distance of an object that is simultaneously felt by both sticks. Correspondingly, there is "a natural geometry" of the eyes so that if an object is very near, the eyes must turn more towards each other than when the object is far. Descartes does not clearly take a stance on what exactly we are aware of in such "natural geometry", but everything he says about the natural geometry is consistent with the interpretation that we do not have awareness of the angles but only of the distance of the seen object.

   Already Galen discussed estimation of distance by the angle of the two visual axes. The theme has stayed in the tradition since then. For this means of seeing distance, Descartes does not give quite as clear a limit, but he does point out that the changes in the angle are very small if you look at anything more remote. It seems that we are again limited to perceiving distances less than four or five feet.

3. *Relocating the one eye*. Descartes provides an elaborated explanation how you do not need two eyes to estimate a distance by a method comparable to the natural geometry if you can move the one eye you use. In this case, Descartes notes that we need "an act of thought which is nothing but a simple imagination". (AT VI, 138.) As Descartes makes clear, this mental move differs from the genuinely geometrical calculations used by surveyors using vantage points for measurements although it uses the same sort of reasoning. It is quite noteworthy that for the two first methods Descartes does not attribute an act of thought, but in the rather active and purposeful use of one eye he does think that what is at issue is active albeit simple thought. In this case, it seems clear that he thought we have awareness of the angle in which we are directing the eye.
4. *Comparative sharpness of the image together with strength of the light*. Descartes notes that given a certain accommodation of the eye, objects farther or closer than the one at which the accommodation aims are fuzzier. As he explains it, more light arrives from the closer object and less from the more remote object. This gives some comparative ordering of objects in terms of their distance. According to Descartes, in this we do not "really see the distance, but imagine it". Again he seems to be speaking of an act of thought rather than passive perception. (AT VI, 138–139.)

   In this method, we are very vulnerable to an error that must be corrected by ratiocination. In Descartes's example, if a mountain has better light than a forest at its feet, we are tempted to judge that the mountain seems to be closer, but we can correct our judgment by taking into account the fact that the we see the forest exactly at the feet of the mountain. It seems that for very long distances we have to rely on reason. Indeed, in astronomical objects the imagination and the sensory systems of the brain lead us wrong. Descartes estimates that our imagination or common sense (*sens commun*) cannot receive an idea of a distance more than hundred or two hundred feet. Rationally, we can of course conceive the sun or the moon being much farther. But this does not change the illusion of the moon appearing much larger close to the horizon even if the angle in which it is seen (its size on the retina) is just the same, as Descartes recognizes. We have no sensory type of image of its distance and therefore estimate its size with a wrong kind of sensory image. (AT VI, 144–145.)

10.5 Berkeley's Criticism of Descartes

George Berkeley quite famously attacked the "geometrical theories of vision" in his *An Essay towards a New Theory of Vision*. In the second edition appendix to the book George Berkeley explains what is the exact target of his criticism. He quotes a paragraph from Descartes explaining the "natural geometry" he thinks we use for estimating distance by the method 2. above. As Berkeley claims, he could "amass together citations from several authors to the same purpose". According to the appendix, the point in the discussion he wanted to make by his essay was that "we neither see distance immediately, nor yet perceive it by the mediation of anything

that hath … necessary connexion with it". That is, we do not see distance, nor is there a necessary logical connection between ideas of sight and the proprioceptive senses by which we have the idea of distance.[19]

Berkeley very famously came in his later works to the strong view that there is no material substance. Also, he did not accept innate ideas. From this viewpoint, it is quite understandable that his approach to theory of vision differed from Alhacen and Descartes, who thought that our estimation of the distance of the seen object is based on a basic acceptance that everything we see is located in a Euclidian three-dimensional world. Berkeley does not look at visual experiences in such a background.

It seems, however, that he overstates his disagreement with Descartes within theory of vision itself. In fact, he does not deny that we rely on the four above discussed methods of estimating the distance of the seen object. What Berkeley is really attacking is exactly what he says in the appendix: theories which claim that we see distance either immediately or by perceiving something that has "necessary connexion" to it. With "necessary connexion" he means something that could translate as logical or conceptual connection, or in Humean terms as an agreement of ideas. In this way, Berkeley is opening an interesting new line in the discussion of theory of vision as regards the reason why, for instance, we connect the feel of the eyes turning towards each other to the idea that we move our gaze closer. Descartes thought that the connection is innate, but Berkeley claims that this is not a "necessary connexion" but we learn it through experience.

In paragraph 28§ Berkeley summarizes that he has gone through the three "sensations or ideas that seem to be the constant and general occasions for introducing into the mind the different ideas of near distance" (Berkeley 1948, p. 177). The three on his list are 1., 2. and 4. of the Cartesian list given above. Concerning them, Berkeley makes the clear statement that there is no "necessary connexion" involved. Instead we rely on them because "by experience they have been found to be connected with them" (Berkeley 1948, p. 177; § 28). Berkeley's third item is straightforwardly similar to the first item on the Cartesian list, accommodation of the eye, and needs no discussion, but the first two are more interesting.

The first connection Berkeley discusses equals to 2. on the Cartesian list. As Berkeley describes "Not that there is any natural or necessary connexion between the sensation we perceive by the turn of the eyes and greater and lesser distance", but rather that through constant experience "there has grown an habitual or customary connexion".[20] The difference from Descartes's theory is that while Descartes claimed the connection between the idea of turning the eyes and the idea of distance is innate, Berkeley thinks it is learnt.

According to Berkeley, it is a "received opinion" that we perceive the changes of the angles of the visual axis and that the perception of distance is based on this perception. He himself claims not to be conscious of any such perception.[21] Descartes's

[19] Berkeley (1948, pp. 237–239).

[20] Berkeley (1948, p. 174); § 17.

[21] Ibid., 175; § 19.

text is not very clear about such a question, but it is clear that "received opinion" refers to Berkeley's contemporaries and not Descartes. My reading of Descartes would suggest that awareness of the angle could be included in the cue 3. on the Cartesian list, when distance is estimated through purposeful movement of one eye. In this context, Descartes refers to "an act of thought". He apparently implies that in 2., or the simple case of two eyes looking at an object, there is no such "act of thought" needed. Rather, direct and immediate idea of near distance is caused by the sensory recognition of the movement of the eyes. He seems to mean that without intervention of the mind the brain causes an idea that we are looking at something close to us when the eyes are turned towards each other without consciousness of the turning of the eyes. The case would be comparable to how less pressure on the nerves at the bottom of the stomach makes the mind feel hunger, although there is no logical connection between less pressure on certain nerves and hunger. It is just a God-instituted natural connection. (Cf. *Principles of Philosophy* IV; 190; AT VIII, 316–317.) We are perhaps not really conscious of the stomach being empty but of the hunger. Similarly, the "natural geometry" would not require one to be conscious of any angles, as Descartes saw it. The work would be done by innate structures of the brain so that the mind is directly aware of distance.

The second ground for estimating distance Berkeley discusses is confused appearance in vision, or lack of sharpness when the object is very near the eye, or at a distance with sensible relation to the size of the pupil. Again, Berkeley makes it clear that the connection between distance and confusion should not be thought to be necessary, but customary. He does admit that as the object is brought close to the eye, we have the experience of the sharpness of the image being lost. Again, Berkeley admits that there is some connection between loss of sharpness and nearness of the object, but he rejects the geometrical explanation.

According to Berkeley, the "most approved writers of optics" explain that the rays from a single radiating point to the eye diverge more when the point is close than when it is farther off. However, as Berkeley shows in a very detailed manner, this divergence cannot be perceived—the retina or the pupil does not perceive from which direction the rays come. Berkeley discusses at length a counterexample provided by Isaac Barrow. The Barrowian counterexample is an optical organization in which the perceived distance in fact grows as the rays falling on the pupil diverge more according to standard geometrical optics of the time. The wrongness of this putative manner of seeing distance is clearly a main target of criticism in Berkeley's *New theory of Vision*.

Descartes does not discuss this kind of divergence of the rays forming the image at all. Therefore I think that the core of Berkeley's attack on geometrical theories of seeing distance does not really hit Descartes's theory. This does not of course mean that Berkeley would have accepted Descartes's theory of vision. He rejected Descartes's innatism and worked hard to build a theory of vision that is not based on assuming a Euclidian three-dimensional world to be seen. He built a theory of vision based on associating vision with human experiences deriving from the proprioceptive senses and the sense of touch, as described below by Ville Paukkonen. But these issues provide a different theoretical foundation for the account of how we see distance rather than changing the details of the real life account.

As we have seen, Berkeley rejects innate geometry because he rejects the innate intellectual knowledge that the visual world is three-dimensional. It is not because of rejecting that we see distance by the cues discussed by Descartes, since Berkeley does not reject them. Rather, these cues are an important part of Berkeley's theory of how we see distances. He agrees that we perceive near distances by recognition of how we turn the eyes towards each other and through recognition of the accommodation phenomenon by which we sharpen the visual image. But for Berkeley, these cues are learnt, not innate.

Furthermore, Berkeley rejects one single geometrical explanation of how information of the distance could be carried to mind, because he correctly notes that the eyes are incapable of receiving that information. Descartes did not put forward this particular explanation and thus did not make this error. In this respect Descartes is not among "the most approved writers of optics" criticized by Berkeley. Already in the appendix to the second edition to his book, he emphasizes that he should not be taken reject all the use of "lines and angles", or geometry, in theory of vision.[22]

Berkeley made it a very strong point that vision is not literally spatial at all. As it is, this fact was accepted to a large extent also in earlier theories, but neither Alhacen nor Descartes thought that it implies much because we put our visual experiences on the background of genuine knowledge that the world is three-dimensional. In recent discussions the received view has been that this implies that Descartes thought that we calculate the visual distances and that there is no immediateness in the spatiality of vision. This view is almost exclusively based on Berkeley's criticism of geometrical optics, and on one word in the sixth set of replies in the *Meditations*.[23] As we have seen, Descartes was not really vulnerable to Berkeley's criticism in certain issues and in a very central issue he was not even the target. But the passage of the *Meditations* still needs consideration.

In the sixth objections, Descartes is challenged with the traditional sceptical example of a stick half-immersed in water and thus visually appearing bent. The objector claims that the intellect is not able to correct the visual mistake but that it is the sense of touch that can do it—one must put one's hand to the water to check how the stick is (AT VII, 418). In his reply to the objection (AT VII, 436–439) Descartes goes back to his *Optics*. He starts with rejecting the scholastic theory of vision, and continues with distinguishing three grades (*gradus*) of sensation. First, there are the movements in the brain. Second, there are the sensory perceptions of colour and light coming from the stick that are immediately effected in the mind by the brain. And third, there are intellectual judgments made on the basis of the senses.

What Descartes is clearly aiming at is that we should distinguish between the visual perception of the apparently bent stick and the intellectual judgment that the stick is bent. In this context, he asks us to assume him to "judge (*ratiocinor*) on the basis the extension, boundaries and location of the colour in relation to the parts of the brain something about the size, shape and distance of the stick". And couple lines later that he has "demonstrated in the *Optics* that size, distance and shape can be perceived only by reasoning (*ratiocinatio*) in relation to each other".

[22] Berkeley (1948, p. 237).

[23] See esp. Atherton (1990, pp. 16–33).

(AT VII, 437–438.) Robert Stoothoff has translated the crucial verb *ratiocinor* as "make a rational calculation". (Descartes 1984, p. 295.) However, any careful reader of *Optics* notices that this is not quite what is at issue in Descartes's theory of perceiving distance. Indeed, the French translation in the AT-edition uses as translations for *ratiocino* in this context the verb *juger* in the first occasion, and *raisonner* on the second occasion where it is used as parallel to Latin *judico* translated as *juger*. I have followed this translation. (AT IX, 237.) The crucial content of the verb *ratiocino* is not to refer to geometrical calculations but to an intellectual operation. The point is that the mind actively takes a stance on the real size, distance and shape of the stick, and it is this judgment in which one is on the error if one takes the stick to be bent. At the level of a visual image, there appears a collage of colours having an angular form, but this image needs evaluative act of the mind before it can be taken to represent a stick either bent or straight.

Furthermore, Descartes says that we learn very early in age to make these judgments without noticing any ratiocinative steps. This surely does not support the idea that there would be steps of calculation involved. Rather, he must mean how a child looking at a person on a hillside might first think that the person seems very small and then—after a ratiocinative step—perhaps understand that the person must be far away. In such a situation, we would as adults still say that the person seems small just like the stick in the objector's example seems bent. Descartes's point is that if we say that the person seems to be far away, we really mean the mental judgment that a person seeming so small must be far away. In the case of the stick the ratiocinative step is even more obvious for an adult. We would not say that the stick seems straight despite the apparent bent, we just say that the apparent angle at the surface of the water does not genuinely make it seem bent to an experienced person because the mind corrects the misleading appearance. (AT VII, 438.)

Comparing to the above discussed list of the visual cues for perceiving distance it seems clear that the case of the bent stick does not belong to the two first classes where Descartes allows some limited immediate perception of distance through accommodation of the eye or through turning the eyes towards each other (cues 1. and 2.). The case is more complex, and clearly belongs to a sphere where we have to make an intellectual judgment of the stick on the assumption that it is a bodily objet in Euclidian three-dimensional space divided by the surface of the water. The visual appearance is such that it would make a child to judge that the stick is broken, and that only the intellect is capable of encouraging one to feel the stick to check whether it really is bent. At some age, we learn that sticks do not get bent merely by being put half way into water. There is no reference to geometrical calculations, neither conscious nor unconscious. Furthermore, geometrical calculations would be so complex in the case of an apparent bent on a stick half-immersed in water that making our everyday judgment dependent on them would not be credible at all.

Descartes's view is quite similar to what Alhacen would say. The visual appearance of the stick calls for apprehending a three-dimensional object. Descartes's specific point is that only the intellect can provide the route to a correct judgment. And right or wrong, the judgment about the shape of the three-dimensional object is thus made on the level of the mind, not of the brain. But there is no hint that he would be

in this reply to his objector thinking of geometrical calculations of the sort rejected by Berkeley.

10.6 Conclusion

My discussion carves out three different approaches to explaining the fact that we appear to see a three-dimensional world. In the pre-Keplerian theories, low-level cognitive processes developed a sphere of three-dimensional imagery in the brain. According to the Cartesian theory, three-dimensionality was added intellectually on low-level cognitive processes of the brain operating with something like two-dimensional imagery. To a very limited extent three-dimensionality was so to say hard-wired on the brain, because we are aware of some differences in small distances because of the accommodation of the eye. But the brain did not host any three-dimensional images in Descartes's theory. Visual objects were in his theory intellectually and actively located to the three-dimensional space we innately know to be around us. In his new theory of vision, Berkeley rejects this innateness and points out that nothing in the visual imagery itself would give the idea of a three-dimensional space: he seems to think of the visual field as two-dimensional. The experiential three-dimensionality in vision is due to associating visual ideas to ideas of other senses, among which proprioceptive senses were the most important.

We can thus distinguish three basic approaches to the spatiality of vision. Spatiality is, strictly speaking, not due to visual experience itself according to any of these three models. It can be, first, a precondition built into the very basic mental imagery and thus given in an unsystematic way with the visual experience itself (Alhacen). Or secondly, we innately and strongly know that the real world represented in vision is three-dimensional, and thus we always judge things we see to be in space (Descartes). Or thirdly, we learn to customarily associate visual images with the proprioceptive perceptual modalities, which are spatial, that we feel the spatiality even in connection to vision (Berkeley).

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Chapter 11
Descartes and Active Perception

Cecilia Wee

11.1 Introduction

There is considerable textual evidence in Descartes' writings to support the view that he held that the human perceiver is passive during sensory perception—that is, the perceiver herself plays no active role in accomplishing such sensory perception. For instance, in the Sixth Meditation, Descartes makes reference to his "*passive* faculty of sensory of perception", which he describes as a faculty for "receiving" the "ideas of sensible objects". (AT 7:80, CSM 2:55, emphasis mine)[1] If Cartesian sensory perception involves the passive receiving of "ideas of sensible objects", this would suggest that the perceiver herself does nothing to actively bring about her own perceptions. That this Cartesian perceiver is passive during sensory perception is further supported when Descartes goes on to note that his sensory ideas come to him "without my cooperation and often against my will". (ibid.)

In this paper, I argue that Descartes' own characterization of sensory perception as given above is somewhat misleading. It does not fully reflect the active role that the Cartesian perceiver plays in organizing and constructing her own sensory perceptions. My paper begins by examining Descartes' proof of the existence of the external world in the Sixth Meditation. On the basis of what Descartes says there (and in the *Passions of the Soul*), I distinguish two ways in which the Cartesian perceiver might be thought to be passive. I shall call these two senses of passivity, respectively, passivity *simpliciter* and non-volitional passivity. This paper will examine and assess the arguments for and against the claims that the Cartesian agent is both passive *simpliciter* and non-volitionally passive.

Before I begin, it is would be helpful to make clear what "sensory perception" would encompass for Descartes. In the Third Meditation, Descartes notes that some of his ideas are "adventitious"—that is, they (apparently) "come from things located outside [him]". (AT 7:38, CSM 2:26) Examples of the latter include, for him,

[1] Descartes (1962, 1984/1985, 1991).

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"hearing a noise, seeing the sun or feeling the fire" (ibid.). In the Sixth Meditation, he further mentions that the things that he "perceives by the senses" (*sensu percepta*) include that he has a "head, hands, feet and other limbs". (AT 7:74, CSM 2:51) A little later, he includes among his sensory experiences towers that appear round from a distance but square up close and large statues on pediments that seem smaller when observed from the ground. (ibid.) For Descartes, our sensory perceptions are of (usually middle-sized) physical objects and their properties. Such perceptions have a particular causal provenance insofar as their distal cause is in the physical world external to the body of the perceiver. They are also accomplished through one or more of the five senses of sight, hearing, smell, taste and touch.[2]

11.2 Cartesian Sensory Perception and Passivity *Simpliciter*

In order to discuss adequately Descartes' two different accounts of the passive-active distinction, it would be helpful to go first to his proof of the existence of the external world in the *Meditations*. This is because Descartes alludes there to both versions of the passive-active distinction. In this section, I examine the first version of the distinction.

Descartes' vaunted aim in the *Meditations* is to demolish his earlier-accepted preconceived opinions, and to build anew a system of knowledge on a "lasting" foundation. By the end of the First Meditation, Descartes had, by dint of a series of skeptical arguments, called into doubt all his formerly accepted opinions, including his belief that an external world exists. Descartes then goes on to establish the well-known *cogito*, noting that whatever else he may doubt, he cannot doubt that he himself exists *qua* doubter and thinker. He then proceeds, ostensibly on the basis of clear and distinct perception, to prove that God exists and is not a Deceiver. This, he argues, guarantees that his clear and distinct perceptions are true, and can serve as a foundation for a stable and lasting knowledge. By the Sixth Meditation, Descartes is ready to re-establish that body, and the external world, exists.

In his proof of the existence of the external world in this final meditation, Descartes begins by noting that he, *qua* thinker, finds in himself "a *passive* faculty of sensory perception, that is, a faculty for receiving and recognizing the ideas of sensible objects". (AT 7:79, CSM 2:55, emphasis mine) He then points out that there must be an "active faculty, either in [himself] or something else, which produced or brought about these ideas". (ibid.) He considers various candidates (e.g. God or

[2] For Descartes, such sensory perceptions are to be distinguished from acts of the imagination. While he thinks that both can only take place with a physical body, cases of imagination, e.g. in dreams and hallucinations, have their distal cause within the perceiver's own body. In contrast, sensory perception has its distal cause outside the thinker's body and involves the relevant sensory organs such as the eyes, nose etc. Descartes also distinguishes between acts of imagination that involve the will, and "passive" imagination (e.g. in dreams) that do not. (AT 11:344–5, CSM 1:336).

a higher being than himself) for the active faculty that brings about these ideas of sensible objects. Eventually, he concludes that, as he has a "great propensity" to think that such ideas derive from body itself and God is not a Deceiver, the active faculty from which these ideas derive must be body itself. Hence, body and the external world must exist.

Descartes in this proof characterizes sensory perception as a "passive faculty", and indicates that there is another faculty—in this case, the physical world[3]—that *acts* on this passive faculty so as to bring about sense-perception. In order to fully understand how sensory perception is "passive" in this first sense, we need to look at the precise way in which action and passion relate to each other in the Cartesian account.

In the *Passions of the Soul* (hereafter the *Passions*) Descartes elucidates the relationship between action and passion as follows:

> Whatever takes place or occurs is generally a 'passion' with regard to the subject to which it happens and an 'action' with regard to that which makes it happen. Thus although an agent and patient are often quite different, an action and passion must always be a single thing that has these two names on account of the two different subjects to which it may be related.[4] (AT 9:328, CSM 1:328)

Let me denominate this passage *Passions* Passage 1 (or PP1 for short). Descartes indicates in PP1 that there are two aspects to any given occurrence or event. For any such occurrence to take place, there must be a patient to which a change is made, and an agent which makes the change. Significantly, he notes that the action and the passion are "one single thing", although the agent who acts and the patient who is acted upon are "often quite different". To understand precisely the sense in which Descartes thinks sensory perception is "passive" in the Sixth Meditation proof of the external world, we need to be clear about the nature of the passive-active distinction in PP1.

Unfortunately, this is not so easily accomplished. We may begin first by noting that Descartes holds that the passions, considered in the general sense, "include the sensations of external objects, internal sensations such as hunger and thirst", as well as "perceptions, sensations and emotions of the soul which we refer particularly to it". (AT11:349, CSM1:338–9)[5] Thus, Descartes would accept that our sensory perceptions are indeed passions. However, in PP1, Descartes also claims that actions and passions are "one single thing". In what sense then is a sensory perception simultaneously *both* action and passion?

The answer to this question is not straightforward. Descartes' account of the relation between action and passion in PP1 has received a fair amount of discussion. Much of it relates to the issue of whether this account can coherently be accommodated within Descartes' specified ontology. As the Third Meditation makes clear,

[3] As mentioned, in order for sensory perception to take place, the causal chain for such perception must originate from outside the perceiver's body.

[4] As various commentators have pointed out, Descartes' distinction between action and passion here is derived from Aristotle. See, e.g., Hoffman (1990); Schickel (2011).

[5] Shapiro (2003, p. 38).

the "furniture" of Cartesian universe is (exhaustively) comprised by infinite substance, finite substances and modes of finite substances. (AT 7:40, CSM 2:28) God is infinite and independent substance. Matter and minds are finite substances that ontologically depend only on God for their existence. (That is, matter and minds would not exist if God did not exist.) Modes are modifications of either minds or matter, and thus ontologically depend upon the latter. (That is, modes of minds or matter would not exist if the minds or matter they inhere in did not exist).

As just noted, Descartes in PP1 claims that an action and a passion must "always" be "a single thing" (*l'un chose*), even though the agent and patient "are often quite different". Consider then an event or occurence X wherein finite substance A acts on finite substance B. We would, according to Descartes' account in PP1, accept that A is the agent, and B the patient. The occurence X is for Descartes a "single thing", and it is both action (*vis-à-vis* substance A) and passion (*vis-à-vis* substance B).

The question that one might then ask is this: is what occurs when X takes place a mode of the agent-substance A or a mode of the patient-substance B? For example, suppose I have a sensory perception. That sensory perception is a "single thing", which is simultaneously both a passion in myself (*qua* thinker) and an action by the external world *qua* body. But is this singular perception a mode of body or a mode of mind?

Commentators have offered different resolutions to this difficulty. Paul Hoffman has argued that X is neither specifically a mode of A nor specifically of B. Rather, X is a "straddling mode"—that is, it is a single mode which is nevertheless a mode of *two* different substances.[6] Thus, when I have a sensory perception, there is one single mode, which is both a mode of body and a mode of mind.

Hoffman's solution is an interesting, indeed intriguing, one. However, Calvin Normore and Deborah Brown have pointed out that it faces "the difficulty of conceiving a single mode which has two subjects"[7]. It is certainly difficult to try to get one's head round a state of affairs where one single state inheres in two different and separate substances. The account given by Hoffman is also hard to reconcile with what Descartes says elsewhere. In *Principles* 1:53, Descartes writes:

> Extension in length, breadth, and depth constitutes the nature of corporeal substance; and thought constitutes the nature of thinking substance. Everything else which can be attributed to body presupposes extension, and is merely a mode of an extended thing; and similarly, whatever we find in the mind is simply one of the various modes of thinking. For example, *shape is unintelligible except [nonnisi potest intelligi] in an extended thing and motion is unintelligible except as motion in an extended space*; *while imagination, sensation and will are intelligible only in a thinking thing*. (AT 9B:25, CSM1:210–11, emphasis mine)

In order to hold that sensory perception is one mode belonging to both matter and mind, we would have to accept that it is a *single* mode of both an extended thing *and* a thinking thing. But Descartes indicates in *Principles* 1:53 that such a claim

[6] See, for example, Hoffman (1990).

[7] Normore and Brown (2003, p. 92).

would be wholly unintelligible. Descartes thinks that physical modes such as shape are *only* intelligible when considered as modes of matter, and mental modes such as sensation are *only* intelligible when considered as modes of minds. Hoffman's single mode, however, would have to be intelligible *both* as mental mode and mode of matter. Descartes' claim here is that this is inconceivable. A mode must be conceived as *either* one of matter *or* one of mind. If we clearly and distinctly understand mind and matter, we cannot even conceive how a single mode is a mode *both* of extension and thought, let alone claim that such a state of affairs *actually* obtains.

In view of these difficulties with Hoffman's position, Normore and Brown have suggested an alternative way of construing the action-passion relation in PP1. Instead of claiming that an action and a passion are essentially one mode belonging to two different substances, they hold that we should think that action and passion are instead two inter-dependent modes belonging to two different but ontologically interdependent substances. They note:

> Descartes insisted throughout his career that actions and the corresponding passions are one thing…this is compatible with thinking of them as different but ontologically interdependent modes.[8]

For Normore and Brown, when there is an occurrence X, substance A (the agent) is in mode M1and substance B (the patient) is in mode M2, such that M1 cannot be conceived to exist without M2, and vice versa. Thus, suppose that I *qua* thinker have a sensory perception. On Normore and Brown's account, when this happens, I *qua* thinker am in mode M2, and the relevant portion of body is in mode M1, such that my being in mode M2 could not be conceived to hold without the latter being in mode M1, and vice versa. On this reading, action and passion during sensory perception are thus not *literally* "one thing". Rather, action and passion are "one thing" insofar there is no "real distinction" between them. For Descartes, a real distinction obtains between A ad B if A can be clearly and distinctly understood apart from B, and B can be clearly and distinctly understood apart from A. Two things are really distinct if they can be understood clearly and distinctly to exist apart from each other. Action and passion are not really distinct, and hence are "one thing" in this (attenuated) sense.

But now one might ask which *precise* portion of body is in mode M1 when the thinker is in mode M2? As noted earlier, sensory perception has its source in a distal cause outside the thinker's particular body, and includes a causal chain involving at least one of the five senses of sight, hearing, touch, smell and taste, and their related organs. Which link in this causal chain would then be the bodily mode that is interdependent with the mental mode of sensory perception? The best candidate for the portion of the body that would be in mode M1 when the thinker is in mode M2 would most likely be the final link of the physical causal chain. On Descartes' view, this terminus would be the pineal gland, on which is "imprinted" the figure of the external object itself. (See AT 5:162, CSMK:344–5) Descartes notes that when the mind "attends to this figure, [it] is said to have sensory perception". (ibid.) It thus

[8] Normore and Brown (2003, p. 93).

seems plausible to claim that it is the physical mode in this gland that is interdependent with the related mental mode.

We now have a reasonably full account of how sensory perception is "passive". According to this account, sensory perception comes about when the physical distal cause acts via the pineal gland upon a passive mind, such that the mode on the pineal gland and the mental mode cannot be clearly and distinctly understood apart from each other. For the thinker, sensory perception *qua* mental mode is passive insofar as it is the mind *qua* patient that is acted upon. It is body (and more specifically, the pineal gland) that is active as it is this that acts upon the mind during sensory perception. Descartes' account in the Sixth Meditation proof of the external world thus accepts that the thinker is indeed passive during sensory perception, insofar as it is the physical world (culminating in physical movements in the pineal gland) that acts on this thinker. I shall characterize this first sense of passivity, wherein something is passive insofar as it is a patient that is acted upon by some agent, as passivity *simpliciter*. I now elucidate the second sense in which Descartes thinks sensory perception is passive.

11.3 The Sixth Meditation Proof of the External World and Non-Volitional Passivity

Apart from noting that the faculty of sense-perception is "passive" and is acted upon by external body during sensory perception, Descartes also notes in the Sixth Meditation proof of the external world that his sensory perceptions are "passive" insofar as they are "produced without [his] co-operation and even against [his] will". (AT 7:79, CSM 2:55) Descartes' point here harks back to an earlier claim in the Third Meditation that his "adventitious" ideas—i.e. ideas which seem to come from "things located outside [him]"—"do not depend on my will", and that he frequently notices them 'even when [he does] not want to'." (AT 7:38, CSM 2:26)

The passive-active distinction here differs from the earlier distinction. In the earlier distinction, Descartes had considered action and passion as a single thing, insofar as they involved two interdependent modes in the active and passive substances respectively. The interdependence is such that one could not conceive either mode to obtain without the other.

The passive-active contrast here is different. The distinction here is between two different *kinds* of mental items. For Descartes, sensory perceptions are passive insofar as they are not within the control of the thinker. As he notes, they are "produced without his co-operation", and he has such perceptions even when he does not want to. In this respect, they would differ from other kinds of thoughts such as volitions and certain kinds of imaginings insofar as the latter are, or involve, acts of the will. The latter *are* within the thinker's control.

Descartes in the Fourth Meditation notes that the will "simply consists in our ability to do or not do something (that is, to affirm or deny, to pursue or avoid)".

(AT 7:57, CSM 2:40) Thus, the mental decision to pursue a certain course of action would be an act of the will. Such a decision is also evidently one that is produced *with* the thinker's co-operation. Indeed, this decision comes about because the thinker *makes* it. Again, Descartes writes of imaginings formed by the thinker thus:

> When our soul applies itself to imagine something non-existent—as in thinking about an enchanted palace or chimera—the perceptions it has of these things depend chiefly on the volition which makes it aware of them. That is why we usually regard [them] as actions rather than passions. (AT 11: 344, CSM 1:336)

Here, Descartes contrasts the activity of the will in such imaginings with the passivity of sensory perception. The contrast is between thoughts that involve the will and the thinker's ability "to do or not do", and those that are passive and do not involve such an ability.

Descartes also invokes this contrast in the *Passions of the Soul*:

> It is easy to recognize that there is nothing in us that we must attribute to our soul except our thoughts. These are of two principal kinds, some being actions of the soul and others its passions. *Those I call its actions are all our volitions*, for we experience them as proceeding directly from the soul and as seeming to depend on them alone. On the other hand, *the various perceptions or modes of knowledge present in us may be called its passions*, in a general sense, for it is often not our soul which makes them such as they are, and the soul always receives them from the things that are represented by them. (AT 9:342, CSM 1:335, emphasis mine)

Let me call this passage *Passions* Passage 2 (or PP2 for short). In PP2, actions are taken to be volitions, and to have their source in the (human) will. In contrast, passions are "perceptions or modes of knowledge" which do not involve the will in any way. Sensory perception would thus fall into the latter class, and it would stand in contrast to those thoughts which are actions insofar as they involve the will.

The present active-passive distinction in PP2 can be distinguished from Descartes' earlier distinction in PP1 in a couple of ways. First, the active-passive distinction in PP2 is evidently one that is specific to thoughts, and the realm of the mental. As mentioned, it is a contrast between two kinds of thoughts—those that involve passive perception (including sensory perception), and those that are acts of the will (including acts of willing or mental imagining with the will as a component). The active-passive distinction in PP1, in contrast, is *not* restricted to the realm of the mental. It could conceivably apply to purely physical items. Suppose, for example, that a stone hits a pavement. Given Descartes' account of the passive-active distinction in PP1, there is nothing that rule out our holding that the pavement is passive insofar as it is the subject which is acted upon, and the stone is active insofar as it is that which acts upon that subject.

Second, the active-passive contrast in PP1 involved two interdependent modes such that one could not conceive either mode to obtain without the other. In the present active-passive contrast in PP2, the passive mode of sensory perception can be conceived to obtain, and indeed may obtain, without a concomitant active mode of willing. Descartes of course does think that a perception—sensory or otherwise—may be followed by an active mode of willing. For example, my sensory perception

of someone in trouble in the water may lead me to will that I help that person. But it need not be followed by such an act. A passive mode of sensory perception therefore need not be accompanied by an active mode of willing.

Of course, one can point out that, for Descartes, some perceptions *must* always be accompanied by acts of willing. In the Fourth Meditation, Descartes indicates that when the intellect has a clear and distinct perception, this necessitates the will to affirm that perception. As he puts it, when one has a clear and distinct perception, "a great light of the intellect [is] followed by a great inclination of the will". (AT 7:59, CSM 2:41)

However, even if this is true, it is only one case in which a passive mode must be followed by an act of willing. It is not true of *all* cases of action and passion in PP2, unlike the cases of action and passion in PP1. Moreover, it is not evident that every case of a clear and distinct perception must inevitably be followed by an affirmation by the will. Note that there is a *temporal* operator in Descartes' claim that "a great light of the intellect is followed by a great inclination of the will". It is *after* one has a clear and distinct perception that one affirms it. In this case, it is possible (though perhaps unlikely) for a situation to obtain where one has a clear and distinct perception, and then is prevented from affirming it. (For example, one might have a clear and distinct perception and then a split second later be involved in a huge explosion, so that one never affirms it.) So the perception here is unaccompanied by any act of will.

I have outlined above the two different accounts of the active-passive distinction that are to be found in Descartes' work. As mentioned, the first version of passivity, where X is passive insofar as it is a patient that is acted upon by some agent, was denominated passivity *simpliciter*. The second version of passivity, where X is passive insofar as it does not depend on the will, will be denominated non-volitional passivity. The next two sections examine, respectively, whether the Cartesian perceiver is passive *simpliciter* during sensory perception, and whether she is non-volitionally passive during the same.

11.4 Is the Cartesian Perceiver Passive *Simpliciter*?

As we have seen, both PP1 and the proof of the external world in the Sixth Meditation strongly suggest that the Cartesian perceiver is passive *simpliciter*. That is to say, this perceiver is acted upon by body, and passively receives the "ideas of sensible objects" from body (and more specifically from the pineal gland). However, an examination of what Descartes writes elsewhere will indicate that this account may be somewhat misleading.

Cartesian sensory perception is a far more complex process than indicated by PP1 and the Sixth Meditation proof of the external world. In his Replies to the Sixth Set of Objections, Descartes provides a fuller account of what occurs when one has a sensory perception. He there distinguishes three grades of sensory response, and outlines the role that each plays in bringing about our sensory perceptions. The

example that Descartes uses in this context to illustrate what happens in the various sensory grades involves the sensory perception of a stick.

According to Descartes, the first grade of sensory response is purely physical. It is limited to the "immediate stimulation of the bodily organs by external objects". (AT 7:436, CSM 2:294) It consists in "nothing but the motion of [physical] particles, and any change of shape or position resulting from this motion". (ibid.) In the specific case of the sensory perception of the stick, what happens in the first grade is that "rays of light are reflected off the stick", which then "set up certain movements in the optic nerve", and then in the brain. (AT 7:437, CSM 2:295)

The second grade of sensory response is to be found in the mental realm. It "comprises all the immediate effects produced in the mind as the result of its being united with a bodily organ". Such effects would include "the perceptions of pain, pleasure, thirst, hunger, colours, sound, taste, smell, heat, cold and the like". (AT 7:437, CSM 2:294) In respect of our sensory perception of the stick, Descartes maintains that this second grade of response involves the "mere perception of the colour and light reflected from the stick". (AT 7:347, CSM 2:295)

It is in the third grade of sensory response that we perceive the stick *as* a stick. This grade "includes all the judgments about things outside us which we have been accustomed to make from our earliest years". (AT 7:437, CSM 2:295) It is at this point that we accomplish what we would normally take to be the "sensory" perception of the stick. Descartes elaborates:

> As a result of being affected by the sensation of colour, I judge that a stick, located outside me, is coloured; and…on the basis of the extension of the colour and its boundaries together with its position in relation to the parts of the brain, I make a rational calculation about the size, shape and distance of the stick: although such reasoning is commonly assigned to the senses (which is why I have referred to it as the third grade of sensory response), it is clear that it *depends solely on the intellect*. (ibid., emphasis mine)

As I shall be shortly discussing this passage in some detail, I shall denominate it Passage A. The account of how we "perceive" through the senses in Passage A is pretty much in line with Descartes' more detailed accounts of sensory perception in works like the *Dioptrics* and the *Treatise on Man*. In the latter works, there is a great deal more detail about the precise mechanisms in the human body and brain by which the first grade of sensory response is brought about. This paper will not be concerned with the precise mechanisms by which the body actively works to occasion sensory perceptions in the mind. The question that we are concerned with here is whether the sensory perceptions at the *mental level* are indeed passive.

According to the active-passive distinction in PP1, the body (or more precisely, the pineal gland) is the agent and the mind is acted upon by the latter. In the Sixth Replies, Descartes indeed accepts that at the second grade of sensory response, the mind is passively acted upon by the body. At that grade, he notes, "all the immediate *effects* (of colour, taste, smell etc.) are *produced* in the mind" as a result of its union with a bodily organ. (emphasis mine) If Descartes had ended his account at the second grade of sensory response, we might have had good grounds to say that the interaction between mind and body is an instantiation of the active-passive

distinction in PP1. It is the body which acts upon and produces particular effects in the mind (*qua* patient).

But Descartes does not end his account of sensory perception at that point. He goes on to add the third grade of sensory response to his account. At this grade, the perceiver herself is evidently an active organizer of what she perceives. The second grade of sensory response included only passively received *qualia* like colour, smell, taste etc. In the third grade, however, it is the thinker—or more precisely, her faculty of intellect—that *judges* that there is a stick and "makes a rational calculation about the size, shape and distance of the stick". This rational calculation may not of course be one that the thinker is *consciously* aware of. As Descartes notes, many such calculations are made at great speed from habit, and indeed may be traced back to one's early childhood. (AT 7:438, CSM 2:295) However, Descartes emphasizes, the thinker, or more precisely her intellect, does affect such judgments.

This being so, we may argue that the thinker plays an active role in accomplishing her own sensory perceptions. It is her rational judgments that result in her sensory perceptions of the size and shape of the stick and of its distance from herself (or more precisely, her body). Indeed, that the thinker is actively involved in the formation of her sensory perceptions is even evidenced by the perceptual mistakes she makes. For instance, Descartes considers the perceptual mistake of the bent-stick-in-water in this Sixth Replies and argues thus:

> When we say 'The reliability of the intellect is much greater than that of the senses' this means merely that when we are grown up the judgments which we make as a result of various new observations are more reliable than those which we formed without any reflection in early childhood; and this is undoubtedly true. It is clear that we are not here dealing with the first and second grades of sensory response, because no falsity can occur in them. Hence when people say that a stick in water 'appears bent because of refraction', this is the same as saying that it appears to us in a way which would lead a child to judge that it was bent […] (AT 7:438, CSM 2:295–296)

As I shall have occasion to refer to this passage again later, I shall denominate it Passage B. Descartes claims here that all our "sensory" perceptions are in fact based on judgments by the intellect, and not the senses themselves. When we see a stick as *appearing* to be bent in water, it is because we are grown up and the judgments by our intellect are mature and "more reliable". In contrast, when a young child "sees" a stick as bent-in-the-water, it is because her judgment is "formed without any reflection". This is because her young intellect is still inexperienced in making judgments, and unreflective about the judgments she does make. Descartes emphasizes that the difference in the "sensory perception" between adult and child is not due to the former relying on her intellect and the latter on her senses to order their perceptions. For Descartes, the senses *per se* can never give rise to any perceptual mistake—as he notes, no falsity can occur in the first and second grades of sensory response. It is only at the third grade of sensory response, which involves the intellect's active (and sometimes mistaken) judgments, that such errors are made. Thus, Descartes indicates that our so-called sensory perceptions are formed by our intellectual judgments—and if such sensory perceptions are erroneous, it is because the judgments by our intellect are faulty.

For Descartes, then, the thinker does indeed play an active role in sensory perceptions insofar as it is her intellectual *judgments* that form her sensory perceptions. This being so, Descartes' claim in the Sixth Meditation that we have a "passive faculty of sensory perception" is arguably misleading, if we mean by that claim that the thinker herself is merely acted upon and plays no active role in sense-perception. If we mean by the faculty of sensory perception that faculty which enables us to perceive a stick through the senses, then it is clear that the thinker plays a considerable role in achieving her own perception. This is because it is she who shapes and orders the second-grade *qualia* so that she comes to perceive a stick. To claim therefore that the thinker is passive during sensory perception does not do justice to the complexity and intellectual activity involved in the process.

At this point, one might object that my account above is unfair when it accuses Descartes of being misleading when he claims that sensory perception is a passive mode. When Descartes writes about sensory perception as passive, it might be argued, he is not referring to what occurs in the third grade of sensory response. The latter, as we have seen, involves *intellectual* judgments. Instead, he is referring to what takes place in the *second* grade of sensory response in which are found *qualia* like colours, tastes, smells etc. If we accept sensory perception to take place in the second grade, we will not find Descartes' claim that sensory perception is "passive" misleading at all. This is because perception at the second grade *is* entirely passive.

Indeed, if we locate sensory perception in the second grade, we will find that Descartes' construal of sensory perception in terms of the active-passive distinction in PP1 would be wholly apposite. This is because the human body in the first grade of sensory response does indeed act upon the mind to affect the passive *qualia* of the second grade. One can thus cogently hold that the physical modes in the first grade and the mental modes in the second grade are interdependent modes in, respectively, the active and passive substances. This account would fit in neatly with the active-passive distinction in PP1.

My response to this would be as follows. It may well be that Descartes (sometimes) means by sensory perception what takes place in the second grade of sensory response.[9] However, as we have seen earlier, Descartes *also* applies terms like "perceived through the senses", "see", "touch" etc. not just to perceptions of *qualia*, but (as pointed out earlier) to sense-derived perceptions of one's head and hands, the wax in the Second Meditation, the towers and statues of the Sixth Meditation.[10] Again, he also claims in respect of physical objects like the sun or towers in the distance that it is "the senses" (and not the intellect) that deceive him about their size or shape.'' (AT 7:74, CSM 2:51) As we have seen, Descartes in the Sixth Replies elaborates that these deceptions have their source in the poor judgments of the

[9] Indeed, some writers have held that Descartes thinks that it is such *qualia* that are *directly* perceived by the senses. They suggest that it is from our direct sensory perception of these qualities that we *infer* that there are finite substances like minds and matter in which they inhere. Such writers would include Vinci (1993); Wee (2002, 2006).

[10] For Descartes, items like the wax, towers or statues are not of course themselves substances. For Descartes, there are in the created universe only two kinds of substances—finite minds and extended matter.

intellect. Descartes thus clearly also maintains that sensory perception obtains at the third grade of sensory response involving intellectual judgments.

Perhaps at the end of the day, Descartes (who was not exactly famous for consistent usage of terms) may not have been very careful in his terminological usage. He may have used terms like "perceive" or "sense" loosely to denominate *either* the perception of *qualia* in the second grade of sensory response *or* the perception of the sun, the stick and the tower in the third grade of sensory response. But perhaps our main interest in this paper is to understand Descartes' views with respect to what *we* normally mean by sensory perceptions (and we usually do mean by "sensory perceptions" our sense-perceptions of physical objects). This being so, we can indeed say that Descartes thought that such sensory perceptions do involve active judgments on the part of the perceiver. In that sense, Descartes arguably differs from someone like Aristotle, who is commonly thought to have held that the sense-perception of a stick only involves the passive receiving of the form of the stick[11] from the stick itself.

11.5 Is the Cartesian Perceiver Non-Volitionally Passive?

I have examined above the question of whether sensory perception is passive *simpliciter*, and shown that the answer depends on what Descartes himself means when he uses terms such as "sense" or "perceived by the senses". I now turn to the second active-passive distinction, which contrasts passive perceptions with active volitions. Here, Descartes is on record as stating that sense-perceptions are passive insofar as they do not depend on the will, and take place without the thinker's co-operation. The question I explore here is whether Cartesian sensory perceptions are indeed volitionally passive (i.e. do not involve the will at all), or whether they could in fact be volitionally active (i.e. the will is in some way involved in sensory perceptions).

The issue here revolves around the question of what Descartes encompassed within the term "judgment". As we have seen, Descartes maintains that the third grade of sensory response involves *judgments* by the thinker. In the Fourth Meditation, Descartes maintains that judgments are acts of the will. (See AT 7:56–8, CSM 2:39–40; and also AT 8A:17–18, CSM 1:204) He distinguishes in that meditation between perception, which belongs to the intellect, and judgment, which belongs to the will. He then indicates there that errors, in the strict sense, do not occur when we merely have perceptions. Rather, they occur when we use our will to make judgments (i.e., to affirm or deny) on the basis of those perceptions. Anthony Kenny writes that "[Cartesian] judgment differs from perception in being an act of the

[11] See, for example, Aristotle's *De Anima*, 2:12 424a17. Note that the passive reception of forms for Aristotle does not in the first instance take place in the mind, but (arguably) in the relevant sense-organ. (Aristotle did not of course hold on to the dualism of mind and matter–or at least not in the way that Descartes did. For a solid discussion of this issue, see Wilkes (1992).

will, in being concerned with extramental reality, and in being liable to error".[12] For Kenny, Cartesian perceptions thus present a certain content, which is strictly speaking neither true nor false. It is when we affirm or deny that this presented content obtains in extramental reality that we make a judgment that runs the risk of being false. Thus, it is when we exert our will in affirmation or denial of claims concerning extramental reality that we are "liable to error".

If we accept Kenny's account of Cartesian judgment, we arguably have good grounds for holding that Descartes' third grade of sensory response involves acts by the will. As mentioned earlier, Descartes writes thus of what happens in this third grade:

> As a result of being affected by the sensation of colour, I *judge* that a stick, located outside me, is coloured. (op. cit., emphasis mine)

It is thus at the third grade of sensory response that the thinker makes a judgment that involves a claim about extramental reality, and which runs the risk of error. This strongly indicates that what happens at this third grade is, or involves, an act of the will.

If this is correct, Descartes' claim that sensory perceptions are passive insofar as they "do not depend on the will" might be misleading. As I have argued, there is ample evidence that Descartes often includes in "what is perceived by the senses" physical objects like hands, towers and the sun. These "perceptions" are to be found in the third-grade of sensory response, and Descartes notes that they involve *judgments*. Insofar as judgments are acts of the will, Descartes' perceptions of the sun or towers or hands would then "depend on the will". Sense-perception, insofar as we take this to mean what takes place in the third grade of sensory response, would not be non-volitionally passive. It would in fact be volitionally *active*.

However, there is an objection to the above reading. While the text in the Sixth Set of Replies does accept that the third grade of sensory response involves judgments, these judgments are noted by Descartes to belong specifically to the *intellect*. Passage B, for instance, would only make sense on the assumption that the judgments in the third grade of sensory response are judgments by the intellect. Descartes notes in that passage that it is on the basis of such judgments we come to perceive a stick of a certain size and shape. He further makes clear that such judgments involve complex rational calculations. It is hard to see such complex and geometrically calculative judgments as judgments by the *will*. Descartes indicates in the Fourth Meditation that acts of the will may involve affirmation and denial (of whether the content presented does exist outside the mind), or they may involve pursuit and avoidance. (AT 7:57, CSM 2:40) But there is no indication there that complex geometrical reasonings are to be achieved by the will *per se*.

Similarly, Descartes notes in Passage A, in respect of the perception of the size and shape of the stick in the third grade of sensory response, that "although such reasoning is commonly assigned to the senses, *it is clear that it depends solely on*

[12] Kenny (1968, p. 123).

the intellect". (AT 7:437, CSM 2:295, emphasis mine) Once again, the reasoning that takes place would obviously belong to the intellect, and not the will.

It is likely that the term "judgment" is thus used in two different senses by Descartes. He used this term to refer to both the rational calculations of the intellect in the third grade of sensory response, as well as the affirmations and denials of the *will*. If I am right in claiming this, then it looks like we have no grounds for thinking that sense-perceptions in the third-grade involve an act of the will. They instead involve a different sort of judgment that is accomplished by the intellect.[13] In that case, we may conclude that Descartes can cogently claim that sense-perceptions are passive insofar as they do *not* involve the will. They thus conform to the definition of passivity in PP2 and may be said to be volitionally passive.

11.6 Conclusion

This paper has focused on two senses in which Cartesian sensory perception may be deemed to be "passive". First, Cartesian sensory perception may be passive because the perceiver is not active, but acted upon by an external faculty during sense-perception. Second, sensory perception may be passive in the sense that the will is not involved in sense-perception. I have argued that the Cartesian perceiver is, on balance, likely to be passive in the second sense. However, the Cartesian perceiver is not passive in the first sense.[14]

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[13] Descartes would of course hold that these third-grade sensory judgments of the intellect can then be *followed* by judgments of the will (i.e., by affirmations and denials by the will).

[14] I would like to thank Annette Baier and C.L. Ten for their helpful comments on an earlier draft of this paper.

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Chapter 12
Locke and Active Perception

Vili Lähteenmäki

12.1 Introduction

In this paper, I examine whether Locke can consistently maintain that perception is a fully passive process. In order to do so I will articulate two Lockean senses of activity with the help of which I will evaluate Locke's view of perception in three contexts: the role of noticing in perception, visual perception of shape, and reflection as a form of inner perception. I will conclude that with respect to noticing and reflection Locke consistently supports his thesis that ideas are passively received, but in visual perception of shape he ascribes an active role to the mind in the sense that the mind contributes more to the perceptual process than a general and passive capacity to receive ideas can allow.

The starting point is that, for Locke, the perceiver is entirely passive. In Locke's vocabulary, perceiving is receiving ideas: "[t]o ask, *at what time a Man has first any* Ideas, is to ask, when he begins to perceive; having *Ideas*, and Perception being the same thing" (II.i.9).[1] It is a central principle of his philosophical program that our knowledge of external world originates in and is caused by things distinct from the mind. He repeatedly indicates that a perceiver is passive in sensory perception (see, e.g. II.ii.2, II.xii.1, II.xxii.2, II.xxxiii.3). In his treatment of the fundamental sceptical challenge—"[h]ow shall the Mind, when it perceives nothing but its own *Ideas*, know that they agree with Things themselves?" (IV.iv.3)—Locke refers to the passivity of sense perception: the mind cannot make simple ideas itself but they are "the product of Things operating on the Mind in a natural way" (IV.iv.4). Agreement between things and ideas obtains ultimately because God has "ordained and adapted" the "Things without us" to produce in us the ideas that they do (ibid.). Locke's subscription to passivity of perception is well motivated from his empiricist aspirations and hence goes beyond a mere convention of pairing receptivity with passivity.

[1] Locke 1975.

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In what way is perception not active according to Locke? This paper puts his view under scrutiny under two senses of activity. Does Locke reject active perception in light of his own understanding of activity; or rather, does he treat perception as passive in that the mind has only a general capacity of reception of ideas and not specialized capacities that contribute in specific ways to organizing specific types of perceptions? The latter approach calls for some explanation. Whereas things are adapted to produce ideas in us, by the same token, we must be adapted to receive those ideas (see IV.xi.3).[2] Accordingly, bracketing off Locke's own definition of mental activity proper, the question of activity and passivity of perception can be translated into a question of the mind's role in the formation of sensory ideas: whether the mind organizes sensory input in ways that go beyond serving merely as something to be imprinted on, contrary to what Locke's repeated statements that the mind is *wholly* passive in the reception of all simple ideas suggest (II.xii.1, II.xxii.2, II.xxxiii.3).

While Locke adamantly denies that the mind has innate ideas, he does believe that it is equipped with some cognitive tools, namely it has an inborn capacity to perform various mental operations. Locke explains, "…[*the mind's*] *own operations*, proceed[…] from Powers intrinsical and proper to it self" (II.i.24). The whole range of particular mental operations involved in reception of different types of ideas (see, e.g., II.xi.14) belong to the mind from its very beginning in the sense that they need not be acquired from experience. Locke's acceptance of ready to use mental capacities can be highlighted through a contrast with Condillac's more far-reaching empiricist aspirations.

Condillac explains in his *Essay on the Origin of Human Knowledge* that his aim is to examine mental operations from a point of view of "how they are all generated from a single starting point which is nothing but a simple perception."[3] He thinks an empiricist needs an account of how mental operations such as imagination, contemplation, memory, etc., are brought forth by virtue of sensory impressions received from without. Condillac and Locke both indicate that the thinking faculty can be improved, as its exercise is in our voluntary power.[4] But whereas Condillac maintains a developmental account of mental capacities and operations, Locke is a developmentalist only as regards acquiring a diversity of different ideas: "'Tis by degrees [a child] comes to be furnished by them" (II.i.6, see also II.i.24). Although attentive reflection on one's own mental operations is not possible for very young children, it is not because the capacity would have to be acquired through learning. It is only that such reflection is not made use of before some maturity (II.i.7–8).

[2] Locke discusses knowledge in good detail in the *Essay*, but that discussion is for the most part conducted in terms of agreement and disagreement between ideas, not things and ideas. This is in itself a complex issue that lies outside of the present topic. But it may be noted that did not Locke think that our senses are to be trusted at bottom, he would have little reason to transpose the question of knowledge onto the ideational level.

[3] Condillac 1746/2001. In his *Traité des Sensations; Traité des animaux* 1798/1984, he presents a detailed exposition of how our cognitive *capacities* are learned, arguing with the help of a thought experiment that starting from a simple sensation of smell eventually all mental capacities can be seen to develop.

[4] Locke: II.ix.1, II.i.20; Condillac 1746/2001: I.ii.5.

Hence, for Locke, *in principle* the mind is not impeded in terms of lack of mental capacities from contributing by way of its own activity to formation of sensory ideas.

I will begin with an overview of Locke's issue with innatism to reinforce the suggested approach according to which the nature of the mind's contribution in the reception of ideas is relevant in determining whether Lockean perception can be seen as passive through and through. I will continue by constructing Locke's notions of activity and passivity in order to provide criteria for activity and passivity by Locke's own lights. Then I will take a closer look into his discussion of noticing that is at play when ideas are formed in the mind. I will argue that with respect to intrusion of ideas and the mind's noticing of them Locke lives up to his thesis that ideas are passively received. I will then examine visual perception of shape as a special case of perception and conclude that Locke compromises his commitment to passivity. Lastly, I will discuss reflection as a type internal perception and argue that Locke successfully treats it as a passive source of ideas.

12.2 Locke's Rejection of Innatism

Locke opposes two strands of innatism. While all innatists maintain that innate ideas serve as "the foundations of all our other Knowledge" (I.ii.21), some innatists propose that we have a set of operative innate ideas and some innatists propose that ideas are innate in us only potentially; in other words, that we are born with a disposition (or dispositions) to actualize them from within. Locke clearly rejects the first strand (see I.ii.1). This suggests that a dispositional form can fare better against Locke's own view than a version committed to actually possessed set of innate ideas, but it can be seen more clearly through distinguishing between two main elements in his criticism.

On the one hand, Locke takes issue with the innatist criterion that if a principle is innate it must be universally assented to (I.ii.24). He provides several objections arguing that there are no universally assented principles and hence no innate principles.[5] On the other hand, he argues that ascribing mental contents of which the mind is not conscious (I.ii.5, I.iv.20) is unintelligible. Strictly speaking, an idea is in the mind only when the subject is conscious of the idea (ibid.).[6] For any innatist view this means that there is no refuge in ideas and principles that are had or assented to without the subject being aware of her having or assenting to them. With these two

[5] See Rickless (2007) for an exposition of the various points Locke raises against innatism.

[6] In keeping with his thesis that only occurrently entertained mental contents count as ideas proper, Locke does not account for memories in terms of *ideas* stored in the memory. However, he acknowledges ideas that have been in the mind before: "to remember is to perceive any thing with memory, or with a consciousness, that it was known or perceived before: without this, whatever *Idea* comes into the mind is new, and not remembered" (I.iv.20). This excludes innate ideas being treated on a par with memories, for of the latter, but not the former, the mind has been aware on the occasion of their initial entrance into the mind.

contentions, Locke is pressing the point against the innatist of how the mind can "have" ideas without having them consciously.[7] In his view, the lack of universal assent and the unacceptability of unconscious ideas forces the innatist to grant that there is no set of ideas and principles we are born with. If there is anything innate, for Locke, it can only be the capacity to acquire ideas and principles. Dispositional innatism hence comes out as the more viable strand. However, it too faces problems, namely:

> [I]f the Capacity of knowing be the natural Impression contended for, all the Truths a Man ever comes to know, will, by this Account, be, every one if them, innate; and this great Point will amount to no more, but only to very improper way of speaking; which whilst it pretends to assert the contrary, says nothing different from those, who deny innate principles. For no Body, I think, ever denied, that the Mind was capable of knowing several Truths. The Capacity, they say, is innate, the Knowledge acquired. But then to what end such contest for certain innate Maxims? If Truths can be imprinted on the Understanding without being perceived, I can see no difference there can be, between any Truths the Mind is capable of knowing in respect of their Original: They must all be innate, or all adventitious: In vain shall a Man go about to distinguish them. (I.ii.5)

Locke takes the position that the innatist is forced into as both trivial and one that does not set it apart from the empiricist's. Now it is worthwhile to note, following Raffaella De Rosa, that Locke's treating innatism and his own empiricist position as indistinguishable from each other rests on the postulation that the capacity of acquiring knowledge is general: Locke regards the capacity as trivial—indicated by his statement that nobody would deny such capacity.[8] But, as De Rosa points out, the success of Locke's argument against dispositional innatism depends on what type of capacity of knowing the innatist is committed to.[9] Namely, if the innatist maintains that the capacity to acquire ideas involves specialized capacities for different types of ideas, speaking of a (trivial) general capacity misses the mark, for positing specialized capacities is surely not a trivial issue that nobody would deny. Granted that Locke maintains that all knowledge must originate in and be caused by external objects *and* that he takes the mind to receive ideas by virtue of its general capacity of reception, then positing specific roles to the mind in reception of specific types of sensory ideas upon specific types of external stimuli would go against his commitments.

Whether such specificity would amount to downright activity of perception in terms of what for Locke counts as activity is a separate question, but it would amount to allowing the mind a more significant and complex contributory role in perception than Locke's insistence on complete passivity suggests—and in this sense compromising the principle that the mind has (only) a general capacity of reception also compromises the principle that the mind is completely passive in perception. Let us start the inquiry by constructing Locke's own understanding of activity and passivity.

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[7] See Atherton (1998, p. 58).

[8] De Rosa (forthcoming).

[9] Ibid.

12.3 Activity

> Thinking, in the propriety of the *English* Tongue, signifies that sort of operation of the Mind about its *Ideas*, wherein the Mind is active; where it with some degree of voluntary attention, considers any thing. For in bare naked *Perception*, the Mind is, for the most part, only passive; and what it perceives, it cannot avoid perceiving. (II.ix.1)

Properly active mental operations involve voluntary attention on ideas in the mind. Locke's qualification of the type of attention relevant for mental activity proper as voluntary and as having ideas as its object is noteworthy, as he also speaks of 'noticing' that is necessarily involved when, as a result of a material stimulus, an idea is imprinted in the mind.[10] I will shortly examine in detail his notion of 'noticing'. Here it suffices to note that an operation of noticing, in so far as it has a material impression as its object, can hardly involve voluntary attention at its object.

Locke acknowledges also another type of voluntary attention, one that is not about ideas.

> When I turn my Eyes another way, or remove my Body out of the Sun-beams, I am properly active; because of my own choice, by a power within myself, I put myself into that Motion. Such an *Action* is the product of *Active Power*. (II.xxi.72)

One can voluntarily direct attention through voluntary mental and bodily efforts. Such attentiveness is relevant here since alertness on a general level to what the senses will deliver indeed forms a way in which the mind can be active in reception of sensory ideas. One can, at will, take pains to stay alert, direct one's sight one way or the other, concentrate on tastes rather than sounds, etc. (see IV.xiii.1–2). Locke can allow such endogenous activity because it does not entail activity of the mind on the level of the formation of sensory ideas in the mind, since external things always "force an entrance to the Mind" (II.i.6).

12.4 Passivity

Locke understands sensation as passive in two different senses. The following passage includes reference to both of them.

> [T]he Mind, in respect of its simple *Ideas*, is *wholly passive*, and *receives* them all from the Existence and Operations of Things, *such as* Sensation or Reflection *offers* them (II.xx.2).

The first aspect concerns how ideas are *offered* to the mind and the second aspect concerns receiving the ideas *such as* they are offered. Let us consider the first aspect. The passage is confusing in this respect, for while stating that the mind is completely passive, it also says that they are the mind's own acts of sensation and

[10] In II.ix.1 Locke says that perception is "exercised about our *Ideas*", i.e., it is not only voluntary attention but also perception that has ideas as it objects. Even if for Locke we perceive external things by virtue of perceiving ideas of those things, there is a difference between (occurrently) receiving an idea and having an idea in the mind.

reflection that offer ideas to it. Other passages where Locke says that it is not in our power to have simple ideas provides some help here.

> [T]he Objects of our Senses, do, many of them, obtrude their particular *Ideas* upon our minds, whether we will or no: And the Operations of our minds, will not let us be without, at least some obscure Notions of them (II.i.25).

This passage leaves unmentioned the requirements of sensation and reflection in the formation of ideas and instead emphasizes that ideas are imposed on the mind. Indeed, Locke writes that such ideas would be imposed even if a volitional effort were made to prevent them (ibid.). But as the first quotation indicates, sensation and reflection are requisite for formation of ideas as the minds reactions to stimuli. We can bring these two contentions into harmony by categorizing sensation and reflection as passive mental operations that are triggered by the objects of ideas and thus involve no voluntary attention to their objects. Sensation and reflection are sources or origins of ideas and as such "rather *Passions* than *Actions*":

> Power to receive *Ideas*, or Thoughts, from the operation of any external substance, is called a *Power* of thinking: But this is but a *Passive Power*, or Capacity. (II.xxi.72)

Sensation and reflection do not actively "offer" ideas, but passively provide them for further use for the mind to attend to, combine, compare, etc.

Let us now look at the second aspect of passivity, the notion that we are passive insofar as we receive the ideas *such as* they are offered. Locke says, the mind cannot "alter [the ideas], when they are imprinted" (II.i.25.). In this sense of passivity the mind cannot interfere with the formation of an idea in terms of its content, even upon voluntary effort, neither at the time of its entrance nor later.

According to Locke, in the process of receiving a simple idea the mind is passive both regarding the entrance of the idea and the content of it in the sense that no volitional activity is involved. In other words, the mind does not and cannot voluntarily act on a material impression to turn it into an idea and it does not and cannot voluntarily act on an idea in terms of altering its content. However, as the first quotation in the previous section exemplifies, sometimes Locke says that in simple perception the mind is 'for the most part' passive. He also contends that sensation and reflection as mental operations are required for ideas to come about. This suggests room for contribution on the mind's part, albeit not characterized by volitional activity. We need to look into the details of the sensory process.

12.5 Noticing

It is helpful to start from Locke's observation that not all stimuli on sense organs result in ideas even when all material conditions for a sensation are met, that is, there is no defect in the stimulus, the relevant sense organ, and the brain.

> Sometimes the mind […] takes no notice of the ordinary Impressions made […] on the senses, which at another Season would produce very sensible Perceptions. (II.xix.3)

> [W]hatever impressions are made on the outward parts, if they are not taken notice of within, there is no Perception. (II.ix.3)
>
> [T]hat which uses to produce the *Idea*, though conveyed in by the usual Organ, not being taken notice of in the Understanding, and so imprinting no *Idea* on the Mind, there follows no Sensation. (II.ix.4)

At first sight, these passages appear to be explanations of why sometimes no sensation, or perception, or idea ensues: it is because of absence of an operation of noticing on impressions external objects make on the sense organs. If this is right, noticing is distinct from what sensation, perception, and idea stand for in the quoted passages. It is an element in the causal chain of how an idea comes about; sensation, perception, and idea are phenomena subsequent to it.

There are two inter-related questions: what type of an operation is noticing and what is its object. Taking notice, for Locke, can signify either passive or active operation. Some passages suggest that it is a voluntary act, as when he states that everyone that *pleases* may take notice in themselves of ideas of perception and willing (II.vi.2) or that the mind may *let* a train of ideas pass with almost no regard to it (II.xix.3, see also II.xiv.4). Some passages suggest that the mind is not volitionally active in noticing, as when he says that by stimulating the senses external objects "draw the mind constantly to them" (II.i.8), the senses can "make us take notice of what hurts, or advantages the Body" (II.x.3), or "*Sounds*, and some *Tangible Qualities* fail not to solicit their proper Senses, and force an entrance to the Mind" (II.i.6).

These examples indicate that noticing can be about both mental items, i.e., ideas (that are in the mind), and material things (that can result in ideas in the mind). The passivity or activity of the operation in the indicated contexts goes hand in hand with the nature of its object. Ideas that pass in the mind, the mind can take notice of at will. Perhaps ideas can also excite passive operations of noticing. In the case of non-mental objects activity lies always on the side of the object, which is what triggers noticing. It is thus not voluntarily directed at the object that imposes the idea.

But what is the object? First, it might be a *material impression*. Second, following James Gibson's suggestion, reception of a simple sensory "idea involves an operation of the understanding by which its *content* is 'noticed' or 'perceived'".[11] The mind becomes conscious of the content of the idea by virtue of an act of noticing. Third, Kevin Scharp argues that the objects of noticing are not ideas, but unconscious *mental impressions* upon noticing of which ideas are created in the mind.[12]

The problem with the first suggestion is that Locke would be hard put to explain how a specific mental act could have a specific material state as its object. Concerning the second, it is in place to note that Gibson emphasizes that Locke's claim of the mind being wholly passive in receiving ideas is not a claim that ideas are completely determined from without, "irrespective of any co-operation from

[11] Gibson 1917, p. 55 (my emphasis). Gibson is not clear whether he takes the act of noticing as an explanation (or at least an attempt at one) of what makes an idea to come about. At the very least, his discussion incites considering noticing as an act about the content of idea.

[12] Scharp (2008, p. 36–40).

[the mind]".[13] He explains this co-operation in terms of operation of noticing and adds that this "mental function […] is only elicited by the presence of an external stimulus".[14] He notes that anything material hardly suits as an object, and indicates the content of an idea as the object. This is unproblematic as an account of what it means for Locke to actually have an idea, that is, to be aware of what it is about. It is difficult to see what the status of an idea with unnoticed content would be in Locke's framework, especially if the absence of noticing is supposed to account for why an idea is not created at all (in circumstances where all the material conditions are met). Scharp's reading avoids the problems about mental acts being directed at material impressions and it articulates the status of objects of noticing as something mental, yet distinct from ideas. The problem with this view is that the prospects are dim for accommodating in Locke's framework more fundamental mental items than ideas, and especially ones of which the mind is not conscious.[15] All these suggestions thus come with a problem.

Let us now return to the assumption that absence of noticing is meant to explain why sometimes no sensation follows from such a material impression that would usually produce one. Locke indicates two slightly different ways in which the mind can be restrained from noticing. On the one hand, sometimes the mind contemplates some objects so intently that it takes "no notice" not only of other ideas but also of impressions on the senses that would ordinarily "produce very sensible Perceptions" (II.xix.3, see also II.ix.4). On the other hand, the mind can be negligent overall, as in deep sleep where the mind is "retired as it were from the Senses, and out of the reach of those Motions made on the Organs of Sense, which at other times produce very vivid and sensible *Ideas*" (II.xix.4). Strikingly enough, Locke provides no description of the role of noticing in successful reception of ideas. There is no positive claim about its status as an operation mediating material impressions and ideas. Moreover, apart from the passages about absence of noticing Locke does not even mention noticing as a mode of thinking relevant for reception of particular ideas.

> In [thinking] the Mind observes a great variety of Modifications, and from thence receives distinct *Ideas*. Thus the Perception, which actually accompanies, and is annexed to any impression on the Body, made by an external Object […], furnishes the mind with a distinct *Idea*, which we call *Sensation*; which is, as it were, the actual entrance of any *Idea* into the Understanding by the Senses. (II.xix.1)

> As the Bodies that surround us, do diversly affect our Organs, the mind is forced to receive the Impressions; and cannot avoid the *Perception* of those *Ideas* that are annexed to them. (II.i.25)

The relevant mental operation in reception of sensory ideas is *perception*, which is also called *sensation*, which emphasises the actuality and external origin of the received idea. I believe the somewhat unexciting but correct reading is that 'taking

[13] Gibson (1917, p. 5).

[14] Ibid.

[15] Apart from the quoted passages there is not much more to support such reading. I have argued elsewhere that Locke does not allow unconscious mental items underlying ideas, see Lähteenmäki (2008).

notice' in the quoted passages is roughly synonymous with perception, sensation, and idea. Locke is not offering the absence of noticing as an explanation for the lack of idea/perception/sensation. There is only one thing that results from an impression on the sense organs, and that is an idea. Perception and sensation perhaps refer to the aspect of an idea being possessed in the sense of being *experienced* by the subject who has it, but they are not really different from the idea: above Locke says that sensation relates to an *actual entrance* of an idea from the senses. In another place he expresses the same by saying that we have "perception and Consciousness […] of the actual entrance of *Ideas* from [particular external objects]" (IV.ii.14).

When he says that sensation "follows" when an idea is imprinted in the mind, and which can happen only when an impression is noticed by the mind, he means that to undergo a sensation or perception *is* to actually have a sensory idea, which *is* to notice the impression. If a material impression does not reach "the observation of the mind" (II.ix.4), an idea follows under none of those descriptions; and if it does reach the mind, one follows under all of those descriptions. None of the terms refers to more fundamental and logically prior mental operation or "function" than the others.

In his discussion of absence of noticing, Locke hence really makes only a general point about the natural limits of our capacities. This admittedly means that the quoted passages are not even nearly as informative as they first lead one to expect. But outside those passages Locke does not have, or purport to have, the resources to cash out the apparent explanatory promise. By and large, he finds it indeed prescribed by experience that material things cause mental affections in us. At the same time, as Locke explains to Malebranche, while he finds plausible the overall story that impressions made on sense organs and continued to the brain produce ideas in the mind, he finds it *incomprehensible* how this material chain of events produces an idea in the mind.[16]

A philosopher may be excused from not accounting for body-mind causation in general, but want of any details, as is the case with Locke, of how bodily states make mental states come about effectively undermines the explanatory value of positing a further mental item as a link in between a material impression and an idea. It does not explain the transition from the impression to the idea. A story about specific acts of noticing of specific material impressions would in any case fail to add anything to the general story that sometimes an idea ensues and sometimes not. Since denying that ideas are produced in the mind upon stimuli is surely not an option and an account of how ideas ensue from impressions is not available, the most he can say is that it happens with no volitional contribution of the mind.

[16] "Impressions made on the retina by rays of light, I think I understand; and motions from thence continued to the brain may be conceived, and that these produce ideas in our minds I am persuaded, but in a manner to me incomprehensible. This I can resolve only into the good pleasure of God, whose ways are past finding out. And I think I know it as well when I am told these are ideas that the motion of the animal spirits by a law established by God, produces in me; as when I am told they are ideas I see in God. The ideas it is certain I have, and God both ways is the original cause of my having them". Locke, *An Examination of P. Malebranche's Opinion of Seeing All Things in God,* § 10.

Gibson is still correct—ideas are not externally determined without any co-operation from the mind. But to the extent this co-operation can be called properly active, it is on a more general level than the level of entrance and formation of particular ideas. Such activity can be of general volitional endogenous attentiveness or specific non-volitional exogenous attentiveness. Neither of these concerns *formation* of a particular idea; rather they underline that for the reception of ideas to happen at all the mind must be in a suitable overall state. In this respect Locke consistently supports his thesis that ideas are passively received. However, with regard to certain type of visual perception Locke's commitments to both the absence of mental acts proper in perception and the generality of the capacity of reception are challenged.

12.6 Visual Perception of Shape

Locke acknowledges that in visual perception of shape the resulting idea in us cannot be satisfactorily accounted for by reference to external powers only, but formation of the idea involves the mind's contribution in terms of judgement on the initial sensory idea.

> [*T*]*he Ideas we receive by sensation, are often* in grown People *alter'd by the Judgment*, without our taking notice of it. When we set before our Eyes a round Globe, of any uniform colour […], tis' certain, that the *Idea* thereby imprinted in our Mind, is of a flat Circle variously shadow'd, with several degrees of Light and Brightness coming to our Eyes. But we having by use been accustomed to perceive, what kind of appearance convex Bodies are wont to make in us; what alterations are made in the reflections of Light, by the difference of the sensible Figure of Bodies, the Judgment presently, by an habitual custom, alters the Appearances into their Causes: So that from that, which truly is variety of shadow or colour, collecting the Figure, it makes it pass for a mark of Figure, and frames to it self the perception of a convex Figure, and an uniform Colour; when the *Idea* we receive from thence, is only a Plain variously Colour'd, as is evident in Painting. (II.ix.8)

The general background is a widely accepted view that we visually perceive combinations of colours and that the stimuli do not hence carry what is needed to distinguish between a convex and flat source of an idea, wherefore the initially received idea must be, as it were, corrected so as to correspond to its cause.[17] The passage does not say from where the information concerning the object's convexity that is lacking in the initial visual idea is originally acquired. Good candidates for such a source are tactile sensations.[18] It is in any case quite clear that the cognitive mechanism by which this information is ascribed to the perceptual content is an act of judgment.[19]

[17] See Ayers (1991, p. 57).

[18] For some discussion on how the mind could extract the spatial information from a tactile idea to be applied in a visual one, see Schumacher (2003, p. 56–7).

[19] For discussion of several problematic issues with Locke's view, see Bolton (1994); Berchielli (2002); Schumacher (2003); Bruno and Mandelbaum (2010). Since Locke's positing an idea-altering judgment is in any case beyond question, the present discussion can be confined to the issue of its activity.

Although in the above quotation Locke speaks of a convex object, it is not clear that perception of only three-dimensional shapes requires judgments. There are two good candidates for an interpretation of what Locke means by "the idea imprinted in the mind is of a variously shadowed flat circle". Let us follow Ralph Schumacher's gloss:

> *Either* his intention is to claim that we visually perceive something flat which has a circular shape: if this is true, he maintains that the visual perception of *two-dimensional* shapes does not depend on habitual judgments. *Or* he wants to say that the circle is not the shape of an object presented within our visual field, but rather a feature of the visual field itself: if this is the case, he is in a position to hold the view that visual perception not only of three- but even of two-dimensional shapes depends on judgments.[20]

In the latter reading, although Locke's example in the above quoted passage concerns perceiving a three-dimensional object, he means that altering judgments are needed in perceiving figures *tout court*. In other words, it is not only three-dimensional but also two-dimensional shapes that are not perceived without the help of a judgment; Locke is describing a pattern of light and colour that has no reference to figure.[21] There is a two-fold motivation for this reading. First, there is the puzzle presented to Locke by Molyneux. His question is whether a newly cured blind person who can distinguish by touch between a globe and a cube would be able to determine by sight alone which is the globe and which is the cube. (II.ix.8) Locke's negative answer to Molyneux is not readily compatible with a view that (two-dimensional) shapes are perceived by sight alone, for the newly cured blind person would be in possession of ideas of square and round shapes based on which he would presumably be in a position to tell which is the globe and which is the cube.

Second, textual evidence supports this reading: "from that, which truly is variety of shadow or colour, collecting the Figure, the judgment makes it pass for a mark of Figure" (II.ix.8); and:

> Sight […] conveying to our Minds the *Ideas* of Light and Colours, which are peculiar to that Sense; and also the far different *Ideas* of Space, Figure, and Motion, the several varieties whereof change the appearances of its proper Object, *viz.* Light and Colours, we bring our selves by use, to judge of one by the other. (II.ix.9)

Nothing specifies the act of judgment as making light and colours to pass as a sign for a three-dimensional shape in particular. For the present purpose, the significance of whether the altering judgment concerns all shapes or only three-dimensional shapes concerns the breadth of instances of visual perception that involve judgment. Visually perceiving solid objects is surely cognitively prominent. But it strongly seems that Locke takes perceiving of all shapes to depend on judgment and thereby assigns to judgment yet more fundamental role in cognition. This, for its part, emphasizes the need to clarify the status of judgment as a mental operation.

While it is clear that the altering judgment is a contribution of the mind to the perception of shape, it is somewhat less clear whether such contribution should be

[20] Schumacher (2003, p. 53).

[21] Bolton has argued for this interpretation (1994, p. 80–83).

described as a properly active element in the perceptual process. As described in the beginning, there are two separate, yet related, issues relevant to our interests: the sense in which the contribution deserves a status of action with respect to Locke's understanding of activity and with respect to the extent the mind's contribution might compromise Locke's commitment a general capacity of reception. Let us start by evaluating the status of habitual judgement as action proper.

After the idea of variously coloured surface is passively imprinted in the mind, the altering judgment takes place. Judgment typically classifies as a mental act proper, but in this case it is noteworthy that the altering judgment happens very quickly and often passes in the mind almost without notice (II.ix.9–10).[22] Even if there is a sense in which Locke can count the judgment as a conscious act, and thereby avoid positing mental operations of which the mind is not conscious (see I.ii.5), the subject of the act does not have to be more than peripherally aware of executing the act. Accordingly, it is not clear whether such operation involves voluntary attention. In the case of voluntarily directing a thought at an object the object must already be present in experience to be opted for one. Ideas are such things, and in the present case it is beyond doubt that the object is an idea. However, not only material impressions but also ideas can trigger mental operations.

> [W]hen the *Ideas* that offer themselves, (for as I have observed in another place, whilst we are awake, there will always be a train of *Ideas* succeeding one another in our minds,) are taken notice of, and, as it were, registered in the Memory, it is *Attention*. (II.xix.1)

The passage is admittedly ambiguous as to activity or passivity of 'taking notice' of ideas passing in the mind. There is some support that for Locke attending to ideas can be non-volitional. Locke speaks of ideas as *offering* themselves, which in some circumstances could amount to triggering an operation. Consider for instance Locke's discussion of ideas of pleasure and pain—which are conjoined to almost all ideas—whose function is to "*excite* us to […] Actions of thinking" (II.vii.3; emphasis added). In the case of visual ideas (that get altered by a judgment) at least our every day experience strongly suggests that they offer themselves in a way that we cannot withhold the judgment: for instance, we cannot avoid experiencing convex objects *as* convex. Locke allows a wide scale of degrees as concerns ideas as objects of further acts of thought between ones that we take pains to seek (II.x.7, II.xix.1) and ones that excite or trigger operations of the mind towards them (II.x7). It seems plausible to describe operations of the latter type, to which habitual judgments presumably belong, as not voluntarily active.

However, the issue is complicated by the fact that the automaticity of judgments is based on habit. Because habit entails change, the acts of judgment have not always been quick and automatic but have developed into such. We have hence actively executed the relevant type of judgment before having accumulated "frequent experience" (II.ix.9), i.e., "having by use accustomed to perceive, what kind

[22] Condillac (2001, p. 103), criticizes Locke for allowing unconscious judgments and points out that "it is useless to base anything on the belief that a good many things seem to occur on the mind of which we take no cognizance". I have argued elsewhere that Locke's notion of consciousness allows him to treat a habitual judgment as conscious operation, see Lähteenmäki (2008).

of appearance convex Bodies are wont to make in us" (II.ix.8). Presumably habituation takes place relatively early in one's life, and Locke gives no description of the process, so it is speculative whether judgments prior to habituation involve voluntary attention to the initial ideas. If they do, habitual judgments have active ancestors, and in this sense visual perception of the type Locke describes in the quoted passage is indeed a case of active perception. If this is the case, I do not see how Locke could harmonize that with his commitment to total passivity of perception.

As it is not beyond doubt that the altering judgments count as proper actions, we should consider the case that altering judgments are not actions in Locke's own sense, that is, visual perception never (i.e., also before habituation) involves any degree of voluntary attention (see II.ix.1). Locke faces a problem in this case too. The mind's contribution in visual perception centrally involves a specific mental operation that is absent in several other types of perceptions and cannot be accounted for with reference to the mind's general capacity of reception only.[23] And since habitual judgments concern formation of specific yet fundamental type of ideas, we are warranted to conclude that he ascribes to the mind an active role in the sense that the mind contributes more than by virtue of a general capacity to receive ideas.

12.7 Passivity of Reflection

For Locke, there are two origins of ideas, both of which fall under the general label of perception. Sensation provides the mind with ideas of external objects and sensible qualities (II.i.3) and reflection provides the mind with ideas of its own operations, i.e., ideas of mental acts *qua* acts (II.i.4). There are important structural similarities as to how sensory and reflective ideas are formed in the mind. Locke acknowledges the general similarity between sensation and reflection by contending that reflection might "properly enough be call'd internal Sense" (ibid.) and also speaks of "external and internal Sensation" (II.xi.17). More specifically, he acknowledges a similarity concerning the status of objects of sensation and reflection, i.e., external objects and mental acts, respectively. All simple ideas—ideas of external things and mental acts alike—conform to reality of things: the mind "receives [all simple ideas] from the Existence and Operations of Things, such as Sensation or Reflection offers them" (II.ii.2). Listing reflection together with sensation as a source of ideas indicates that "Things" here does not refer to external things only but also mental acts. Mental acts are distinguished from their ideas as external things are distinguished from their ideas.

[23] It is worth noting that what judgment brings in to the initial visual idea is still derived from (tactile) experience. But this shifts the problem elsewhere. Namely, Locke maintains that shape (i.e. figure, along with space, extension, rest, and motion) is a simple idea that we get from both touch and sight (II.v). This means direct reception, which Locke takes as a guarantee of reality and adequacy of those ideas (see II.xxx.1–3; II.xxxi.2). This is a problem for Locke, regardless of whether judgment is properly an active operation or not.

A number of interpreters take Locke's notion of reflection to involve voluntary attention.[24] Accordingly, sensation and reflection cannot be on a par with one another with respect to the way in which ideas are 'offered' to the mind. If reflection involves voluntary attention, the objects of reflection (i.e. mental operations) do not trigger the act of reflection, but the ideas of mental operations need to be obtained by voluntarily attending to mental operations. The view that reflection is (exclusively) an active operation (i.e., properly active, involving voluntary attention) involves the idea that mental acts are available for the mind to attend to since Locke allows no acts of thought of which we are not conscious. The way in which we are conscious of our mental acts, according to this view, is not by virtue of ideas, but in a direct way.[25] It is only upon attentive reflection on the already conscious acts that ideas of those acts are created in the mind. In this way Locke's commitment to two exclusive sources of ideas is safe, but with a price that reflection is an emphatically active source of ideas.

The threshold for accepting activity of reflection in its function as a source of ideas is no doubt lowered by the case of visual perception of shape, which we already saw to constitute an exception to Locke's commitment to passivity. Nevertheless, I wish to defend a reading of reflection according to which Locke does not give in to activity concerning reflection as a *source* of ideas. He makes the point several times in the *Essay* that *all* simple ideas are passively received and does not explicate activity as a feature that distinguishes reflection from sensation.[26] I believe Locke subscribes to two notions of reflection, one of which is a passive notion that he employs in his discussions of reflection as a source of ideas and which must be distinguished from voluntary reflection that is not a source of ideas of mental operations but has *ideas* as its objects and is required for concept formation and storing ideas in memory.[27]

The latter type of reflection Locke occasionally names contemplation, which involves "keeping the idea *Idea*, which is brought into [mind], for some time actually in view" (II.x.1). If we take reflection in its source function to involve this type of voluntary attention too, it is an operation of the same type of activity with contemplation, except for its objects, which are not ideas (of mental operations), but mental operations directly. It is true that on such reading a problem about the status of objects of voluntary attention does not arise (as it arises with voluntary atten-

[24] Gibson (1917); Kulstad (1984); Thiel (1994); Bolton (2007); Weinberg (2008).

[25] This is a problem, as it is far from clear how Locke's framework could accommodate mental things of which we are conscious that are not ideas. But this issue is beside the present topic.

[26] In II.i.7–8 Locke discusses reflective capacities in children. The lack of reflection he indicates there can be read as referring to the voluntary type of reflection (about ideas), which is required for clear, distinct, lasting ideas. For the pervasive type of reflection it is enough that "the operations of our Minds, will not let us be without, at least some obscure Notions of them" (II.i.25), see Lähteenmäki (2008).

[27] I have proposed this view earlier, see Lähteenmäki (2008, 2011), and will here discuss it only as concerns the passivity of the first type of reflection. Another way to capture the distinction would be to speak of wide notion of reflection that accommodates different passive and active functions as well as two types of objects.

tion on material impressions), since the mind is already conscious of its operations and can thus opt for them. But this reading implies that Locke would have to accept objects of voluntary attention other than ideas, and the non-ideational status of mental objects does constitute a problem for Locke. He is adamant that "*The Mind*, in all its Thoughts and Reasonings, hath no other immediate Object but its own *Ideas*" (IV.i.1). Reflection taken as a volitionally attentive operation is undoubtedly a proper act of thought.

These problems are avoided when we see that Locke takes consciousness as intimately related to ideas and as presupposing reflection as a passive source of them (i.e., ideas of mental operations), such as sensation is (with regard to external objects). Consciousness is "the perception of what passes in a Man's own mind" (II.i.19) and "whatsoever the Mind perceives in it self, or is the immediate object of Perception […], I call *Idea*" (II.viii.8). Ideas, as we know, are supplied by sensation and reflection. Sensation and reflection are not similar in all respects, though. For instance, although Locke maintains that mental operations depend on the mind's intrinsic powers—which makes them of the same order with powers of external objects in that the ideas both of these powers bestow on us are received from the existence and operations of "Things"—mental operations are intra-mental to begin with, wherefore Locke does not have quite a similar concern about their reality and adequacy, "agreement to the reality of things", as he has about sensory ideas (see II.xxx.2, II.xxxi.2). This does not mean that he cannot, and does not, view them as passively produced.

12.8 Conclusion

I have investigated Locke's explicit commitment to perception as wholly passive by examining his discussion of how sensory ideas enter the mind and what role noticing plays in that process, his account of visual perception of shape, and his view of reflection as a species of perception. I have attempted to challenge Locke's commitment in two respects. On the one hand, I have explained Locke's own understanding of mental activity proper and evaluated the relevant discussions in that regard. On the other hand, I have pointed out that Locke's overall empiricist position commits him to passivity of the mind in terms of (only) a general capacity of reception of ideas. I have taken this to mean that in addition to such general capacity an adequate account of how ideas are formed should make reference only to the powers in the external objects and that allowing the mind to contribute to formation of particular types of ideas in specialized ways amounts to ascribing the mind active role.

As concerns Locke's general account of formation of sensory ideas and the role of noticing in that process as well as reflection as a species of perception, I have argued that he can uphold his thesis of passive reception against both understandings of activity. As concerns visual perception of shape, Locke positively argues that ideas of shapes are not directly received from without but achieved only with the help of acts of (habitual) judgment. I have examined the status of habitual judgment

as mental act proper. I have indicated that textual evidence is not decisive about whether habitual judgments involve voluntary attention. If they do, it shows that Locke's empiricist resources are insufficient to account for sensory processes across the board. However, even if habitual judgment as such is not action by Locke's own terms, visual perception of shape requires a specific mental operation that is absent in several other types of perceptions. This means that Locke in effect admits that not all perceptual processes can be accounted for with reference solely to external objects and the mind's general capacity of reception.

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Chapter 13
Spinoza on Activity in Sense Perception

Valtteri Viljanen

13.1 Introduction

In Spinoza's rationalist framework, sense perception yields the lowest kind of cognition. In his early *Treatise on the Emendation of the Intellect*, Spinoza talks about four kinds of perception, sense perception being characterized as follows:

> There is the Perception we have from random experience, that is, from experience that is not determined by the intellect. But it has this name only because it comes to us by chance, and we have no other experiment that opposes it. So it remains with us unshaken. (*TdIE* § 19.)

The description we find in the *Ethics* runs similarly:

> From what has been said above, it is clear that we perceive many things and form universal notions:
> I. from singular things which have been represented to us through the senses in a way that is mutilated, confused, and without order for the intellect (see p29c); for that reason I have been accustomed to call such perceptions knowledge from random experience[.] (2p40s2.)[1]

According to Spinoza, this kind of imaginative cognition is inadequate in its mutilation, confusion and disorderliness (2p41). As is well known, the aim is to gain adequate knowledge, ultimately of the highest kind, or what Spinoza calls intuitive knowledge:

[1] I use the following method in referring to the *Ethics*: a = axiom, c = corollary, d = definition (when not after a proposition number), d = demonstration (when after a proposition number), p = proposition, s = scholium. For instance, 1p8s2 refers to the second scholium of the eighth proposition in the first part of the *Ethics*. It should be noted that sense perception thus forms the first aspect of what Spinoza calls opinion or imagination. The other aspect is that of perceiving things "from signs, e.g., from the fact that, having heard or read certain words, we recollect things, and form certain ideas of them, which are like them, and through which we imagine the things (p18s)" (2p40s2).

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> In addition to these two kinds of knowledge,[2] there is (as I shall show in what follows) another, third kind, which we shall call intuitive knowledge. And this kind of knowing proceeds from an adequate idea of the formal essence of certain attributes of God to the adequate knowledge of the essence of things. (2p40s2.)

The precise nature of this rather ambitious-sounding type of knowledge raises some traditionally thorny interpretative issues; but obviously, we are dealing with a kind of intellectual grasp of the eternal God-or-Nature and of finite things as its modifications. This is one of the places in which Spinoza's strong intellectualist tendencies come to the fore. A passage in his correspondence indicates that the fundamental philosophical truths can be apprehended by the intellect only: "[T]here are many things that can in no way be apprehended by the imagination but only by the intellect, such as Substance, Eternity, and other things". (*Ep*12.) This kind of adequate cognition of things is perception in a very different sense than that which we acquire through our senses; but it is not without experiential character of its own, and one that is at least comparable to that of sense perception:

> For the Mind feels those things that it conceives in understanding no less than those it has in the memory. For the eyes of the mind, by which it sees and observes things, are the demonstrations themselves. (5p23s.)

There is, in turn, a strong linkage between adequate knowledge and activity. As some of the final propositions of Spinoza's masterpiece state, the more we understand things adequately, the more perfect and active we are:

> The more the Mind understands things by the second and third kind of knowledge, the less it is acted on by affects which are evil, and the less it fears death. (5p38.)

> The more perfection each thing has, the more it acts and the less it is acted on; and conversely, the more it acts, the more perfect it is. (5p40.)

> For the eternal part of the Mind (by p23 and p29) is the intellect, through which alone we are said to act (by 3p3). But what we have shown to perish is the imagination (by p21), through which alone we are said to be acted on (by 3p3 and the gen. def. aff.). So (by p40), the intellect, however extensive it is, is more perfect than the imagination, q.e.d. (5p40c.)

Moreover, there can be little disagreement about whether ideas of sense perception are, for Spinoza, to be classed as passions or actions—the former is obviously the correct answer. All this, however, does not mean that sense perception would be, for Spinoza, *completely* passive. In what follows, I argue that there is in the *Ethics* an elaborate—and to my knowledge previously unacknowledged—line of reasoning according to which sense perception of finite things never fails to contain a definite active component. This *argument for activity in sense perception* consists of two main parts: first, that ideas we form through sense perception have something adequate in them; second, that the adequate component is actively brought about. Dis-

[2] Apart from the first type of knowledge (imagination) and the third type of knowledge (intuitive knowledge), there is also the second type of knowledge (reason), which derives "from the fact that we have common notions and adequate ideas of the properties of things (see p38c, p39, p39c, and p40)".

cerning this line of thought connects to—and sheds some new light on—Spinoza's general way of understanding ideas as entities involving activity.

13.2 Sense Perception and Epistemic Adequacy

We can begin tracking down the argument for activity in sense perception by considering a *prima facie* surprising claim concerning our epistemic capacities:

> The human Mind has an adequate knowledge of God's eternal and infinite essence. (2p47.)

The proof of the proposition reads:

> The human Mind has ideas (by p22) from which it perceives (by p23) itself, (by p19) its own Body, and (by p16c1 and p17) external bodies as actually existing. And so (by p45 and p46) it has an adequate knowledge of God's eternal and infinite essence, q.e.d. (2p47d.)

The contention is thus that any idea of any finite thing, e.g. of a material body, yields us adequate knowledge of the very essence of God.[3] As the demonstration signals, this should be evident by 2p45 and p46. Let us take the former first:

> Each idea of each body, or of each singular thing which actually exists, necessarily involves an eternal and infinite essence of God. (2p45.)

Surely, this is the key contention. But why should it hold? Spinoza argues:

> The idea of a singular thing which actually exists necessarily involves both the essence of the thing and its existence (by p8c). But singular things (by 1p15) cannot be conceived without God—on the contrary, because (by p6) they have God for a cause insofar as he is considered under the attribute of which the things are modes, their ideas must involve the concept of their attribute (by 1a4), i.e. (by 1d6), must involve an eternal and infinite essence of God, q.e.d. (2p45d.)

Staying true to the style of his preference, Spinoza keeps the argument relatively brief; but it cannot be denied that, in fact, the demonstration connects to a considerable number of central Spinozistic tenets.

The demonstration begins by stating that ideas of actually existing things involve the essence and existence of the things ideated—a contention interpretable as a rather unstartling point of departure: we know that there exist finite things and have at least some grasp of their nature. The reference to 1p15, the proposition that

[3] In a recent paper, Martin Lin (2009, p. 266) articulates the surprising nature of this contention in the following way:

> So every mind contains a spark of rationality insofar as it is endowed with an adequate idea of God's eternal and infinite essence. This is a surprising thesis. According to a widespread picture, no one, not even the wisest or most virtuous, can have any idea of God's essence in this life. Only after death is such knowledge possible. But according to Spinoza, not only the wise and virtuous possess this idea, but so do the fool and the knave. Indeed, so do rocks and insects!

For Lin's way of making Spinoza's position more understandable, see note 9 below.

proclaims immanent monism, moves us to deeper waters. Here Spinoza reminds us of the central feature of his philosophy: finite things are entities both ontologically and epistemically dependent on the only substance, God-or-Nature. This, however, is only a basic contention; in moving from it to the desired conclusion, Spinoza relies on a number of more fine-grained features of his system, some of which are left implicit in the demonstration.

In Spinoza's ontology of substances, attributes, and modes, finite things belong to the last category. Attributes, in turn, constitute the essence of substance and are causally efficacious, capable of producing their own modes. 2p6 connects to these contentions, and Spinoza invokes it to argue that each and every mode—falling under a certain attribute as it does—is produced by its attribute (and not by any other attribute). Because effects are conceived through their causes (1a4), it follows that a mode must be conceived through the attribute by which it is brought about; and because attributes, as already noted, constitute the substance's essence, it follows that by having an idea of a mode we cannot avoid having an idea of God's essence, or of an attribute that constitutes that essence.[4]

Given Spinoza's framework, the argument seems valid. But it may not be found immediately convincing, and I would suggest that we articulate Spinoza's line of thought in the following way to make it appear more plausible and less complex. In Spinoza's basic metaphysics, any finite entity (for instance, a material body such as a tree) is a way in which an essential attribute (for instance, extension) of the only substance is modified. Now it is in fact quite understandable that no modification can be conceived without having a conception of the attribute it modifies, because for example a particular tree is, in the Spinozistic scheme of thing, the attribute of extension modified "treely", or in a specific way that results in a tree. As every singular thing is a modification *of* substance under a certain attribute, no idea of a finite thing can be formed without forming, at the same time, an idea of a certain (essence-constituting) attribute.[5] Thus, each idea of a singular thing involves God's essence. While this account does not rely on the causal relationship obtaining between attributes and modes,[6] it shows, I think, that the proposition to be proven is, given Spinoza's scheme of things, quite understandable and well secured.

[4] The relationship of substances and attributes and the nature of "constitution" involved raise some very difficult questions. However, I think it can be said, roughly, that the concept of attribute and that of substance are so tightly intertwined that there is, at most, what is traditionally called a distinction of reason between the two; for more on this, see Koistinen (1991, pp. 18–24); Viljanen (2009).

[5] In fact, I believe this is one of the major reasons for saying that finite things are precisely *modes*, not some other type of properties. For an informative account of the ontological status of modes in the thought of such predecessors of Spinoza as Suárez and Descartes, see Glauser (2002).

[6] Also Eugene Marshall (2008, p. 67) explicates the argument of the demonstration in non-causal terms:

> Whenever one forms an idea of any thing or event, one must form that idea under a certain attribute. In other words, the idea of Thought in general is involved in one's idea of something mental, while the idea of Extension is involved in one's idea of something bodily; one cannot consider a particular body without assuming the general idea of Extension.

All this, however, does not explain why an idea of an attribute (e.g. of extension) involved in our perception of finite things (e.g. of bodies) must be an *adequate* one. The subsequent proposition states that "[t]he knowledge of God's eternal and infinite essence which each idea involves is adequate and perfect" (2p46), and its demonstration argues:

> The demonstration of the preceding Proposition is Universal, and whether the thing is considered as a part or as a whole, its idea, whether of the whole or a part (by p45), will involve God's eternal and infinite essence. So what gives knowledge of an eternal and infinite essence of God is common to all, and is equally in the part and in the whole. And so (by p38) this knowledge will be adequate, q.e.d. (2p46d.)

The argument thus relies on 2p38, which reads:

> Those things which are common to all, and which are equally in the part and in the whole, can only be conceived adequately. (2p38.)
>
> Let A be something which is common to all bodies, and which is equally in the part of each body and in the whole. I say that A can only be conceived adequately. For its idea (by p7c) will necessarily be adequate in God, both insofar as he has the idea of the human Body and insofar as he has ideas of its affections, which (by p16, p25, and p27) involve in part both the nature of the human Body and that of external bodies. That is (by p12 and p13), this idea will necessarily be adequate in God insofar as he constitutes the human Mind, or insofar as he has ideas that are in the human Mind. The Mind therefore (by p11c) necessarily perceives A adequately, and does so both insofar as it perceives itself and insofar as it perceives its own or any external body. Nor can A be conceived in another way, q.e.d. (2p38d.)

Hence, the claim is that a feature common to all things of a given domain can only be perceived adequately; and as for instance extension and thought are, of course, something shared by all of their respective modes, we cannot conceive them inadequately. But it is perhaps not immediately clear why should this hold. How could the reasoning behind this be elucidated? I would suggest that it turns on the idea that certain features common to all things are uniform and not composed of parts—this is why they can be called "common" to begin with—and so any idea of them is as accurate and correct as the next one. I believe that Descartes very informatively explicates this in the twelfth rule of his early *Rules for the Direction of the Mind*:

> [S]ince we are concerned here with things only in so far as they are perceived by the intellect, *we term "simple" only those things which we know so clearly and distinctly that they cannot be divided by the mind into others which are more distinctly known. Shape, extension and motion, etc. are of this sort; all the rest we conceive to be in a sense composed out of these*. (CSM I, 44, emphasis added.)

> [T]hese simple natures are all self-evident and never contain any falsity. […] For it can happen that we think we are ignorant of things we really know, as for example when we suspect that they contain something else which eludes us, something beyond what we intuit or reach in our thinking, even though we are mistaken in thinking this. For this reason, it is evident that we are mistaken if we ever judge that we lack complete knowledge of any one of these simple natures. *For if we have even the slightest grasp of it in our mind—which we surely must have, on the assumption that we are making a judgement about it—it must follow that we have complete knowledge of it. Otherwise it could not be said to be simple*, but a composite made up of that which we perceive in it and that of which we judge we are ignorant. (CSM I, 45, emphasis added.)

The thesis thus is that either one grasps something so simple and uniform as the attribute of extension in its entirety, i.e. adequately, or one does not grasp it at all. I think this is what underpins Spinoza argument for 2p38,[7] and so he feels himself entitled to claim that common things are adequately conceived both insofar as God conceives a singular human body *and* insofar as he conceives the states of that body that are partly brought about by other bodies.[8]

The first part of the argument for activity in sense perception is thereby complete, and the claim that we have "adequate knowledge of God's eternal and infinite essence" (2p47) can be said to be on firm Spinozistic grounds. In fact, the discussion above has shown, I think, that it is not as striking a statement as one might at first blush be tempted to think.[9]

Before moving on in reconstructing the rest of the argument, it is instructive to take a quick look at the role and significance some notable commentators have considered 2p47 (and the propositions leading to it) to have in Spinoza's system. In a recent paper, Diane Steinberg writes as follows:

> The ideas of the attributes and what follows from them make up what Spinoza refers to as the "common notions" (2p38c, 2p40s, 5p12d, 5p28d). Spinoza also proves that we have adequate knowledge of God's essence (2p45–p47); but because the attributes constitute God's essence, this knowledge does not appear to involve anything beyond what is contained in the most basic of the common notions. What is added by 2p45–p47 is that the most basic knowledge of what is common to all finite things is also knowledge of the divine essence. (This is a consequence of God's immanent causality.)[10]

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[7] I would thus agree with Marshall (2008, p. 70) who, without invoking invoke the Cartesian line of thought, argues:

> Now, if something is conceptually simple, one cannot grasp it only in part, for it is not so composed. Instead, one must grasp it completely, that is, adequately, or not at all. For example, self-evident notions often are said to display this characteristic of simplicity. And this seems to be exactly how Spinoza takes the idea of the attributes—self-evident truths of the highest simplicity.

[8] In the demonstration, Spinoza refers to 2p7c, which states that "God's power of thinking is equal to his actual power of acting. I.e., whatever follows formally from God's infinite nature follows objectively in God from his idea in the same order and with the same connection". However, I find this almost puzzlingly uninformative, because from this it obviously follows that God conceives adequately *everything* pertaining to finite things, be it common or not. Thus, 2p7c seems to be of little help in understanding why precisely *common* things can be only adequately conceived. I think that in 2p38d, Spinoza is relying on the line of thought concerning simplicity, as explicated above. It might be helpful to note that Spinoza's common notions are quite unlike Lockean general ideas: according to Spinoza, common notions are concretely in the things themselves, and there is no process of abstraction involved in acquiring them; for Locke's position, see especially *EHU* III.3.

[9] Largely based on a line of interpretation concerning Spinoza's theory of consciousness presented by Don Garrett (2008), Lin (2009, p. 266) gives the following alternative reason for thinking that 2p47 is not, in the end, as surprising as it might first seem:

> But Spinoza believes that in most minds, the power of this idea is very slight and, to the extent that it possesses any power at all, it is overwhelmed by the contrary force of various passions. So, although an adequate idea of the essence of God is possessed by all, most are only dimly conscious of it and it does little to determine their thought and action.

[10] Steinberg (2009, p. 150).

Now Steinberg is right to point out that Spinoza's argument for 2p47 relies on his understanding of God's causality; but I would see 2p45–p47 as more important than she seems to do. 2p38 says that features common to all things (of a given attribute) can only be adequately cognized. But 2p47 does not tell us only this but also, and much more significantly, it informs us of how we can form adequate ideas of common features, and even of something as fundamental as the essence of God. This, in turn, is the basis of nothing less than the third kind of knowledge, as Spinoza himself tells us:

> From this we see that God's infinite essence and his eternity are known to all. And since all things are in God and are conceived through God, it follows that we can deduce from this knowledge a great many things which we know adequately, and so can form that third kind of knowledge of which we spoke in p40s2 and of whose excellence and utility we shall speak in Part V. (2p47s.)

It is by no means easy to see the nature of this deduction;[11] but at least he has given grounds for us having a basis from which it could emerge—which is not a minor detail and obviously the reason why Spinoza presents the argument of 2p45–p47 in the first place.

13.3 From Adequacy to Activity

The second part of the argument consists of showing that from the thesis that sense perception always contains an adequate idea of an attribute it follows that while perceiving things we are inevitably active. Spinoza defines activity as follows:

> I say that we act when something happens, in us or outside us, of which we are the adequate cause, i.e. (by d1), when something in us or outside us follows from our nature, which can be clearly and distinctly understood through it alone. (3d2.)

In other words, we are causally active when we are the complete, or total, or entire cause of an effect—in such a case, the effect can be conceived through our own nature alone (recall that, according to 1a4, effects are conceived through their causes). Now Spinoza holds that when we have an adequate (i.e. clear and distinct) idea of something, we must be the active cause of the idea:

> Our Mind does certain things [acts] and undergoes other things, viz. insofar as it has adequate ideas, it necessarily does certain things, and insofar as it has inadequate ideas, it necessarily undergoes other things. (3p1.)

Epistemic adequacy thus implies causal adequacy. But this surely raises the question, why would our activity be the exclusive source of adequate ideas? Spinoza's answer to this question turns on certain central features of his monism. To begin, we should keep firmly in mind the following basic truth about the relationship between God-or-Nature's mind and finite human minds:

[11] See, however, Gueroult (1974, pp. 467–480) and Koistinen (forthcoming). For an interpretation according to which the third kind of knowledge concerns the relationship obtaining between finite individuals' and God's power, see Wilson (1996, pp. 122–123).

> From this it follows that the human Mind is a part of the infinite intellect of God. Therefore, when we say that the human Mind perceives this or that, we are saying nothing but that God, not insofar as he is infinite, but insofar as he is explained through the nature of the human Mind, or insofar as he constitutes the essence of the human Mind, has this or that idea; and when we say that God has this or that idea, not only insofar as he constitutes the nature of the human Mind, but insofar as he also has the idea of another thing together with the human Mind, then we say that the human Mind perceives the thing only partially, or inadequately. (2p11c.)

Here Spinoza teaches us that any human mind partakes in (and even, as 5p40s says, constitutes) God's infinite intellect,[12] and that whenever we are engaged in a perceptual process, what happens is that it is actually God who (*qua* us) perceives something. Moreover, all of God's ideas are adequate; when an idea we have is not that (but inadequate), God's idea is a compound of our idea and of another thing's idea; when our idea is adequate, God's idea is formed through our mind only.

Knowing this background helps in analyzing Spinoza's somewhat complicated argument for 3p1, which reads:

> In each human Mind some ideas are adequate, but others are mutilated and confused (by 2p40s). But ideas that are adequate in someone's Mind are adequate in God insofar as he constitutes the essence of that Mind [only] (by 2p11c). And those that are inadequate in the Mind are also adequate in God (by the same cor.), not insofar as he contains only the essence of that Mind, but insofar as he also contains in himself, at the same time, the Minds of other things. Next, from any given idea some effect must necessarily follow (1p36), of which effect God is the adequate cause (see d1), not insofar as he is infinite, but insofar as he is considered to be affected by that given idea (see 2p9). But *if God, insofar as he is affected by an idea that is adequate in someone's Mind, is the cause of an effect, that same Mind is the effect's adequate cause (by 2p11c). Therefore, our Mind (by d2), insofar as it has adequate ideas, necessarily does certain things [acts]*. (3p1d, emphasis added.)

The first half of the argument cites 2p11c and presents the line of thought we just encountered. The final part of the demonstration reveals Spinoza's reasons for holding that epistemic adequacy implies causal adequacy, i.e. activity: whenever we have an adequate idea of something, there is an adequate idea in God's intellect that is formed through our mind alone; this, in turn, means that the idea in question is produced solely by us, i.e. that we are the complete or entire—in Spinoza's idiom, adequate—cause of that idea. And to be the adequate cause of something is to be active.

So, to recapitulate, Spinoza takes the following route from (epistemic) adequacy to activity. First, when we have an adequate idea, God has that idea through our mind alone—no other minds are involved. Second, effects are conceived through their causes. And so, third, when there is an idea to be conceived through a certain finite mind alone, it is an effect of that mind alone—which means that the mind in question is the adequate cause of the idea and thus active. Whenever we have an adequate idea, we cannot help being active; were this not the case, God's idea would not be formed through a single mind alone but through several minds, which would make the idea in question inadequate in those minds.

[12] For more on this, see Koistinen (2009).

The second part of the argument for the adequacy in sense perception is now complete. When connected to the first part, we can see the argument to be, to put it briefly, that in every idea formed through sense perception there is ingrained an adequate idea of an attribute, which idea cannot but result from the perceiver's activity. There is thus a specific active component in each and every sense perception; not even the most mutilated and confused sense perception can fail to carry something lucid and unconfused within it. All this is nicely in keeping with—and, evidently, reveals some of the reasons underpinning—Spinoza's way of defining ideas as being formed through mental activity:[13]

> By idea I understand a concept [*conceptum*] of the Mind that the Mind forms because it is a thinking thing.
>
> Exp.: I say concept rather than perception, because the word perception seems to indicate that the Mind is acted on by the object. But concept seems to express an action of the Mind. (2d3.)

Whatever we may think about Spinoza's terminological intuitions, the message is unequivocal: production of ideas involves a basic form activity. Moreover, nothing here suggests that this would not hold with regard to ideas of sense perception.

13.4 Sources of Adequacy

We have seen that Spinoza can argue *that* there is an active ingredient in any idea of sense perception. But the argument does not tell us *how* that ingredient gets there—it does not reveal the fundamental source of our activity, and how it is possible that from that source stem certain specific aspects of our ideas. I believe that Spinoza's answers to these questions can be roughly outlined as follows.

Many of the propositions cited above contain references to what operate as the centers of causal efficacy in Spinoza's world. Recall especially the emphasized parts in the following passages:

> [W]hen we say that the human Mind perceives this or that, we are saying nothing but that God, […] *insofar as he is explained through the nature of the human Mind*, […] has this or that idea[.] (2p11c, emphasis added.)
>
> I say that we act […] when something in us or outside us *follows from our nature*, which can be clearly and distinctly understood through it alone. (3d2, emphasis added.)
>
> But ideas that are adequate in someone's Mind are adequate in God *insofar as he constitutes the essence of that Mind* [only] (by 2p11c). And those that are inadequate in the Mind are also adequate in God (by the same cor.), not insofar as he contains only the essence of that Mind, but insofar as he also contains in himself, at the same time, the Minds of other things. (3p1d, emphasis added.)

[13] See also 2p49s, where Spinoza famously states that ideas are not to be regarded "as mute pictures on a panel". For notable recent discussions that emphasize the active character of ideas, see Della Rocca (2003); Steinberg (2005).

In the emphasized passages, Spinoza designates that precisely essences (or natures) play a crucial role in God having his adequate ideas. Especially when Spinoza talks about the cases in which we have adequate ideas, God both *constitutes* the essence of that mind and *is explained through* it. One summarizing articulation of this position runs as follows:

> [W]hen we say that an idea in the human Mind follows from ideas that are adequate in it, we are saying nothing but that (by p11c) in the Divine intellect there is an idea of which God is the cause, not insofar as he is infinite, nor insofar as he is affected with the ideas of a great many singular things, but insofar as he constitutes only the essence of the human Mind. (2p40d.)

Moreover, 3d2 states that when we are active, it is our essences that are efficacious: then something "follows from our nature".[14] This is unsurprising given the claim of general nature that there is nothing "from whose nature some effect does not follow" (1p36). Spinoza can thus be said to champion what I have dubbed the essentialist model of causation;[15] according to it, the causal efficacy we find in things is due to their essences. Moreover, also the passages from which I have reconstructed the argument for activity in sense perception have given us indications about the ultimate source of this essential causal activity: finite things take part in God's infinite power.[16] It can be said more precisely, I think, that God's causal power comes to be modified according to finite things' essences,[17] which also explains why Spinoza so frequently mentions essences (or natures) when he designates the factors involved in the formation of ideas, be those ideas—in finite minds—adequate or not. The contention concerning the activity involved in sense perception is thus nicely in keeping with Spinoza's overall view of finite things as intrinsically dynamic centers of causal activity, and explains an expression as the one we can find in the early *Metaphysical Thoughts*: "[I]t [the will] is a thought, i.e., a power of doing each one, of affirming and of denying". (*CM* II.12.)

Unfortunately, the fact that like all really existing things, ideas have power as their basis—that of affirming—informs us little about the particular nature, and the results, of the dynamism involved—that there is a specific actively produced element in the *content* of our sense perception. Now the discussion above has shown that our essential mental power results precisely in *adequate ideas of attributes*. Clearly, this requires that there are certain concepts—recall here the appearance of the notion of concept in the definition of idea (2d3)—that are "of our own making", concepts the forming of which depends on our mind alone but which nevertheless are of such a nature that they truly apply to all the things of a given domain (e.g.

[14] The first half of 3d2 focuses on activity, the latter half on passivity—and, interestingly, makes clear that essences are also involved in cases of passivity: "I say that we are acted on [*pati*] when something happens in us, or something follows from our nature, of which we are only a partial cause". For more on this, see Viljanen (2011, Chap. 6).

[15] See Viljanen (2008).

[16] See especially 4p4, 4p4d.

[17] For a detailed argument for and discussion of this, see Viljanen (2011, Chap. 3).

thought or extension).[18] Here Spinoza seems to be in agreement with Descartes of the Fifth Meditation, who argues that

> I distinctly imagine the extension of the quantity (or rather of the thing which is quantified) in length, breadth and depth. […] Not only are all these things very well known and transparent to me when regarded in this general way, but in addition there are countless particular features regarding shape, number, motion and so on, which I perceive when I give them my attention. And the truth of these matters is so open and so much in harmony with my nature, that *on first discovering them it seems that I am not so much learning something new as remembering what I knew before; or it seems like noticing for the first time things which were long present within me although I had never turned my mental gaze on them before*. (CSM II, 44, emphasis added.)

Thus, we are endogenously endowed with the concept of extension, whether or not we realize this when we perceive bodies. I believe it can be said that, for Descartes, sense perception awakens the innate concepts and prompts them into operation. This, in turn, as Raffaella De Rosa has recently argued, structures our sense experience of external objects.[19] Moreover, even though sensory perception is on the whole passive, there still seems to be a role to play for an active intellectual element. While discussing Descartes's example of the piece of wax, De Rosa contends: "I take Descartes to be saying here that the distinct (and intellectual) perception of the wax *as a body having certain categorial features* is latently contained (and actively employed) in the confused sensory perception of the piece of wax".[20] Spinoza seems to agree about this basic point in his doctrine of the formation of certain

[18] In a similar vein, Marshall (2008, p. 83) holds:

> Say I see a hockey puck before me. In forming the sensory idea of this puck, I necessarily form certain common notions of extension. For example, implicit in my idea of the puck is the idea that it must be either at motion or at rest. Further, in order to form such ideas, I must presuppose the idea of extension itself. These ideas, Spinoza says, are adequate ideas, and my mind is their adequate cause. Therefore, though these common notions come to my mind when I see the puck, they are not caused by the puck and I *do not learn them from the sensation*. Instead, they are a result of my mental activity, wholly caused by the mind, though triggered by the sensory experience. These common notions are present in my mind, which acts to form them whenever I have a sensation of a body.

[19] De Rosa (2010, esp. pp. 125, 127, 129, 131).

[20] Ibid., p. 128. Later, when discussing Meditation Six, De Rosa (2010, p. 132 n. 35) notes that "the overall passive character of sensory perception may not rule out an active role of the mind". Nicolas Malebranche's doctrine of "vision in God" offers another interesting, albeit very different, Cartesian point of comparison. Malebranche endorses the Cartesian view that extension is intellectual in nature—something forming the concept of which does not require any input from the senses. In its eternity, immutability, necessity, infinity, and universality, this intellectual idea of extension cannot reside in finite minds but in God. So despite the fact that Malebranche's "supernaturalism" so decisively differs from Spinoza's naturalist monism, there is a close linkage between extension and God for Malebranche as well. Moreover, in his later works Malebranche discusses causality pertaining to this idea, understanding it in a way opposite to Spinoza: for the latter, the human mind is of its own capable of producing the idea of extension, whereas for the former we seem to be completely causally inefficacious receivers of the intellectual idea of extension. For a very instructive account of Malebranche's doctrine, see Schmaltz (2000, esp. pp. 74, 77, 79–81). For Malebranche's reductive account of the faculty of understanding, see Schmid (forthcoming).

basic concepts: there is an adequate idea—the active source of which we ourselves are—of the attribute of extension in every sense perception. I would suggest more precisely that, for Spinoza, we can always, by our own power, affirm the idea of extension (nothing external is needed to prompt us to do this); but we are determined to different specific ways of doing this. When I think about how a circle rotating around its diameter creates a sphere,[21] I am having a thoroughly adequate idea (i.e. an idea that is adequate not with regard to extension only but also with regard to the way in which extension is modified); but when I see a table, I am having an inadequate idea, not of extension itself, but of the way in which it is modified.

We are still left with the question, why is the adequate idea of extension with which we are endowed not immediately transparent to us? Here I find helpful the tool analogy of the early *Treatise on the Emendation of the Intellect* to which R.J. Delahunty draws attention. To adequately conceive of things through their essences or proximate causes (*TdIE* § 19), we must use the intrinsic power of our intellect to make intellectual tools with which we can attain knowledge of the true nature of things, just as the humankind has been able to construct tools with natural human abilities, more refined tools with those tools, and finally is able to accomplish many things with little effort (*TdIE* § 31). As Delahunty notes,[22] this suggests that the primary truths are discovered only with difficult labour. It seems that idea of extension is in all of us to be found, but not without considerable effort and philosophical reflection.[23]

13.5 Conclusion

To conclude, I would like to make some remarks concerning causality, passivity, and cognition which may help in clarifying our intuitions concerning activity involved in sense perception. It should be noted that passivity does not equal causal inefficacy: patients do not have to be causally inactive. In accordance with this, causal inefficacy is *not* a traditional mark of patiency in a causal occurrence that involves (at least) two individuals: instead, *being the bearer of the effect*, i.e. the thing in which the produced effect or property inheres, is such a mark. This was so already for Aristotle, and early modern thinkers show considerable sympathy towards this tenet. To take one influential example, Hobbes writes as follows:

> A BODY is said to work upon or act, that is to say, do something to another body, when it either generates or destroys some accident in it: and *the body in which an accident is generated or destroyed is said to suffer*, that is, to have something done to it by another body; as when one body by putting forwards another body generates motion in it, it is called the AGENT; and the body in which motion is so generated, is called the PATIENT; so fire that warms the hand is the agent, and the hand, which is warmed, is the patient. *That accident,*

[21] See *TdIE* § 72.

[22] Delahunty (1985, pp. 23–24).

[23] Marshall (2008, p. 67 n. 42) elaborates this type of approach nicely as follows: “This is not to say that we are consciously aware of the idea of Extension when we consider a body, though this idea must be implicit, Spinoza believes. Only through analysis of our concepts and similar cognitive labor are these ideas made explicit”.

> *which is generated in the patient*, is called the EFFECT. (*Dco* II.9.1, emphases added, original emphases omitted.)

In his *Passions of the Soul*,[24] Descartes proceeds along the same lines; and in defining passivity, Spinoza shows signs of following the lead of his predecessors, for he claims that we are passive "when something happens *in us* […] of which we are only a partial cause" (3d2, emphasis added).[25]

As a matter of fact, it is quite difficult to regard patients as completely causally impotent. This applies especially to any instance of sense perception: how could the perceiver not have at least some effect on what kind of idea results from sense perception? It seems very plausible to hold that we are never entirely inefficacious while perceiving through our senses. It thus seems that the really interesting question to ask is, not whether we are being causally efficacious while being passive, but what is it that we *spontaneously* bring to the table when we are in cognitive contact with the external world. And so we should appreciate the fact that there is in Spinoza's system a line of thought that not only argues—on the basis of substance monism and other central commitments—that sense perception involves activity, but also designates more precisely what is being actively produced, and how. All of our ideas of sense perception, however mutilated and confused they may be, are endowed with an unconfused concept brought about the very power that makes us, as mental existents, what we are.[26]

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[24] CSM I, 328.

[25] I only say "shows signs", because "in us" (*in nobis*) also appears in the definition of activity.

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Chapter 14
Berkeley and Activity in Visual Perception

Ville Paukkonen

The question of activity has been prominent in studies on Berkeley's metaphysics of mind. His claim that in perception the mind is "altogether passive"[1] has been found puzzling[2] due to his repeated insistence that the mind is wholly active,[3] although in his correspondence with American Samuel Johnson he acknowledges "That the soul of man is passive as well as active I make no doubt".[4] In this paper I will put aside the metaphysical question concerning the relation between active mind and passive ideas and concentrate on the role of activity in perception as Berkeley conceived it in his works on vision. As we gain deeper understanding of Berkeley's theory of how we learn to see things at a distance from ourselves, we also come to understand the importance Berkeley placed on minds activity in perception. I will argue that a proper understanding of activity in perception will enable us to understand what Berkeley conceived our phenomenal experience to be in visual perception and doing this in turn will allow us to see a reason which commentators

[1] Berkeley is most explicit about the passivity of perception in the First Dialogue in the context of arguing that sensations could not exist in "an unperceiving substance": "you are in the very perception of light and colours altogether passive … the perception of light and colours, including no action in it". (DHP I, 197). Kenneth Winkler has pointed out the ad hominem character of the argument in First Dialogue, where the aim is to force Hylas into an unsupportable position rather than to reflect Philonous's, i.e. Berkley's own position. Winkler has also paid attention to the subtleties of what could be meant by action in this context. See Winkler (1989, pp. 7–9).

[2] See, for instance, Migely (2007) for a discussion on this inconsistency. Charles McCracken has pointed out a related worry about the activity of the mind that is not directly related to Berkeleyan dualism between active minds and passive ideas but rather to the metaphysical status of the mind itself: if the mind has both active and passive functions, it seems to pose a threat to its unity and simplicity. See McCarcken (1988).

[3] "a spirit is one, simple, undivided, active being" (PHK 27, 52), "a soul or spirit is an active being, whose existence consists not in being perceived, but in perceiving ideas and thinking" (PHK 139, 105).

[4] Berkeley to Johnson in March 24 1730, in *Works II*, 293.

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have overlooked for Berkeley's denial that ideas of sight and ideas of touch have anything in common.[5]

In the end I hope to have shown that Berkeley's account of perception can preserve our intuition both that there is an integral element of passivity in perception, that we cannot choose what we see, and that nevertheless there is a substantial amount of activity involved in our perceptions when conceptualizing the world of which we may not be conscious of.

14.1 Learning to See Distance

In the first sentence of the New Theory of Vision Berkeley sets himself a task of answering two questions concerning vision: First, he aims to show how it comes about that we perceive distance, magnitude and situation of objects by sight; second, he promises to consider the difference that holds between ideas of sight and touch and whether there is any idea common to both senses.[6] These two questions, as it turns out, are interconnected. Curiously Berkeley seems to make life hard for himself already in the second chapter of the book by claiming that in fact we do not and cannot perceive distance immediately, since distance is "a line directed end-wise to the eye" with only one point projected "in the fund of the eye", which remains the same regardless of whether the distance to the object is long or short.[7] It soon turns out, however, that the stress should be on the word *immediately*: according to Berkeley we do in fact perceive distance, not immediately but mediately. What Chap. 2 of NTV aims to do, is to pave the way for a critique of the so-called "geometric optics", whose most famous representatives for Berkeley are Molyneux (for whom he

[5] This denial is known in the literature as Berkeley's "heterogeneity thesis", i.e. that ideas of sight and touch have nothing in common but are completely heterogeneous.

[6] NTV 1, 171.

[7] NTV 2, 171. "Fund of the eye" means retina. This argument against the possibility of immediate perception of distance is known as the "one-point argument" in the literature. Note however that the argument is stated somewhat differently in Alciphron: "Therefore the appearance of a long and of a short distance is of the same magnitude, or rather of no magnitude at all, being in all cases one single point" (Alc IV, 8, 150. See also DHP I, 202) As Alan Donagan has noted, this latter way of spelling out the argument is done in terms of the way things look, not in terms of physical points of projected light in the retina. See Donagan (1978). This alone puts David Armstrong's interpretation of Berkeley as identifying the object seen with retinal image in doubt. See Armstrong (1960, pp. 9–10). In addition, were it the case that we would see our retinal image in visual perception, we would be actually seeing tangible objects since the image in the retina is a physical picture formed by physical light reflecting from objects. In this case we would immediately see tangible objects, which is exactly what Berkeley denies. This should not be taken to insinuate that for Berkeley there would be no connection between retinal image and what is seen, for would that be the case then Berkeley would never have asked for instance the question of inverted retinal image (NTV 98, 211). Berkeley says himself in NTV 88, 206–207 that "There is at this day no one ignorant that the pictures of external objects are painted on the retina, or fund of the eye: That we can see nothing which is not so painted". It suffices for our purposes to say that there exists a correspondence between the retinal image and the visual perception without claiming these two to be identical. For interesting discussion on the relation between retinal image and objects of vision see Thrane (1977).

had the greatest respect) Descartes and Malebranche.[8] By denying that we perceive immediately distance as a line turned endwise to our eye, Berkeley hopes to show that it cannot be the case that we calculate the distance of objects from us by using such lines as "optic axes" whose concurrence form greater angle when the object perceived is near and smaller angle when the object is far. If we are not aware of any lines directed to objects from our eyes, it follows that we are not able to use their angles to explain why it is that we see objects at a distance from us.[9] Without going into details of Berkeley's critique of geometric optics,[10] I will turn to Berkeley's positive program for explaining the distance perception.

Berkeley takes as his starting point a methodological guideline that vision should be studied as vision. This means that the proper object of study are the things perceived by visual sense alone, "the proper objects of sight" as Berkeley calls them and that these objects ought be studied by attending to our own visual ideas without presupposing, however indispensable they might be in the mathematical study of optics, hypothetical entities such as lines and angles.[11] Berkeley does not oppose as such the study of external objects, the causes of our ideas, but insists that we must start from our own ideas—that is, from the "effects"—and move from knowledge of them to the knowledge of their causes, not the other way around in order to explain the workings of the visual system. Because lines and angles of geometric optics that are supposed to explain our ideas are by themselves unperceivable, they cannot serve as basis of our knowledge of distance. Since our perception of distance is not immediate, but we nevertheless perceive objects at distance from us, distance has to be perceived "by means of some other idea"[12] which is immediately perceived, in order to remain faithful to Berkeley's methodological guideline of studying vision as vision. This other idea that grounds our distance perception must itself be somehow perceived to be useful in a meaningful explanation; otherwise we would end up either in infinite regress of ideas perceived mediately or in presupposing unperceived entities, such as lines and angles, to explain vision. Berkeley uses the

[8] See, for instance NTV 40, 185 where Berkeley calls Molyneux "ingenious".

[9] Armstrong has not been convinced of Berkeley's criticism, and considers it sufficient for geometric optics to hold that lines and angles are perceived unconsciously, instead of consciously as Berkeley demands, see Armstrong (1960, pp. 21–22). Neither Descartes nor Malebranche considered the calculation performed in perceiving objects at distance to be a conscious one: indeed Malebranche acknowledges that it would be far too complex for finite minds to perform and concludes that it is God who makes the calculations for us (Search I, 9, 46-8 and Elucidations 17, 746).

[10] This has already been done in the secondary literature. For a fuller account of Berkeley's critique of geometric optics, see Atherton (1990, pp. 61–88).

[11] See TVV 16, 257; NTV 14, 173. As Berkeley's great respect towards William Molyneux already suggests, Berkeley had no quarrel with the project of explaining mathematically the refraction and reflection of light, he merely insisted that this geometrical explanation is not applicable to study of vision: "To explain how the mind or soul of man simply sees is one thing, and belongs to philosophy. To consider particles as moving in certain lines, rays of light as refracted or reflected, or crossing, or including angles, is quite another thing, and appertaineth to geometry. … [t]he former theory is that which makes us understand the true nature of vision, considered as a faculty of the soul." (NTV 43, 266).

[12] NTV 9, 172–173.

example of perceiving other persons passions to make his point about mediate perception: when I see someone in the grip of shame or anger, I am not directly seeing her passion as such. Instead what I see is the change of colour on her face or some other visual ideas that suggest that the person is feeling the passion I mediately perceive her to feel. Were there no immediately perceived visual ideas that serve as clues to that person's passions, e.g. no change of colour in her face, I would have no way to perceive the other persons passions mediately.[13]

Since distance is not among the proper objects of sight,[14] and given that we do nevertheless perceive ideas to be "out there", i.e. we perceive ideas in depth in visual perception, we are faced with a challenge of explaining the perception of distance. But before going into Berkeley's explanation of the perception of distance few words are in order to explicate what exactly is meant by distance in this context. The distance Berkeley is talking about is the distance from the perceiver to the perceived, or the depth of our perception, not the distance between two or more objects of vision that could be drawn in breadth or height.[15] In the first place, it is appropriate to distinguish seeing objects at a distance from us from seeing how far away the objects are from us.[16] We may perceive objects at distance from us, as "out there", without being able to assess the exact metric distance to the object. I take Berkeley to be interested mainly in the perception of distance as "outness" in the first parts of NTV, while arguing against geometric theorists.[17] Otherwise he would be, on the one hand, making things too easy for himself since the mere fact that we often make mistakes in assessing our distance to the objects in visual perception would suffice to prove the geometric theory wrong,[18] and, on the other hand, committing himself to the somewhat modest project of showing that we may estimate the distance of objects from us based on purely psychological, non-geometrical, cues.[19] But there

[13] NTV 9–10, 172–173.

[14] By proper object of sight Berkeley does not have in mind objects in the usual sense as objects in the world but subjective experiences one has when perceiving by sight.

[15] Note, however, that Berkeley does once use the word "distance" in the latter sense while arguing that there can be distance only between things which appertain under the same sense modality: "For by the distance between any two points nothing more is meant than the number of intermediate points" (NTV 112, 216). It follows from this that it would be absurd to say that visual point is adjacent to tangible point; for this would mean that the line between them would consist of neither visually nor tangibly perceived points, and would hence be inconceivable. For more thorough discussion of this argument, see Schwartz (2006, pp. 49, 55–68).

[16] See Cummins (1987, p. 166) for distinction between "outness" and "exact distance". Brook (1973) has argued that the distance discussed in NTV ought to be understood as metric distance.

[17] This is not to say that metric distance would not be relevant topic for Berkeley. In particular, when discussing the impossibility of geometry based solely on visible extension Berkeley might have had some considerations concerning the problems of calibrating the visible units with tangible units as one of his background assumptions (NTV 149–159, 232–235).

[18] Perhaps the proponent of geometric theory might explain the misperception of the distance of objects as the outcome of the influence of non-geometric psychological processes on the process of visual perception, as Descartes and Malebranche in fact seem to be doing.

[19] If this were Berkeley's project he would in fact be in accordance with Descartes and Malebranche, who both acknowledged the fact that psychological cues can and do play a role in estimating the distance of objects in addition to geometrical reasoning. As a matter of fact Malebranche

is a further distinction to be noted. It seems that the distance from us ("outness") is not exactly the same thing as the visual three-dimensionality of objects, i.e., seeing objects *in depth,* as having a volume. Berkeley himself seems to acknowledge this difference when he proceeds to discuss the question of how it is that we visually perceive the tangible magnitude of objects after considering himself "done with distance".[20] Perhaps we might think of the visual perception of an object that is far away but which appears to us as two-dimensional, i.e. as such that we would not immediately perceive any of its parts as nearer or farther from us as any other part.[21]

Berkeley proposes that we come to perceive objects at distance with the help of a collection of visual cues that suggest the actual distance of objects, distance itself being perceived immediately by touch alone. These visual cues are available immediately in the visual perception. In the case of distance perception these cues are first the muscular sensation of the turning of the eye as the interval between the pupils lessens or widens,[22] and second the degree of confusion of the object that

holds that as the distance to an object is far enough the rays issuing from it converge on the retina (Search I, 6, iii, 43) thus failing to provide us information about the distance to object. In those cases we judge the distance based on psychological cues. Descartes speaks of "judgements" in his Sixth set of Replies, which we are accustomed to make from our earliest years and which have an influence on what I see. See Descartes (CSM II, pp. 298–299; AT VII, pp. 438–439). Although Descartes' example of these judgments in the Sixth set of replies is calculations made on the distance of objects, in the Sixth Discourse of *Dioptrics* he mentions "the knowledge or opinion, that we have of the position of various parts of an object" as influencing our perception of the shape of an object, which clearly count as psychological cues in vision (CSM I, 172; AT VI, 140). For a discussion of the role of judgments in visual perception in Descartes see for instance Atherton (2005); Wolf-Devine (2000).

[20] Berkeley writes in NTV 52, 190 "I have now done with distance, and proceed to shew how it is that we come to perceive the magnitude of objects". He proceeds to distinguish visible magnitude from tangible, maintaining that we see both of them, albeit only the former "properly and immediately" and the latter only mediately (NTV 54, 191).

[21] Think of, for instance, visual perception of a ship just before it vanishes to the horizon. Although we know the ship to be an object with volume in all three dimensions of space, and normally appearing to us as such, we still see it for a moment as two-dimensional regardless of the fact that we know it to be three-dimensional. Some contemporary writers, who have hold that since we originally perceive objects as three-dimensional, we could not perceive objects as genuinely two-dimensional at all, would deny this. See for instance Schwitzgebel (2007). Margaret Atherton cites Robert Schwartz's example of seeing a picture of a globe through a stereoscope, which will "look bulgy or in depth" but will not look to be in any distance from us (Atherton 1990, pp. 74–75). Thus as in the former example, where we could be able to see object to be two-dimensional but nevertheless as in distance from us, perhaps we could also perceive an object to be three-dimensional without being at any distance from us. It seems, however, that the former example does not suffice to show that we could perceive three-dimensional object without it being at distance from us but merely that we could perceive such object without being able to say at what metric distance it is from us. At least in the case of these two examples it seems that perception of objects in distance is primary in relation to perceiving objects in depth. In more general note, it is interesting that just as during the eighteenth century there was more or less a consensus that we originally see objects as two-dimensional, there has been a wide agreement in the twentieth century that our original visual perception of objects is three dimensional.

[22] NTV 16, 174.

increases as it approaches the eye.[23] Since these cues have only a contingent relation to the actual (tangible) distance of objects, knowing them does not enable us to judge a priori the approximate distance of the object or even that the objects are at distance at all. The cues that indicate distance (1) could be other than what they are, (2) might mislead us (sometimes an object looks confused when it is in fact far away as is the case with near sighted person, although normally confusion is a cue of the proximity of objects) and (3) do not have any necessary connection with the actual distance (just as the colour of persons face and the passion she is feeling are not necessarily connected).[24] Unlike the lines and angles that geometric optics presupposes, whose relation to distance was considered to be necessary, the visual cues suggest actual distance to the perceiver simply because they have been observed to go together with the actual tangible distance.[25] Whenever we see objects at distance, we discover that there are two things going on: kinaesthetic sensation of moving our eyes and a confusion of visual idea. We may be certain of this with mere introspection, by attending to our own ideas. Moreover, neither kinaesthetic sensation nor confusedness of the visual idea has any necessary connection to actual distance since the very same visual idea abstracted from custom and experience, could just as well produce the idea of great distance or small distance or no distance at all.[26] I will not go further into Berkeley's discussion of perception of magnitude and situation[27] since it does not provide anything essentially new to this general picture of learning to see visual properties through visual cues.

Distance is then *mediately* perceived by vision. What is mediated is tangible distance. Distance itself can be perceived immediately only by the sense of touch. In the case of immediate tangible perception of distance I feel the object as being at a distance from me by perceiving (tangibly) how long it takes me to get to it at a given speed.[28] One might object that this account fails to show that we perceive distance itself *immediately* by touch in the same sense as we are in direct perceptual contact

[23] NTV 21, 175. Berkeley acknowledges that in most cases there are many other ideas which can act as visual cues for distance and mentions "particular number, size and kind" as examples (NTV 28, 177).

[24] NTV 23, 176.

[25] Berkeley writes "That one idea may suggest another to the mind it will suffice that they have been observed to go together, without any demonstration of the necessity of their coexistence, or without so much as knowing what it is that makes them so coexist". (NTV 25, 176).

[26] In NTV 26, 176 Berkeley writes "if it had been the ordinary course of Nature that the farther off an object were placed, the more confused it should appear, it is certain the very same perception that now makes us think an object approaches would then have made us imagine it went farther off. That perception, abstracting from custom and experience, being equally fitted to produce the Idea of great distance, or small distance, or no distance at all".

[27] See NTV 52–87, 191–206 for magnitude and NTV 88–120, 206–219 for situation.

[28] NTV 45, 187–188: "Looking at an object I perceive a certain visible figure and colour, with some degree of faintness and other circumstances, which from what I have formerly observed, determine me to think that if I advance forward so many paces or miles, I shall be affected with such and such ideas of touch: So that in truth and strictness of speech I neither see distance it self, nor anything that I take to be at a distance".

with tactual qualities such as temperature or texture.[29] What Berkeley has in mind here is active bodily movement. We are aware of our body kinaesthetically, and as we move our limbs in space and encounter resistance we become aware of space and objects in space, that is, objects in distance from us. Moreover, as we move our limbs on the surfaces of objects we come to perceive their texture and shape.[30] For Berkeley, touch is active by its nature; we could not acquire the ideas that we do via touch were it not by active movement. The immediate perception of distance then is fundamentally a kinaesthetic sensation that requires some notion of time and of speed (or effort) and also some preliminary understanding of what the object feels like (so that I may know when I have reached it, or distinguish it from others in touch by knowing where it ends).[31]

We are now in a position to begin to understand what Berkeley means by mediated visual distance perception: it means that certain visual ideas, visual cues, allow us, and in fact make us, to visually perceive objects to be at a certain distance in virtue of their constant conjunction with certain tangible ideas. By perceiving confused visual ideas and feeling certain kinaesthetic sensations in my eyes I become accustomed to expect that by taking one step forward I will hit a large object, for example. So often has this connection been presented to me that I have learned to see the distance of an object: I cannot help but perceive that the object is one foot away. In other words, I learn to perceive objects at distance in visual perception and as this learning process is complete it will be very hard or even impossible for me to return to the original situation where I perceived merely immediate objects of vision. The fact that visual distance is mediately perceived does not diminish the fact that it is nevertheless visually perceived, which means that it is present in our phenomenology of visual experience. Perceived visual distance is thus perceived in virtue of

[29] "By touch I perceive, *for example*, hard and soft, heat and cold, motion and resistance, and of all these more and less either as to quantity or degree. (*Principles*, 1, 41, emphasis added.)" As the expression "for example", and the context of this passage suggest, Berkeley did not consider this list of proper objects of touch as exhaustive. Similar qualification seems to be hinted at the last sentence of NTV 45, 188: "Note that when I speak of tangible idea, I take the word idea for any the immediate object of sense or understanding, in which large signification it is commonly used by the moderns". Although Berkeley never explicitly offers an organization of tangible ideas into different kinds, I think that his writings hint that he was aware of the complexity of the phenomena under the label "tangible ideas".

[30] As it turns out, perceiving the hardness and softness of objects by touch, not to mention their movement and resistance, involves some sense of our body and its intentional movement, as in pushing and groping an object as is the case of tactual perception of shape and size as well. Interesting discussions on Berkeley and the sense of touch are found from Warnock (1982, pp. 47–59) and Armstrong (1960, pp. 73–80). For an illuminating account on the nature of the sense of touch in general see O'Shaughnessy (1989).

[31] It ought to be noted at this point that Berkeley has not given an argument against the possibility of illusions and misperceptions of distance and size and shape in the immediate perception by touch (the second point that I noted about the relationship between visual cues and the actual depth of objects). Supposing that he thinks that such an argument cannot be given, it seems to follow that our tangible perception of distance may be fallible but yet immediate.

tangible distance, which is the only kind of distance immediately perceived.[32] We could describe the situation in seeing by saying that what we have as *given* in visual perception are the colours and lights, i.e. the proper objects of sight, which are by themselves not seen at distance or as three-dimensional. These proper objects of sight are *non-conceptual* in the sense that they would be perceived by any kinds of conscious beings who share the same kind of faculty of vision, regardless of their conceptual abilities. They are the passive material of visual perception. It is only in virtue of tangible perception that we are able to see objects at distance, or learn to perceive objects *as* at distance.[33] This *perceiving as* could be called conceptual in the sense that only by possessing an appropriate concept of distance could one come to perceive objects at distance from oneself. It is only by tangible perception, which is intrinsically active, that we come to possess the relevant concept of distance and it is by application of this concept on the visual data by which our visual field[34] transforms and we begin to perceive (some of) its elements as objects at distance.

14.2 The Phenomenal Nature of Visual Experience and Heterogeneity between Ideas of Sight and Touch

The distinction between immediate perception of tangible distance and mediate perception of visual distance brings us to the second of the main themes of NTV, namely the question whether there are any ideas common to both sight and touch.[35]

[32] George Pitcher has pointed out that within an immediate perception one can distinguish two meanings: 1) perceiving *directly* without any intermediary and 2) perceiving *immediately* without any intellectual or mental process being involved in perception, see Pitcher (1977, pp. 9–13). In this paper I will limit my inquiries into immediate perception falling under the second category of the distinction, understanding immediate perception as having a sensation without any interpretation or belief connected to it.

[33] To apply Berkeley's example of hearing a couch drive out on the street (NTV 46, 188–189), we might say that the content of immediate perception of the coach is same in both with a person who has never heard a coach in his life and who does not know how couch sound like and, on the other hand, with person who has heard the sound that one hears from coach driving by and who full well knows that this is how the coach sounds like.

[34] Later Hatfield and Epstein have called the visual field with only proper objects of vision in it by the name "sensory core" which they take to refer "to a conscious states with the phenomenal properties of the retinal image", see Hatfield and Epstein (1979, p. 363). This term could be used in Berkeley's case as well as long as it is remembered that there might be some retinal properties which the proper objects of vision do not track. For example, as the perceived object recedes far enough, the visual perception of it diminishes to smaller than one minima visibilia, which means that there is no phenomena of seeing anything, whilst at the same time retina might still have on it a point caused by the ray of light issuing from the tangible object.

[35] I will leave aside all other senses expect vision and touch, since they seem to be the only ones by which we could be claimed to perceive distance directly. One might wonder why hearing is not counted as one of the senses by which we perceive distance. Berkeley indeed says that "by the ear I perceive distance, just after the same manner as I do by the eye" (NTV 46, 189), that is mediately. But he goes on to qualify that "I do not nevertheless say I hear distance in like manner as is say that I see it, the ideas perceived by hearing not being so apt to be confounded with the ideas of touch as

Berkeley draws the conclusion that there are none, but before we go into this in detail we need to gain a clearer picture of what exactly is being compared. We do know something about immediate tangible perception, which was described in terms of kinaesthetic sensations of moving one's limbs and feeling resistance, but what about the immediate visual perception? We are still left with questions about the nature of visual perception before we learned to see distance by connecting certain visual ideas to tangible distance. What did we perceive before we learned to perceive objects at a distance (albeit mediately)? There obviously was something that was being perceived before that, otherwise the whole story would have been told for nothing since one could have simply said that we perceive distance visually all along. If there were no visual perception before we learned visual distance perception, the motivation for calling visual distance mediate, rather than immediate, would be mysterious: what reason would we have in that case for regarding tangible extension prior to visual extension? Berkeley introduces two thought experiments that might help us to understand the nature of visual perception prior to learning to see objects as at a distance from us: these are the famous Molyneux man[36] and less rarely cited "unbodied spirit".[37] Although neither of these thought experiments is designed primarily to explain the nature of visual perception before learning to see distance, they do help us in this task by depicting exactly this kind of situation.

Berkeley considers the so-called "Molyneux-man",[38] a man born blind who has his vision restored, to be unable to tell the distance to objects he first sees by merely using his sight and moreover, that he would have no idea of the shape of visual objects he sees. Therefore he would not pass the test of telling which of the two figures before him is the globe and which one is the cube, if asked to. The reason Molyneyx man could not perceive distance at first sight is that he has not yet learned to correlate visual cues with tangible size: those visual ideas that serve for the rest of us to suggest tangible distance are for him of the same status as any other visual idea and bear no relation to tangible distance. The moral of Berkeley's story is that Molyneux man would originally believe that the objects of visual perception are at no distance at all, but rather in his mind[39], and that our visual ideas are altogether

those of sight are". We are more accustomed to analyse hearing as hearing a sound rather than as hearing a (tangible) object at distance. (NTV 47, 189) Perhaps Berkeley ought to have said more about hearing in his discussion of perceived extension, to which he turns to in NTV 49, 189, since it seems that although hearing might not provide us with immediate perception of distance, there could still be a particular organization of sounds that merits the name of space. Sounds are ordered in terms of loudness and pitch in addition to which they seem to have a particular orientation: they, at least sometimes, seem to be at some direction from us. Perhaps Berkeley thought that being in certain direction is not immediately perceived by hearing but merely mediately, due to the fact that we have some immediate kinaesthetic perception of our own position, which in turn would be counted under the broad category of perception of touch. For a discussion of phenomenal spatiality in hearing, see Smith (2002, pp. 134–135, 144–145).

[36] NTV 41–42; 132–136, 186; 226.

[37] NTV 153–155, 233–234.

[38] A character in a thought experiment first introduced by Molyneux (The Correspondence of John Locke, IV, p. 651) and introduced to the public by Locke (Essay, II, ix, 8, p. 146).

[39] "From what has been premised it is a manifest consequence that a man born blind, being made to see, would at first have no idea of distance by sight; the sun and stars, the remotest objects as

different from ideas of touch.[40] Moreover, according to Berkeley, he would be right in holding these beliefs. The reason why Molyneux man understands this better than we do is because he has access to the immediate objects of vision: as the light from objects around him focuses on his retina, he has exactly the same sensations of light and colour in his mind as everyone else standing in his position would have: but unlike the rest of us who see these variations of light and colour as objects which are at various distances from us, the Molyneux man sees them as they are, as nothing more than lights and colours. He does not even recognize the objects surrounding him that he knows perfectly well with his sense of touch, let alone the distance that these objects are from him, by means of vision.

What is it like to see just light and colours (I take Berkeley to mean by "light" simply the hue of colour in the context of proper objects of vision)? At this point it is important to make a distinction between perceiving distance and perceiving space.[41] It does not follow from Berkeley's claim that the Molyneux man does not see things at a distance and that he fails to see the three-dimensional shape of objects, that he would not see any spatial organization in his objects of vision, i.e. that he would be unable to perceive any kind of visual space (or, rather, objects taking up space,

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well as the nearer, would all seem to be in his eye, or rather in his mind. The objects intromitted by sight would seem to him (as in truth they are) no other than a new set of thoughts or sensations, each whereof is as near to him as the perceptions of pain or pleasure, or the most inward passions of his soul". NTV 41, 186.

[40] The denial that Molyneux man would see objects at distance is clearly directed against the geometric theory, main proponents of whom Berkeley considered Descartes and Malebranche to be. If distance were perceived by lines and angles as geometric optics holds, Molyneux man ought to be able to make the calculations as soon as he opens his eyes and tell at what distance objects are. The latter part of the conclusion which Berkeley draws from the original experience of Molyneux man, that he would not perceive any ideas in common between ideas of sight and ideas of touch but would need to learn to connect particular visible ideas to particular tangible ideas, is directed towards Locke. Locke had given negative answer to the Molyneux question just as Berkeley, but was not entitled to do so, according to Berkeley, on the basis of his distinction between primary and secondary qualities. Locke thought that the so called primary properties are properties that material things themselves have independent of our perception of them. Our perceptions of these properties resemble the properties that they are perceptions of and are shared by different senses (with the exception of solidity, which can be only felt by touch): we can both see and feel extension, size, figure and motion of objects. If this is the case, then it ought to be possible for a Molyneux man to be able to figure out the shape of a seen thing without touching it. After all, shape is, according to Locke, an idea shared both by vision and touch and Molyneux man does not hence receive any new idea of shape via vision. The denial that there could be such "common sensibles" was at the core of Berkeley's heterogeneity thesis and he considered it to be one of the greatest merits of his NTV, as he pointed out in TVV 15 and 41, 257; 265. See Brykman (1996) for an interesting discussion on the question of common sensible and common sense in Locke and Berkeley.

[41] For a reading of Berkeley's NTV that interprets him as denying not only the visual perception of distance, but the visual perception of space altogether, see Morgan (1977, pp. 61–62). Morgan puts great weight on Berkeley's solution of the problem of inverted retinal image (NTV 88–106, 206–213) and thinks that there is no meaningful way to speak of visual space without orientation, which can only take place in relation to our own body and its possible action, which is tangible and known by touch. However, it does not follow from the fact that there is no natural up, down, left, right, near, far in visual space that the visual space would be completely non-spatial and unordered. Berkeley explicitly acknowledges that ideas of sight have a situation, but reminds us that "the position of any object is determined with respect only to objects of the same sense". NTV 111, 215.

that is, having extension). Berkeley says exactly the opposite in NTV 43, where he argues that extension which we perceive cannot be abstracted, not even in thought, from colour. "I appeal to any man's experience, whether the visible extension of any object doth not appear as near to him as any colour of that object; nay whether they do not both seem to be in the very same place?".[42] If this is so, then not only is extension always coloured, but colour is also extended.[43] And if this is the case, then seeing colours is also seeing extension, although a particular kind of extension, namely visual extension. Since it is the case that proper objects of vision (colour and light) are extended, it follows that they take larger or smaller amount of space in the visual field of the Molyneux man (or of any man for that matter). Again, this cannot be taken as a cue as to whether the object really is near or distant, before we have learned to associate certain kinds of visual ideas with real distance, all of which takes time and learning. Berkeley puts the point by saying that "the immediate objects of sight are not so much as the ideas or resemblances of things placed at a distance".[44]

The problem Molyneux man is having is that he lacks experience of how visual and tangible ideas correlate, but his problem is not that his visual field would be completely unorganized: there is some organization in his visual field since he sees things as extended, although visually, not tangibly extended. Berkeley himself says "Now, where the extension is there surely is the figure, and there the motion too. I speak of those which are perceived by sight".[45] This being the case, following claim made by Margaret Atherton seems exaggerated: "What he (Molyneux man) perceives upon being made to see is not an organized visual representation, which might or might not be thought to bear connections or resemblances with the familiar collection of tangible properties. Instead, what the Molyneux man experiences is an enormous number of different visual qualities, and he has not yet learned anything about which are likely to recur together".[46] Putting aside the actual confusion the

[42] NTV 43, 187.

[43] Indeed, were it not, Berkeley would have contradicted himself on the denial of abstract ideas by granting the existence of unextended colour (in addition to already cited NTV 43, 187, see also, for instance, PHK 5, 42–43).

[44] NTV 44, 187.

[45] NTV 43, 187. Berkeley defines figure as the termination of magnitude in NTV 124, 221, in relation to geometry, but for our purposes we may consider figure to be synonymous with shape of perceived visual object.

[46] Atherton (1990, p. 191). When talking about the visual experience of unbodied spirit, which I take to be same as Molyneux man's at the very moment he regains his sight, Atherton grants that the immediate objects of vision, which Atherton calls colour patches, are distinguishable from one another and "which can therefore be *judged* to be greater or smaller than another". (Atherton 1990, p. 206, emphasis added). However, she seems to be in a slippery slope here: if the immediate objects of vision, light and colour, are really colour patches which are individuated already in the first instance of vision before we have learned to connect our visual ideas with tactual ones, then would they not have to be in some organized relation to each other? How else could we perceive them as distinct from one another? Moreover, a "colour patch" sounds like an object with visual extension, in which case it ought to have figure as well. One might resist this objection by arguing that colour patches are really the minima visibilia, the smallest things that take up extension in the visual field and by insisting that such units of extension have no magnitude since they cannot be divided into

Molyneux man would have when regaining his sight, which would undoubtedly de facto make him unable to calmly reflect on his new sensations and their order, and thinking instead in terms of the thought experiment, we are not entitled to say that there is no organization in the visual field of the Molyneux man: the organization of his visual field is surely different from ours, since we do both perceive things as having shapes and as being at a certain distance from us, neither of which the Molyneux man does. If it were the case that the Molyneux man had no organization in his visual fields, if his visual ideas were in fact mere anamorphic mass, it would be very hard to understand how the learning process could ever start, in virtue of which he eventually learns to see objects at a distance. With what would he learn to connect his tactual ideas if his visual ideas were completely unidentifiable and chaotic?[47]

What the Molyneux man sees would then be approximately the same as what the unbodied spirit, who has a sense of vision but no sense of touch, would see. That being would not have "idea of a solid, or quantity of three dimensions"[48] which according to Berkeley follows from it not having any idea of distance. From this it follows that this unbodied spirit would neither have ideas of space nor body, and consequently that it would be unable to learn any geometrical concepts that measure bodies or portions of space.[49] Berkeley's view is that without the idea of distance the unbodied spirit cannot frame the idea of metric distance either and thus would be unable to do solid geometry. Still there is nothing excluding the unbodied spirit from perceiving its visual ideas as having some extension or other. To put the same point differently, it would not perceive space as three dimensional, but why would it not perceive it as two dimensional, consisting of breadth and width, just lacking depth? However, Berkeley proceeds to claim that unbodied spirit would not only be unable to do solid but also plane geometry: if this is the case it seems that the organization of the visual field of unbodied spirit, or Molyneux man for that matter, does not even consist of two dimensional forms, which makes it very difficult to understand what it consists of. What would the unbodied spirits visual experience be like phenomenologically?

As I read Berkeley, he is attempting to specify the meaning of *visual* extension, figure and motion and in this way to show the impossibility of unbodied spirit doing plane geometry, but at the same time trying to maintain the idea that there is some organization governing our visual ideas even before we have learned to see

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any smaller parts, and hence have no figure either. But if colour patches are such things, and if our visual field is full of them, in that case should not they have some primitive organization amongst themselves? For instance, would it not appear even to the unbodied spirit that this particular green dot is between these two blue dots and so on?

[47] Atherton's interpretation does not go as far since she maintains that immediate objects of sight are identifiable. However, Bertil Belfrage comes at least close to claiming the proper objects of sight to be lacking in criterion for individuation as well as organization. He considers any individuation of proper objects of sight as one rather than another to be entirely the creature of the mind and as necessarily involving some mixing of ideas of touch. See Belfrage (2003, pp. 197–198). For an illuminating discussion concerning immediate objects of vision in Berkeley see Falkenstein (1994).

[48] NTV 153, 233.

[49] NTV 154–155, 233–234.

objects at distance. In the case of plane geometry, what exactly is the problem facing unbodied spirit, operating merely with visible figures and motion, trying to do geometry? Although unbodied spirit would not have any kinaesthetic experience of moving in space, why could it not perceive one of its visual ideas to move in relation to other visual ideas in its visual field?[50] Although Berkeley is not explicit on the matter, what he had in mind is the lack of criteria for distinguishing local movement from mere change. Berkeley explains that "the perpetual mutability and fleetingness of those immediate objects of sight render them incapable of being managed after the manner of geometrical figures".[51] Since our proper objects of vision, light and colour, are continuously changing, we would need to be able to re-identify visual idea as the same visual idea during its change of colour (or hue of its colour), growing bigger or smaller and moving in our visual field in relation to other ideas. To do this, the unbodied spirit would need some criterion for seeing one idea as changing place rather than merely a new set of ideas being brought into existence. This ability to perceive one and the same object through changing visual ideas is gained only by actively encountering the object by touch and learning to connect certain visual ideas with certain tactual ideas and to recognize that certain change in visual ideas regularly corresponds to change in tactual ideas. If this is not the case we cannot tell whether we are perceiving a movement of a shaped object or mere change of our visual field as new objects of vision appear and old ones disappear.[52] A related problem concerning perception of visual motion for unbodied spirit is that there is too much of it: without learned ability to distinguish local motion from all other changes,[53] we are left with a concept of visual motion that only makes perception of visual extension even more difficult than it would otherwise be. Although one might object that this is merely practical difficulty which unbodied spirit might learn to overcome over time with the help of his reason and memory, it does not

[50] An easy answer would be that since unbodied spirit does not have eyes, it could not focus its attention since focusing requires straining one's eyes. This answer would, however, be arbitrarily changing the rules of the thought experiment since it does not provide any reason to think that there could not be movement of visual ideas in relation to one another even when the gaze is focused on one point: why could not an idea of sight just flout across our visual field even while our gaze is focused on one point.

[51] NTV 156, 234. He continues: "nor is it in any degree useful that they should. It is true there are divers of them perceived at once, and more of some and less of others: but accurately to compute their magnitude and assign precise determinate proportions between things so variable and inconstant, if we suppose it possible to be done, must yet be a very trifling and insignificant labour".

[52] It might also be asked, why is motion needed for plane geometry in the first place? What Berkeley must have thought, is that to make judgements about the geometry of our visual field, such as that these two triangles are similar or these two lines are of equal length, we need to be able to compare the figures against each other. The only way to do that, or to rule the length of any line, requires movement from our part. To be sure that those triangles are really similar we would have to move one over the other or to see whether those lines are of equal length by putting them by each other to see if this really is the case. This would require active control of objects and ability to intervene with the environment, to which unbodied intellect would be incapable of. As Margaret Atherton has noted, geometrical demonstration for Berkeley has to consist in the manipulation of objects in space (Atherton 1990, pp. 204–205).

[53] Or colour change from birth and destruction of new visual ideas for that matter.

diminish the fact that when following an object moving in our visual field, we are already using concepts learned from perception of ideas of touch, namely to recognize consecutive figures of different size as one and the same object. Without this conceptualization of our visual data as units moving in directions relative to our body we would be left with visual field with its own organization incapable of coming to represent objects in the world.

Our next task is to try to understand what could be meant by a visible figure when objects "properly perceived by visive faculty amounts to no more than colours, with their variations and different proportions of light and shade".[54] Conceiving visible figure ought to be possible in order to preserve the viability of Berkeley's theory of vision. Not only does Berkeley speak of visible extension in several places, but also needs to maintain that visible extension is structured into units that can be used to signify tactual qualities and only visible figures can serve this purpose. On the one hand, we need visible figure to be able to learn to see distance in the first place;[55] on the other hand, according to Berkeley, to have an idea of figure as geometrical plane is not possible. Indeed this conclusion is natural for Berkeley for he needs it in order to uphold to his heterogeneity thesis: if we would perceive plane figures with geometrical properties, there *would* be an idea common to both sight and touch, which is exactly what Berkeley denies. However, it does not follow from this that we cannot visually perceive any figure at all, but merely that the figure we perceive when perceiving proper objects of vision does not have geometrical properties, or at least not the same geometrical properties that objects of touch do.[56] Extension and figure are still proper objects of sight; they do exist (in being perceived) but they are lacking determinacy by nature. If we were able to get rid of our present phenomenology, i.e. seeing things at distance from us, and could concentrate on our pure visual sensations that make up the visual field, we would be able to see some parts of our visible field as, for example, more bright in colour than some other, but we would still be unable to determine the exact borders of figures so perceived. Unlike tactual figure, which lends itself to the measurement by touch, the borders of visible figure are by their nature undetermined. Berkeley states explicitly that "It is true there are divers of them [proper objects of sight] perceived at once, and more

[54] NTV 156, 234.

[55] What else than figure would border one part of extension from the other? And without some possibility to grasp certain features of our visible extension and to distinguish them from others, we cannot properly understand the process of learning to see distance mediately as a process of connecting immediately perceived visual ideas with immediately perceived tangible ideas.

[56] In TVV 36, 267 Berkeley writes: "It is true that terms denoting tangible extension, figure, location, motion and the like, are also applied to denote the quantity, relation and order of the proper visible objects or ideas of sight. But this proceeds only from experience and analogy. … to express the order of visible ideas, the words *situation*, *high* and *low*, *up* and *down*, are made use of, and their sense, when so applied is analogical". In other words, touched figure comes to be related to certain particular organization of visible ideas, where certain visible ideas are related to certain others: this particular organization of visual field comes to be called by the name "figure" although it is neither the same nor even of the same kind as tangible figure.

of some and less of others".[57] Since the proper objects of sight do have extension and figure, albeit visual extension and visual figure, it follows that they must be in some proportions to one another. Again, in this case it is better to quote Berkeley himself: "The proper, immediate object of vision is light, in all its modes and variations, various colours in kind, in degree, in quantity; some lively, others faint; more of some and less of others; various in their bounds or limits; various in their order and situation".[58]

What exactly does Berkeley mean by "order" and "situation" of proper objects of sight? The question is how do we determine the proportions that proper objects of sight bear to each others; what does it mean to have immediate visual perception of things in relative locations to each other? It depends on what the units being perceived are: if I perceive three red minima visibilia, they are bigger than two blue minima visibilia, but only in the case that they are next to each other; if they are scattered around the visual field then two blue ones have larger magnitude. These and many other proportions and relative locations are presented in our visual field, but since our phenomenology of vision has radically altered by our learning to connect ideas of sight with ideas of touch and thus to perceive objects at distance from us, we are not able to go back to our original visual perception and to attend to our visual field as it was. Instead we start from our current spatial visual perception of ordinary objects around us and, by a sort of visual archaeology that Berkeley pursues in NTV and TVV, we arrive to these basic building blocks of our visual perception. Berkeley's own example is telling. Just as when reading a book, our thought moves directly to the things signified by the words in the book and fails to attend to the sign itself, i.e. the physical letters on the paper lumped together to form words: "it is usual, in hearing a discourse, to overlook the sounds or letters, and instantly pass on to the meaning".[59] In the case of vision, as we come to understand visual signs as signifying tactual ideas and learn to see objects at distance from us, it gets very difficult to stop seeing objects like that and to return to the original "pure" vision and to attend to its features, although these proper objects of vision are still present to us since our current visual field is made up of them. The appearance of the signs themselves changes as we learn to see what they refer to and coming back to them requires not merely attending to the features of our current phenomenology of vision but careful introspection and rational analysis. Again, the point might be made in short by saying that the proper objects of vision (light and colour) are not *perceived as* geometrical figures in any conceptual sense, although they do have properties and organization within themselves that make it possible to come to perceive objects as geometrical figures through them as we learn to see objects in distance.

[57] NTV 156, 234.

[58] TVV 44, 266.

[59] TVV 48, 268.

14.3 Conclusion

A good formulation of what the proper objects of sight are that Berkeley confines himself to is found later on from one of Berkeley's most formidable critics, Thomas Reid, from his discussion of "visual appearances" which he holds to be present to the mind "almost every moment" but only rarely made the object of reflection: "the mind has acquired a confirmed and inveterate habit of inattention to them; for they no sooner appear, than quick as lightning the thing signified [a solid object] succeeds, and engrosses all our regard. They have no name in language; and, although we are conscious of them when they pass through the mind, yet their passage is so quick and so familiar, that it is absolutely unheeded; nor do they leave any footsteps of themselves, either in the memory or imagination".[60] If Berkeley's proper objects of vision, lights and colours immediately perceived, are indeed something like Reid's "visual appearances", then the state of Molyneux man or unbodied spirit should not surprise us: the latter is unable to do geometry since it does not perceive clear cut figures that it could compare together or lines that would remain the same to be used in measuring. The Molyneux man, on the other hand, is suffering from the problem of too many choices when presented with a square and a circle: even if the perceptual situation would be stable enough, so that there would be absolutely nothing in his field of vision expect these two objects, the challenge would still be too demanding for him to be able to connect the right visible figure to the right tangible figure. If someone would suggest that he just counted the corners,[61] he would not know what in the visual perception corresponds to tangible corner. He would still have several alternative ways of counting at his disposal from which he could not choose a priori: for example, he might count the circle in the following way: 1. everything outside the circle, 2. everything inside the circle, 3 the circumference of the circle, and 4. all of them added together and get four for an answer. Admittedly this method of counting four things of a visual object might appear less suitable than counting four corners of the square, and Berkeley might be referring to this in NTV 142 where he acknowledges that visible square is "fitter" than visual circle to represent tangible square, but Molyneux man could not really know this before he learns to connect his ideas of sight with ideas of touch. As long as there is a chance of misidentification on the basis of the perceived objects of sight, then Molyneux man has no good reason to choose the more "suitable" of the visual figures: he only learns about its suitability when he has learned to see mediately, that is, to connect his immediately perceived visual ideas with the immediately perceived tangible ideas in proper way. As soon as we begin to move in the world and connect our ideas of touch with the ideas of sight, this "fitness" of certain portions of our visual field to represent certain tangible ideas rather than others shows its value: without some structural correspondence the process of learning to see objects at distance could never take off since there would always be too many choices among the ideas of sight amongst which to choose the one that could serve as signifying the idea of touch. However, as the case of Molyneux man shows, this structure among visible

[60] Inquiry, VI, 3, p. 82.

[61] As Leibniz, amongst others, did (New Essays, p. 137).

ideas by itself is not rich enough to show which visual ideas represent which tactual ideas: mere theoretical contemplation will not suffice to find out the relevant connections, but practical engaging in the world is needed to learn to see.[62]

The heterogeneity thesis which claims that ideas of sight and touch have nothing in common, in my reading at least, is made intelligible by the existence of the immediate objects of vision, i.e. by the light and colour taken as primitive features of vision. If there are no immediate visual perceptions, which we have in fact experienced at some point but have forgotten by learning a new way of perceiving, that is the mediate perception, we would have no reason to argue against the existence of common sensibles, such as distance, number and extension. The way the world appears to us is three dimensional space inhabited with objects with clear figures. We find third dimension as well as objects with determinate magnitude (that is, figure) from our tangible perception. We learn to correlate these with the proper objects of immediate visual perception. This is possible not because of any necessary connection between ideas of sight and ideas of touch, but because the immediate objects of vision have an organization amongst themselves which enables them to come to signify corresponding ideas of touch and because the two occur regularly together. God alone is responsible for this regularity: he is responsible for the fact that objects of vision may become signs in the language of nature, signifying objects of touch. In the end, however, it is we ourselves who learn this language by connecting signs to objects signified and by learning the rules of this "language", and it is our activity that is responsible for bringing about the visual world inhabited with objects at distance from us.

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[62] As Margaret Wilson and Rick Gursh have pointed out, merely on the basis of the fact that relation between ideas of sight and touch is not necessary, it is not ruled out that it could not be contingent but based on something more than mere co-occurrence of visual and ideas of touch. See Wilson (1999); Gursh (2007). Berkeley's theory of the nature of immediate objects of sight and their organization grants this, but maintains that the "fitness" that certain visual ideas have to signify certain tactual ideas is not fine structured enough to enable the Molyneux man to a priori reason which visual idea signifies which tactual idea. For an interesting account of "fitness" of visual ideas to signify tactual ideas see Dunlop (2011).

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Chapter 15
Activity and Passivity in Theories of Perception: Descartes to Kant

Gary Hatfield

Is perception an activity of perceivers, or is it something that happens to perceivers? Is it active or passive? This question, which may seem clear enough, admits of no simple answer. A standard answer, popular in the past two centuries, might be that *sensation* is passive and *perception* active. Sensation is something that happens when sense-organs are stimulated; perception is the awareness of the external world based on sensation, and usually involves contributions on the part of the subject, whether associational, inferential, neural, or through sensorimotor activity.[1]

If we explicitly make the question historical, it may seem more tractable, because answers can be relativized to individuals, times, and places: Have theorists of sensory perception regarded perception as active or passive? But rendering the question as historical adds more complication, not less. While it allows the notions of *active*, *passive*, *sensation*, and *perception* to gain specificity by being tied to historically specific theories, these theories differ in their conceptions of the terms or concepts in question.[2] If we consider simply the theories under discussion in the

[1] See the definitions of "sensation" and "perception" attributed to Reid and many modern psychologists in Stout and Baldwin (1925, p. 277), which is paraphrased above. This source does not consider the various theoretical conceptions of the contributions by the subject, but they include: the associative theory of Berkeley and its descendants; inferential theories from Ibn al-Haytham and Descartes to Helmholtz (Helmholtz's theory may better be classed as a hybrid: an associational account of inference); the Gestalt psychologists' inferred neurophysiological field processes that mediate between sensory nerve stimulation and perceptual experience, see Koffka (1935) and Köhler (1947); Gibson's (1966) conception that perception paradigmatically arises through sensorimotor activity (of course, Gibson rejects mediating processes and sensation-based perception, viewing perception as the direct apprehension of objects through information obtained by sampling the optic array). On the earlier theorists (pre 1900), see Boring (1942); Pastore (1971); Hatfield and Epstein (1979); Hatfield (1990).

[2] Although historians may credit the explicit terminological distinction between "sensation" and "perception" to Reid (Stout and Baldwin (1925, p. 277); Hamlyn (1961, p. 125); Pastore (1971, pp. 114, 117)) or even to Malebranche, e.g., Schmaltz (1996, Chaps. 2–3), the conceptual distinction paraphrased in the previous paragraph is older. In the eleventh century, Ibn al Haytham (1989,

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modern period, from Descartes to Kant (including the ongoing discussion in this period of theories that arose in antiquity or the middle ages), the range of meanings that various theorists gave to these terms is staggering. This occurs in part because of metaphysical differences in the notion of mind and its activities, but also because of differing notions of what it is to perceive a world by means of the senses, including different conceptions of how objects are perceived.

In this chapter I examine aspects in which sense perception has been conceived as passive and as active in the early modern period, Descartes to Kant (and beyond, in a few instances). In these discussions, I compare early modern theoretical outlooks with some selected ancient and medieval theories that were available for discussion at the time. In the first section, I consider the notion of passivity in perception, which is mostly, but not exclusively, allied with sensation considered as an immediate effect on the sense organs or an immediate mental consequence of such an effect. In the second section, I consider the diverse notions of activity in perception. In both sections, the variety of positions is further multiplied by the fact that I consider the notions of passivity and activity both as they would be understood by the historical actors in the period in question and as we might apply them retrospectively. That is, I am interested not only in the actors' conceptions of passivity and activity, but also in the place of these conceptions as background to more recent thought—which means I am interested in how recent theory might classify earlier theories on this question. Finally, in a third section I give an overview of the development of the notions of active and passive perception. I believe that the considerations I bring forward support the conclusion that, in most cases, sensation has been regarded as passive but perception as in some way active. The ways in which perception is conceived as active are, however, quite varied, yielding no unified or single answer to the question with which I began, or its historicized version.

15.1 Passivity in Sense Perception

The passivity of sense perception can mean a variety of things. In the Aristotelian tradition, the predominant view is that the senses are affected by sensible species, which bring the sensory power from potency into act. For Descartes, it means that

pp. 1, 142) distinguished between what, in vision, is perceived by "pure sensation" (viz., light qua light and color qua color) and what is perceived by "discernment, inference and recognition", which comprises all the other sensible properties, including: classifying light and colors by kind, and twenty other visual "intentions", comprising spatial properties as well as similarity, difference, beauty, and ugliness (ibid., p. 1, 138). One might even seek the distinction in Aristotle's division between the sense-perception effected by the individual senses and the cognitive dimension added by the "primary sense faculty" (on which, see the discussion in Knuuttila (2008, pp. 1–8), who, I should be clear, does not suggest that the conceptual distinction between sensation and perception may be found in Aristotle). Finally, although the definition given by Reid and paraphrased above precluded sensation from being world or object presenting, not all authors drew the distinction in this manner. Some held that sensations are passively received subjective effects and that they are nonetheless object-property presenting. Arguably, that was Ibn al-Haytham's view. For an interpretation of Descartes as holding this position, see Hatfield (2013).

brain states cause (or occasion) sensations in the mind. For Berkeley, that God produces sensory ideas in minds. For Hume, that the mind passively receives impressions from the various senses (or in the various sense modalities). For Reid, that sensory objects cause sensations in the mind. For Kant, that the faculty of sensibility is affected by objects. This passivity may be restricted to an early or initial stage in the sensory process, as in all the figures named, or, in rare cases, such as the nineteenth-century theory of Samuel Bailey, it may determine the entire sense-perceptual experience.[3] In most theories, the passively received sensation may be followed by an active cognitive response that nonetheless is part of sense perception, as in Descartes, Reid, and Kant, or it may be followed by an associatively based habitual response, as in Berkeley and Hume, which itself might be deemed to include aspects both of passivity and of activity. Let us further examine each of these examples.

In a standard Aristotelian scheme, which served as a common background for philosophizing in the seventeenth century (though of course not as the only background), the senses passively receive the forms of external objects without the matter. The metaphysics of forms without matter is intricate. Aristotle himself doesn't give much help with it. The Latin scholastics developed several different schemes by which the form of color in an object might alter the air (the medium of vision, rendered transparent by the action of light) so that the air supports the transmission of the form to the eye and ultimately along the optic nerve to the internal senses. The color while in the air and eye is called a "sensible species". The form or species of color in the air has material conditions (the air), but does not join with the matter of the air in the usual way, or else it would render the air colored. Rather, the form or species has "spiritual" or "intentional" existence in the medium, which is a diminished form of existence from that which it has in the colored object.[4] The very form of color is received by the sensory power, which is moved from potentially percipient of color to actually percipient of color. This process is passive in that the sense organ and sensory power is moved by the form to become like the color of the body. As is discussed in Sect. 2, some theorists saw a need to add an active component to this reception. Further, the perception of color and other visible sensibles is augmented by the internal senses, including the "primary sense faculty", which adds or draws out cognitive content about the objects of sense.

A dualist, interactionist theory of mind is perhaps the metaphysical paradigm of passive sensation in the early modern period. In the Cartesian scheme, sense perception involves three stages or grades, including the (passive) causation of sensations. Descartes' scheme for sense perception is given in several places, including the *Dioptrics*, the *Passions*, the *Principles*, and the *Meditations*. Perhaps his clearest statement of a distinction between passively received color sensations and a more active grasping of object properties comes in the Sixth Replies to objections in the *Meditations*:

> when I see a stick, it should not be supposed that certain 'intentional forms' fly off the stick towards the eye, but simply that rays of light are reflected off the stick and set up certain movements in the optic nerve and, via the optic nerve, in the brain, as I have explained at

[3] Bailey (1842); see also Pastore (1971, pp. 211–212).

[4] Hatfield (1998b, pp. 957–959); see also Simmons (1994); Knuuttila (2008).

> some length in the *Optics*. This movement in the brain, which is common to us and the brutes, is the first grade of sensory response. This leads to the second grade, which extends to the mere perception of the colour and light reflected from the stick; it arises from the fact that the mind is so intimately conjoined with the body that it is affected by the movements which occur in it. Nothing more than this should be referred to the sensory faculty, if we wish to distinguish it carefully from the intellect.[5]

Descartes goes on to discuss a third grade of sense, in which we attribute the color property to the stick and also perceive its size, shape, and distance, by means of "judgements" or "rational inferences" that have become habitual and so go unnoticed. But as regards the theme of passivity, this passage ascribes the perception of "colour and light" from the fact that the body affects the mind. As it happens, Descartes does not here give a completely accurate account of his position in the *Dioptrics*, since in that work he allowed that distance might be immediately perceived (without judgment or rational inference) through the mechanism of accommodation.[6] That would allow for passive perception of distance in some circumstances (things close at hand). In any event, not only in this passage but elsewhere in the *Meditations*, Descartes supplements passivity in sense perception by a further cognitive dimension, as in perception of the wax as a material thing, or of colored forms in the square as human beings rather than automata (Second Meditation). Moreover, as discussed in Sect. 2, there is a sense in which the creation of the sensation in the mind may be deemed an activity of mind.

In Berkeley, the proper objects of each sense are passively received ideas caused by God to occur in individual minds. For vision, these proper objects include light and color. Arguably, they also include what Berkeley calls "visible form" and "visible magnitude".[7] Berkeley distinguishes visible form and magnitude from tangible form and magnitude. The visible magnitude of an object varies with our distance from the object. This variation agrees with the optical variation of the retinal image, although Berkeley does not suppose that we see or sense our retinal images.[8] Tangible form and magnitude for an object such as a tower or a standing person remain constant and accord with our conception of objects as retaining a constant shape and size even if we vary our angle of regard or our distance from the object. As it happens, in sight Berkeley held that mature (adult) perceivers are not aware of the proper objects of sight, which, as a result of associative processes of "suggestion", are replaced or supplemented by the secondary or mediate objects of sight. Accordingly,

[5] *Meditations*, Sixth Replies, Sect. 9, AT 7, p. 437. For citation details, see Descartes (1969–1975, 1984–1985).

[6] *Dioptrics*, AT 6, p. 137; Descartes also proposed that convergence might serve as an innate physiological mechanism for distance perception (discussed in n. 34). Many translators render the title of Descartes' French *Dioptrique* as *Optics*; this distorts the title, as in classical optical theory a distinction is made between optics (direct vision), dioptrics (vision through lenses), and catoptrics (mirrors). Descartes' title may merely reflect the fact that Discourses 7–10 of the work concern lenses and a method for grinding them, a problem that greatly engaged Descartes in the 1620s (e.g., *Correspondance*, AT 1, pp. 13–15, 53–69); but, if only coincidentally, the title also reflects the fact that, after Kepler's discovery that the crystalline humor is a lens, direct human vision is through a lens (the natural lens in the eye).

[7] Berkeley (1709), Sect. 41–50. See also Hatfield and Epstein (1979).

[8] Berkeley (1733), Sect. 50–53.

as adults we visually experience objects to be at a distance and to retain a constant size. Our original experience of the passively received proper objects, which we may think of as two-dimensional arrays of light and color, is supplanted by an experience of a world of stable objects arrayed in three-dimensional space.

Hume alters the terminological relations among sensation, perception, and ideas, but he holds to a model of passively received sensations. In Hume's taxonomy, "perceptions" are any content found in the human mind and are always in themselves concrete and particular. "Impressions" are "all our sensations, passions and emotions, as they make their first appearance in the soul". "Ideas" are "faint images" or copies of impressions.[9] Hume divides impressions into two general kinds, "those of *sensation* and those of *reflexion*". A sensation "arises in the soul originally, from unknown causes".[10] Hence, sensations are effects; they are passively received. We cannot alter them at will, though of course by changing our direction of gaze or moving a hand over an object, we may receive different sensations than we had before. Hume analyzes visual sensations into minimally extended points.[11] This concept may also be found in Berkeley, with his *minimum visibile*,[12] but Hume takes a further step and supposes that our initial visual sensations are atomic (minimally extended) sensations, and that the idea of visible extension is compound, arising from the situation of minimum visibilia or sensational atoms.[13] Following Berkeley's lead (and perhaps also echoing Malebranche), Hume holds that the original, passively received sensations of vision "appear as if painted on a plain surface" and attributes the apprehension of their remoteness more to "reason" than to the senses.[14] But, for Hume, reason "is nothing but a wonderful and unintelligible instinct in our souls, which carries us along a certain train of ideas"; the "instincts" of reason arise from past experience through habit, and are thus associative.[15] Thus, we may suppose that he held that our apprehension of distance arises through associative connections. Be that as it may, Hume showed much less interest in the theory of vision than did Berkeley or Malebranche, and he did not develop a detailed account of distance or size perception. All the same, his discussion of associative principles and the "instinct" of reason may prove useful when considering whether associative processes in sense perception should be deemed as passive, active, or some combination of these.

Although we have found in various authors a de facto distinction between sensation and perception, Reid explicitly drew a terminological distinction. He noted that the same grammatical form is used to describe sensations and perceptions, and ascribed the failure to accurately distinguish the terms to this fact.

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[9] Hume (1739–1740, p. 1).

[10] Ibid., 7.

[11] Ibid., 27, 29 ff.

[12] Berkeley, *An Essay*, Sect. 54, 80–86.

[13] Hume, *Treatise*, 34, 38.

[14] Ibid., 56. In eighteenth-century usage, "plain" can mean "plane," as it does here.

[15] Ibid., 179. Hume does not here label the "habits" underlying reason as associative, but his account of habit is associative. He later equates "the understanding" with "the general and more establish'd properties of the imagination" (ibid., p. 267); but the tendency of the imagination to unite ideas and form principles arises through the laws of association (ibid., pp. 10–13).

> The same mode of expression is used to denote sensation and perception; and therefore we are apt to look upon them as things of the same nature. Thus, *I feel a pain*; *I see a tree*: the first denoteth a sensation, the last a perception. The grammatical analysis of both expressions is the same: for both consist of an active verb and an object. But, if we attend to the things signified by these expressions, we shall find, that in the first, the distinction between act and object is not real but grammatical; in the second, the distinction is not only grammatical but real.[16]

Sensations include pains and also secondary qualities: color, odor, taste, smell, and tactual qualities. A sensation "by itself", when properly isolated from conjoined elements, "appears to be something which can have no existence but in a sentient mind, no distinction from the act of the mind by which it is felt".[17] In perception, act and object are distinct:

> I perceive a tree that grows before my window; there is here an object which is perceived, and an act of the mind by which it is perceived; and these two are not only distinguishable, but they are extremely unlike in their natures. The object is made up of a trunk, branches, and leaves; but the act of the mind by which it is perceived, hath neither trunk, branches, nor leaves. I am conscious of this act of my mind, and I can reflect upon it; but it is too simple to admit of an analysis, and I cannot find proper words to describe it.[18]

The perception of the object implies "both a conception of its form, and a belief of its present existence".[19] These are constituents of the act of perception, by which the object is perceived.

Are sensation and perception passive, active, or in some sense both? Reid here declares that both sensation and perception involve an act of mind. The difference between them consists in the fact that, in the case of sensation, act and object are not distinct—as Reid puts it, "*feeling a pain* signifies no more than *being pained*"[20]—whereas, in the case of perception, act and object are distinct—the act of perception is mental, the object (in the case of vision) is outside the body in the material world. Are these "acts" active? Do they constitute of kind of activity, or does the term "act" here merely connote that the mind has come into a certain state?

The question of activity and passivity in Reid's account is somewhat vexed. Reid himself records as the "opinion of modern philosophers" that "in sensation the mind is altogether passive," a position that he accepts but with some qualification (in the ensuing sentences):

> And this undoubtedly is so far true, that we cannot raise any sensation in our minds by willing it; and, on the other hand, it seems hardly possible to avoid having the sensation when the object is presented. Yet it seems likewise to be true, that in proportion as the attention is more or less turned to a sensation, or diverted from it, the sensation is more or less perceived or remembered.

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[16] Reid (1997, pp. 167–168).

[17] Ibid., 168.

[18] Ibid.

[19] Ibid. Reid uses the term "conception" to include an awareness of the determinate form of an object; in this regard, it is allied to the imagination, and indeed Reid compares perception more to imagination and remembrance than to reason (ibid., p. 169).

[20] Ibid., 168.

From these considerations, Reid concludes: "Whether therefore there can be any sensation where the mind is purely passive, I will not say; but I think we are conscious of having given some attention to every sensation which we remember, though ever so recent".[21] Sensations are bare effects upon us. Reid leaves open whether we must notice them for them to exist as sensations. He also treats them as naturally giving rise to perceptions that consist, in the case of bare sensations such as odors and other instances of secondary qualities, in the belief in the existence of an external object and the ascription of an unknown causal basis in the object for producing the sensation of an odor in us.

What about perception and activity? Perception is an act of mind that includes a belief in the existence of an external object (as the cause of our sensation or other perceptual state). The belief is caused in us in accordance with our natural constitution. As Reid puts it (speaking to "the skeptic"): "This belief, Sir, is none of my manufacture; it came from the mint of Nature; it bears her image and superscription". Similarly, the form of objects is immediately perceived, without judgment or inference. For touch, the perception of a three-dimensionally extended world is immediate:

> That our sensations of touch indicate something external, extended, figured, hard or soft, is not a deduction of reason, but a natural principle. The belief of it, and the very conception of it, are equally parts of our constitution.[22]

In this regard, the sensations of touch serve as natural signs[23] to yield a belief in and conception of an extended, figured, and hard or soft external object.

In vision, Reid posits in addition to sensations of color the experience of "visible appearances" that are two-dimensional (they fulfill the geometry of the projection of the three-dimensional world onto a concave, spherical surface, which Reid constructs as a hemisphere in front of the eye). These serve as signs for the perception of three-dimensional objects; in this case (unlike in touch) the meaning or denotation of the sign is learned. Through a process of learning, we come to pass (without reflection or notice) from visible appearances (including a visible form and magnitude, which accord with the retinal image), which serve as signs, to a conception of the distance of objects and their true form and magnitude. According to Reid, the process is habitual and not rational; he ascribes this passage between sign and thing signified to a process of suggestion, which can be original or acquired. In seeing distance, it is acquired.

According to Reid, sensations are passively produced in us but may require an act of attention to be noticed. Perceptions would also appear to be passively produced in us in accordance with the original constitution of our nature. Some perceptions, such as distance as perceived by sight, arise through learning. But the process of learning is a matter of unnoticed habit formation, not of active judgment or ratiocination. It would seem that, on the whole, sensation and perception involve

[21] Ibid., 44.

[22] Ibid., 72.

[23] Ibid., Chap. 5.

distinct mental operations for Reid, but the overall picture is of passivity. This conclusion is, however, placed in a wider context, and qualified, in Sect. 2.

Although he was not deeply involved in the theory of the individual senses, Kant organized the theoretical part of his critical philosophy around the distinction among sensibility, understanding, and reason. The first is passive, the latter two are active. Sensibility and understanding are both required for sensory cognition of objects. Although Kant offers a more intricate scheme than is involved in a bare distinction between sensation and perception, he does endorse a version of that distinction. However, unlike Reid (or Berkeley, or Hume), he endorses an active process of synthesis as underlying sensory perception generally.

The faculty of sensibility is a "receptive" faculty. It produces sensations when it is affected by objects. In empirical cognition, these sensations yield an empirical intuition. Kant also speaks of a pure intuition, devoid of sensation. Sensation is called the "matter" of intuition.[24] Intuitions also have "forms" into which sensations are organized: space and time. Kant sometimes says this organization is carried out by laws of sensibility, which seem to be laws for placing sensations in spatial and temporal relation to one another. Kant (at least sometimes) ascribes this synthesis to the activity of imagination.[25] Merely spatially and temporally organized intuitions do not yield perception of objects. For that, the intuitions must be brought into a unity by means of concepts, including at least the categories (substance, cause, etc.). Outer perception (of things in space) requires at the very least the synthesis of intuitions in accordance with the concept of magnitude, by which objects are represented as having determinate spatial properties.[26] This synthesis, as involving concepts, is an active synthesis of the understanding, which orders sensory materials. At a general level, then, Kant holds to a view in which sensations arise passively and are ordered by imagination and understanding to yield perception of objects.

Among our authors, Descartes and Kant hold to a view in which sensation is, generally speaking, passive, and perception of objects requires an act of understanding. Berkeley, Hume, and Reid offer a picture of passive sensation which, through the operations of habit formation ("suggestion" or "association") yield perceptions of objects in space at a distance. Section 2 finds that this easy partition of authors must be further articulated, to recognize additional active aspects of both sensation and perception.

15.2 Activity in Sense Perception

What "activity" in perception may mean is by no means clear from the use of the word alone. Indeed, there are several conceptions or aspects of activity in perception that should be distinguished. The most minimal conception of activity is the Aristotelian notion that the form of a sensible quality brings the sensory power from

[24] Kant (1781), A 19–20/B 33–34; A 50/B 74.

[25] Ibid., A 78/B 103.

[26] Ibid., A 162/B 203.

potency to act, with respect to its power of sensing. Because all the early modern figures we have considered reject a conception of sensation as the reception of the form of a real quality, none of them share this particular conception. Some of them, however, hold to the notion of passive receptivity, while reconceiving the relation between cause and sensation. Either the cause is unknown, or it is known and is known not to have the characteristics (phenomenal color, phenomenal warmth) found in the sensation; or the cause is, as in the case of Berkeley, God, who presents an actually colored idea to the perceiver.

In Sect. 1, Descartes was presented as a theorist who held that sensation arises when the mind is affected by the body. But there are passages that suggest he held another position, akin to an earlier, Augustinian position. Augustine held that body cannot affect mind, because mind is a substance of a higher type. He thus conceived of the soul as creating sensations when bodily conditions call for it—a kind of occasionalism enacted by individual souls. The content of the sensation thus originates in the mind. A related conception was promoted by some late medieval Aristotelians who, following the lead of Simplicius and Averroes, posited an "agent sense", which was responsible for producing sensory content when appropriately "triggered" by conditions in the body—without, as a higher power than body, being causally affected by the body.[27] In Descartes, this content is produced by an "institution of nature" regarding the relation between brain state and sensation.[28] Whether Descartes is read as an interactionist or an individual occasionalist, he is clearly committed to the idea that the phenomenal character of sensations arises from the peculiarities of the mind's having or making a sensation in relation to a given bodily state. Phenomenal red comes not by absorption from the medium or brain, but is owing to the representational or phenomenal capacities of the mind itself.[29]

Aristotelian conceptions of sense perception invoked other sorts of activity in the process of sense perception. The internal senses, in the guise of the primary sense faculty, sometimes also known as the common sense, perceives *that* we perceive. This sort of perceptual act has its counterpart in the reflective act of awareness described by Descartes, or in what Locke and others following him called the reflective act of internal sense. In the Aristotelian scheme, the internal senses also add cognitive content to what they received from the senses. It was a commonly held doctrine that the visual sense perceives the shape and color of a wolf, but an internal sense, variously known as the estimative or cogitative power, perceives that the wolf poses danger (and does so by instinct, according to many Aristotelians).[30] This sort of distinction between passively received sensory content (color, perhaps

[27] On the agent sense in Renaissance philosophy, see Spruit (2008, pp. 203–224).

[28] Descartes, *Dioptrics*, AT 6, p. 130. On Augustine and individual occasionalism in relation to Descartes, see Hatfield, (2005, pp. 53–54). More generally on Descartes and occasionalism, see Schmaltz (2008), Chap. 4.

[29] For a reading of Descartes' sensations as intentional or representational, see Hatfield (2013). The contribution of phenomenal color, arising from its status as an effect caused by the powers or secondary qualities of bodies, may be what Locke had in mind in saying that sensory ideas are "produced" in the mind as the result of sensory stimulation (1690, II.i.3).

[30] Hatfield (2012), pp. 151–186.

aspects of shape) and a judgmental grasping of the properties and identity of the object of perception. We have seen such a distinction in Descartes' account of various grades of sense, and it recurs in his account of the perception of human beings in the square. As Descartes observes, we see only hats and cloaks (or perhaps only things having the colored shapes of hats and cloaks), but we claim to perceive human beings rather than mere automata.[31] This can only occur if perception itself includes not only the second grade of sense, but also the implicit judgments of the third grade of sense, including here the implicit judgment that the hats and coats cover human beings.

In the optical tradition, it had become a standard theoretical tenet that the perception of size and distance includes judgment or inference. We have seen this standard position reflected in Descartes' discussion of the third grade of sense. He partly emended it, by holding that, for things close at hand, the brain states that control the accommodation of the lens can directly cause the idea of distance, making distance passively perceived in that case. But the more typical case for Descartes is that unnoticed and habitual judgments and inferences underlie size and distance perception. These judgments, or some counterpart to them, are required by the then standard optical analysis of size perception as involving a combination of the visual angle subtended by the object and the distance to the object. Visual angle alone does not suffice for ordinary size perception; it remains indeterminate as regards object-size until it is combined with a distance, yielding the concrete representation of a size at a distance. In intromission theories of vision, it was often accepted that distance is not directly given optically but arises from the interpretation (or other type of psychological response, such as association) of "signs" for distance, such as muscle feelings involved in accommodation, known size in relation to visual angle, awareness or representation of the intervening ground, or effects of atmospheric perspective (objects at a greater distance or seen less clearly or appearing purplish).

The various psychological operations by which retinal values for size and shape, and retinal pictorial cues for distance, are combined with other sources of information constitute a dimension of activity on the part of the perceiving subject. However, the varying conceptions of these combinatorial processes in different theories treated them as more or less active. Descartes' unnoticed judgments would seem to involve a representation and an affirmation, depending therefore on both intellect and will. But in adult perceivers, these judgments have become habitual. They are performed without reflection or conscious awareness that they are happening (excepting third-person awareness of them by the theorist). They constitute an implicit activity of the perceiver in visual perception. Kant endorses an account in which unnoticed and habitual judgments yield size and distance perception.[32]

Other theoretical accounts of these combinatorial operations differ. Malebranche's mature position is that God carries out these combinatorial acts and reveals the resulting idea to the perceiver. Berkeley, Hume, and Reid ascribe them to associative processes of "suggestion", which Berkeley and Reid compare to the

[31] *Meditations*, AT 7, p. 32.

[32] Kant 1781/1787, A 295, 297, 303/B 351–52, 354, 359; see also Hatfield (1990, pp. 105–106).

habitual and ingrained interpretation of signs in terms of a thing signified. The sign and the processes connected with it are not noticed; we have no conscious control over these "interpretive" processes. Inasmuch as these processes depend on association, which may be conceived as passive process of imagination, these combinatorial processes are perhaps conceived as being even more passive in Berkeley, Hume, and Reid than they are in Descartes or Kant. All the same, one might argue that insofar as these processes combine discreet sources of sensory stimulation to yield perceptions of three-dimensional structures, or to classify objects into kinds (as with Descartes' human beings), they constitute a form of active contribution to perception on the part of the subject.

There is another aspect of the usual account of these processes for size and distance perception that more clearly depends on the activity of the perceiver. Standard accounts of the distance cues involved the notion that touch educates vision, or that through active exploration of the environment the signs for distance come to be learned. This conception is present in Ibn al-Haytham's account of how we become accustomed to use intervals of the ground as a means of perceiving distance. We explore the ground by walking over it, and thus come to calibrate ground intervals. These intervals on the ground then serve as cues or signs for the distance of objects on the ground.[33]

Berkeley is responsible for ensconcing in visual theory the notion that touch educates vision. Rejecting the innateness claims of Descartes with respect to the operation of accommodation and convergence,[34] he held that all aspects of distance and size perception in an adult perceiver arise from the association of tactual information with visual signs or cues. The process of learning starts from the proper objects of sight, which, as we have seen, include light and color along with visible form and magnitude, but do not involve distance. We also have the uninterpreted feelings of the ocular musculature during accommodation and convergence. Touch, Berkeley assumes, includes three-dimensional structure among its proper objects. From infancy, in grasping for objects, touching and manipulating them, or walking up to them and experiencing a change in the visible magnitude associated with a feeling of their "real" or tactual size, we come to absorb associative rules of suggestion that subsequently become mixed in with our visual experiences, so that we seem to see objects at a distance with a constant size.[35] Active tactual exploration drives the associative processes by which we learn to see objects at a distance. Reid holds a similar opinion, that visual distance perception depends on learning signs for depth and distance under the tutelage of the sense of touch.[36]

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[33] Ibn al-Haytham, *The Optics*, 1, p. 152; see Hatfield (2005, pp. 35–38) on intromission and extramission theories of distance perception, including Ibn al-Haytham's account.

[34] In the appendix to the second edition of Berkeley 1709 (also dated 1709), Berkeley rejected Descartes' innate "natural geometry". He held the opinion that Descartes ascribed this geometry to innate judgments or rational processes. This is partly due to his use of the Latin translation of the *Dioptrique*, in which the term *imagination* (AT 6, p. 138) is translated by *judicium* (*Dioptrice*, AT 6, p. 609). However, not only the passage on accommodation, but also that on convergence may be read as psychophysiological, see Hatfield (1992, pp. 356–357). In either case, Descartes is a nativist; the type of innate mechanism differs (psychophysiological or judgmental).

[35] Berkeley, *An Essay*, Sect. 16–20, 40–57.

[36] Reid, *An Inquiry*, p. 178.

A recent scholarly account attributes separately to Ficino and Telesio a view in which sense perception is an innerly directed activity of exploration, guided by the allocation of attention and feedback from redirecting the sense organs.[37] Various dimensions of attention had been described from antiquity, and an interest in and appreciation of the importance of attention for perception grew during the late middle ages and Renaissance. In the seventeenth century, Descartes noted the ability of perceivers to direct their attention to various parts of the sensed world. In the *Dioptrics*, in comparing vision to the active probing of the world by a blind person manipulating a stick, Descartes reported our ability to direct our attention within our phenomenal world, in relation to the felt location of the body and its members:

> For this position [of nerves in the brain], changing ever so little each time that of the members where the nerves are inserted changes, is instituted by nature not only in order that the mind may be aware of how each part of the body which it animates is placed with respect to all the others, but also so that it may transfer its attention from there to any of the locations contained in straight lines that we can imagine to be drawn from the extremity of those parts and prolonged to infinity.[38]

A natural way to read this passage might be to suppose that Descartes is offering a projectivist account of vision and of stick-aided location perception in the blind. In each case, the mind would project locations from the hand along the stick, or from locations on the retina to points in the world. But in fact, Descartes rejects this position for the stick, and so implicitly for the eye. He says that in order for the blind person to be aware of the position of the points along the sticks and continuing in the same direction, "he does not need to be aware of or to think at all of the locations of his two hands".[39]

This suggests that Descartes held that attention can be allocated within the domain of phenomenal experience in relation to the body as a whole, and not by projecting from hand-locations or retinal locations. It offers an example of another type of active perception: the direction of attention to phenomenally available locations in the visual world. The active direction of attention became an increasingly important topic among subsequent theorists,[40] including Malebranche and the eighteenth-century German philosopher Christian Wolff, author of the first "psychology" textbooks in the narrower, non-Aristotelian sense of that term as denoting the non-vital operations of the soul or mind.[41] We have seen Reid conjecture that attention is needed if a sensation (and presumably perception) is to be remembered.

[37] Spruit (2008, pp. 208–213).

[38] AT 6, p. 134–135*.

[39] AT 6, p. 135*.

[40] On the history of the concept of attention in psychology, see Hatfield (1998a, pp. 3–25); for an appreciation of the awareness of attention in late Aristotelian and early modern philosophy, see Leijenhorst (2007).

[41] Wolff (1738, 1740).

15.3 Passivity and Activity in Sensation and Perception

In the period from Descartes to Kant, there were several notions of passivity and activity in perception. Many theorists held that, in sense perception, the bodily organs or the sensory power or the mind are affected from without. The metaphysical frameworks for this passive affection varied, and included: Aristotelian alteration of the organ and sensory power by a sensible species so as to actualize a potentiality to sense; Cartesian interactionism (which may not have been the position of Descartes); Malebranchian occasionalism, in which, following general rules, God reveals ideas to individual minds on appropriate occasions; Berkeleyan production of coherent series of ideas in individual minds by God; the passive reception of Humean impressions; Reidian passivity of sensation, as modulated by the need for attention if we are to remember a sensation; and Kantian passivity of the faculty of sensibility.

This same range of authors also proposed various positions concerning the activity of perception. The minimal act is the Aristotelian sensory soul's coming into a state of sensing when affected by a sensible species. In an active counterpart to Aristotelian passivity, neo-Platonic or Augustinian theorists held that the soul or sensory power creates sensory content on the occasion of an appropriate bodily state (an individual occasionalism). Aristotelian theorists held that the internal senses find cognitive content in sensory materials, as when an animal by instinct becomes aware of the enmity of a wolf, based on the reception of shape and color of the wolf. In Descartes' human perceiver, this role was played by unnoticed judgments that complete the perceptual act. Standard views of visual perception had, from the time of Ibn al-Haytham, posited that information for visual angle must be put together with distance information to yield perceived size, and that the ability of distance perception rests on learning guided by touch or motor activity (such as walking). Early modern authors responded to this theoretical desideratum in various ways. Descartes again appealed to unnoticed judgments (while also positing a passively received distance sensation in some circumstances). Kant regarded perception as arising from an active process of synthesis, carried out by the imagination and requiring, for the perception of objects, the participation of the understanding. Berkeley, Hume, and Reid invoked associative processes of suggestion to account for the connections among various sorts of cues in vision. Berkeley and Reid assigned touch the starring role in educating vision about the third dimension. Various authors drew attention to the active role of attention in perceptual awareness.

On the whole, has sensation been regarded as passive, and perception as active? Perhaps "on the whole" this generalization can stand. But only on the whole. What marks the early modern period is the variety of positions adopted on these issues. Further, whether one regards perception as active or passive is highly sensitive to what one counts as perception and what one counts as activity. The same goes for sensation and passivity. One might argue that the various contributions of the subject to perceptual content, whether by creating phenomenal character in the mind, combining information to yield a three-dimensional visual experience, or contributing a belief in the external world or grasping an objects as an instance of a kind,

entail that both sensation and perception involve activity for the vast majority of theorists (at least by our retrospective standards). At the same time, to the extent that sensations are produced by an external cause, they are passive. Similarly, if the subject's contribution to perception results from past experience and habit that are not acquired reflectively, they include a passive element. And yet, if sensory perception itself involves more than the perception of light, color, and spatial properties such as size, distance, and position, extending to the awareness of objects in a world, then perception is regarded by most theorists as active, at the very least by containing a contribution from the subject based on the subject's past experience.

Revisiting the idea of sensation as produced when the sense organs are affected and of perception as of objects in a world, we should avoid a simple or categorical answer in response to queries about activity and passivity. However, it can be said that sensation is in some ways passive (world caused or occasioned) and that perception is in some ways active (world grasping). This is as general a summary as we should expect, given the variety of theories concerning what counts as basic sensation and concerning the types of subject-based contributions to both sensation and perception.

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