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Aristotle's theory of perception: Physiology and psychology

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Aristotle's Theory of Perception:

Physiology and Psychology

by

Paul James Opperman

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Abstract

Aristotle's Theory of Perception:
Physiology and Psychology

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The topic of my dissertation is Aristotle's doctrine that the faculty of perception receives the forms of sensible things without the matter. Whether his doctrine is an account of a physiological process or an account of the soul's activity in perception has been a matter of dispute among contemporary scholars. These two interpretations I call the physiological and the cognitive. In an attempt to settle the dispute, I present Aristotle's physiology of perception as it can be gleaned from the *de Anima* and the *Parva Naturalia* and his theory of the cognitive faculties of the soul. I advance an interpretation according to which receiving sensible forms without the matter is an activity of the soul that takes place when the appropriate physical changes occur in the heart, which is the primary sense organ and the body part most closely associated with the soul. Part of Aristotle's physiology of perception includes alterations in the outer sense organs in which some receptive material becomes like the sensible object with respect to a sensible quality. On the physiological interpretation, this becoming like is identical with receiving sensible form without the matter. I claim that it is only the first stage, which in itself is neither the reception of sensible form nor the actualization of the perceptual faculty. These occur when the primary sense organ is stimulated. This stimulation is what Aristotle compares to the imprinting of a signet ring on sealing wax. That the sign signifies the sender is analogous to the perceiver having cognition of a sensible object. Just as the showing of the sign depends on the wax being altered on its surface, so too the cognition depends on some alteration in the primary sense organ. In this study, I expand and explain Aristotle's dictum that an act of perception is a change in the soul through the body.

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List of Abbreviations

This is a standard list of abbreviations for the works of Aristotle which has been used for references in the text and notes.

An. Post.	*Analytica Posteriora*	*Long.*	*de Longitudine et Brevitate Vitae*
An. Pr.	*Analytica Priora*	*Mem.*	*de Memoria et Reminiscientia*
Ath. Resp.	*Atheniensium Respublica*	*Metaph.*	*Metaphysica*
Cael.	*de Caelo*	*Meteor.*	*Meteorologica*
Cat.	*Categoriae*	*MA*	*de Motu Animalium*
DA	*de Anima*	*MM*	*Magna Moralia*
Div.	*de Divinatione Per Somnum*	*PA*	*de Partibus Animalium*
EE	*Ethica Eudemia*	*Phys.*	*Physica*
EN	*Ethica Nicomachea*	*Poet.*	*Poetica*
GA	*de Generatione Animalium*	*Pol.*	*Politica*
GC	*de Generatione et Corruptione*	*Probl.*	*Problemata*
HA	*Historia Animalium*	*Protr.*	*Protrepticus*
IA	*de Incessu Animalium*	*Respir.*	*de Respiratione*
Id.	*de Ideis*	*Rhet.*	*Rhetorica*
Insom.	*de Insomniis*	*SE*	*de Sophisticis Elenchis*
Int.	*de Interpretatione*	*Sens.*	*de Sensu et Sensibilia*
Iuv.	*de Iuventute et Senectute, de Vita et Morte*	*Somn.*	*de Somno et Vigilia*
Lin. Insec.	*de Lineis Insecabilibus*	*Top.*	*Topica*

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Dedication

I dedicate this work to my wife, Suzanne, and my sons, Luke and Philip, who have patiently stayed with me across two continents and over six years of graduate study. Without their encouragement and companionship I would not have brought this to completion.

Chapter 1

Receiving sensible forms without the matter

In *de Anima* Book II, chapter 12, Aristotle describes the perceptual faculty as what has the ability to receive sensible forms without the matter (*DA* II.12.424a17-19).[1] There are two opposing schools of thought about what "receiving sensible forms without the matter" means. One school thinks that this describes a physical process that constitutes perception: it is something that the matter of the sense organ undergoes.[2] The other school thinks that this description is not about a physical process that accompanies a perceptual act but is about the act of awareness itself.[3] If the first is correct, then he is providing a material account of perception, that is, an account of the physiological process that constitutes a perceptual act. If the second is correct, then he is providing a formal account, that is, a definition of what perception is, or at least a description that tries to capture what it is to perceive. Aristotle's paradigms for these two kinds of accounts are these: (1) a house is stones, bricks, and timbers, and (2) a house is a covering for the protection of bodies and chattels (*DA* I.1.403b1-7). The first tells the physical constitution of a house, an account of the matter; the second gives a definition of a house and so it is an account of the form, what it is that makes anything a house.

The form of a plant or animal is much more complex than that of a house. It is not just the static organization of the parts but primarily the capacities for the kinds of activities that distinguish the organism in question, such as its manner of digestion, reproduction, and perception. Because these activities involve motions in physical organs and parts, they too will have both a material account and a formal account. Some of these activities, such as perceiving, are psychological states. Aristotle provides an illustration of the two kinds of accounts for a psychological state; the example is being angry. The account of the matter is that anger is a boiling of the blood around the heart; this describes the physiological process that underlies the feeling of anger. The account

of the form is that anger is the desire for retaliation; this gives a definition, what it is for someone to be angry (*DA* I.1, 403a29-31). Aristotle goes on to say that the true natural philosopher studying plants and animals will need to concern himself with both because each of the different living things is a certain form manifested in a certain kind of matter. The general activity that distinguishes animals from plants is the activity of perception. It, too, is a form[4] that is manifested in certain material parts of an animal. This activity will have a material account that tells the physiological processes in the sense organs and a formal account that gives a definition of perception, what it is for an organism to be in a state of perceiving something. The issue between the two schools of thought is whether Aristotle's description of perception as the ability to receive sensible forms without the matter is an account of the physiology or an account of what makes it perceptual cognition. I will call the one a physiological interpretation of receiving sensible forms and the other a cognitive interpretation.

Jonathan Lear has labeled the two views a material account and a spiritual account.[5] This is somewhat apt because on one version of the cognitive interpretation with a long tradition the reception of form is taken to be simply awareness of the form.[6] Assuming that receiving form is the only change there is in perception, it turns out that there is not any physical alteration that is necessary for perception. On the other hand, some who maintain that receiving sensible form is a literal taking on of the quality in the sense organ take this to be all there is to perception for Aristotle and thus make Aristotle out as a crude sort of materialist.[7] The red in the eye-jelly and the odor in the nose are all there is to a perception of the red rose and its fragrance. However, what has already been said about Aristotle should make it clear that these are both extreme views. Aristotle should hold that there are two accounts of perception, as there are two of anger, one parallel to the boiling of blood, the other to desire for retaliation. Whichever account receiving sensible form gets assigned to, there will be room for the other account as well.

If reception of form is cognitive, there still will be a physiological change with it; and if it is physiological, there still will be a formal account to be had.[8]

As one might expect, there are very good reasons behind either interpretation. Some texts support one, some the other. Parts of Aristotle's discussions of the sense organ's becoming like the object suggest that some matter of the sense organ comes to have the same quality as the object. Insofar as the receiving of sensible form is thought to be the very same thing as the sense organ becoming like in form, one will conclude that a form received is the physical likeness in the organ. On the other hand, the notion of a cognitive faculty coming to possess forms without the matter plays a similar key role in Aristotle's theory of intellectual cognition, and we know that here it is not a physiological state because the intellect has no organ. There can be little doubt that a form in the intellect is a cognitive state where a form is a specific content of understanding; so it is reasonable that a sensible form received is a cognitive content for the perceptual faculty. Even within *de Anima* II.12, where the idea of receiving forms without the matter is first introduced, there are textual difficulties for either interpretation, as we shall see shortly.

I intend to propose a new interpretation of receiving sensible forms without the matter that attempts to accomodate the texts that motivate both of the opposing interpretations. It is impossible for one interpretation to be both cognitive and physiological and mine is basically cognitive. But it is one that can accept what the physiological interpretation says takes place in the individual sense organs. The sense organs may very well become literally like the object by becoming warm or smelly, but I will deny that this is what Aristotle means by receiving sensible forms without the matter.[9]

An assumption made by both interpretations is that the becoming like discussed in *de Anima* II.5 and II.11 and the receiving sensible form discussed in *de Anima* II.12 are

the same thing. Another assumption is that the locus of both of these events is the individual sense organ, e.g. the eye for vision. These assumptions force the chasm between the two interpretations in that becoming like and receiving sensible forms must together be either cognitive or physical all the way. The crux of my interpretation is to deny the second assumption by showing the important role the primary sense organ, which for Aristotle is the heart, plays in all perception. It will then become plausible that a sensible form is not received until the primary sense organ has been stimulated. Since there is no reason to think that the primary sense organ can capture color, smell or sound literally in the way the outer sense organs can, if it is what receives sensible form, then this reception cannot be a literal taking on of the sensible quality. The importance of becoming like as it is introduced in II.5 is that it explains how object and sense organ can interact. Since the interaction occurs first in the outer sense organs, not the primary sense organ, for color, smell and hearing, it remains possible that here a literal becoming like takes place, and also in the organ of touch. Whether or not that is all Aristotle means by becoming like is another question. He may intend to extend the principle to the cognition itself. In that case, insofar as we can speak of the entire physiological process as the receiving process, it would be correct to claim that becoming like and receiving sensible form are the same event. But they are different descriptions serving different purposes. The principle of becoming like is a general principle about action and affection and is invoked to explain how the sense object acts on the sense organs; the doctrine of receiving sensible forms is about the cognitive content of perception, which is the end result of the action of the sensible object and is accomplished at the place where Aristotle says the soul resides, the primary sense organ.[10]

Aristotle says that perception is a change that reaches up to the soul (*DA* I.4.408b15-17) and a kind of change of the soul through the body (*Somn.* 1.454a7-11 and *Sens.* 1.436b6-7). Although the entire process through the body will be the act of

receiving, it is the soul that possesses the sensible form and this is a cognitive state; but, since perception is an affection shared by body and soul (*Sens.* 1.436a7-8), it will also be a state belonging to the primary sense organ, the place of the soul. The ability of the soul and primary sense organ to be the recipient of cognitive states is represented by the analogy of an imprint by a signet ring on sealing wax. Aristotle uses this analogy to represent not only the original reception of a sensible form but also its retention after perception. I maintain that in the two occurrences of this analogy in the psychological works exactly the same event is represented, an act of perception, and that in both cases the imprint stands for an affection of both the soul and the primary sense organ. This is contrary to a traditional interpretation which takes the first occurrence in *de Anima* II.12 (424a19-21) to represent an event in an eye or ear or any other individual sense organ and the second occurrence in *de Memoria* (1.450a31-32) to represent a subsequent impression on the primary sense organ. Either interpretation can find support in the same lines of Greek text in *de Anima* II.12: *aisthêtêrion de prôton en hôi hê toiautê dunamis* (424a24-25). "It is the (primary) sense organ (or: primarily) in which this capacity resides." The capacity in question is the receptivity to sensible forms. The Greek *prôton* can be taken adjectivally or adverbially; thus the two choices for translation, 'primary' or 'primarily'. I read it as the adjective, and taken thus it is an explicit statement of my interpretation, that the capacity of receiving sensible forms resides in the heart, not in an individual sense organ such as the eye. I will provide several reasons for my choice in chapter 2.

The main contribution I wish to make in an effort to resolve the controversy about receiving sensible forms without the matter is an alternative starting point for interpreting the doctrine about receiving sensible forms. If it is the primary sense organ that receives sensible forms, then it is possible to develop a cognitive interpretation of receiving sensible forms without denying that Aristotle is committed to real physical change taking place in the sense organs of a sort that satisfies his principle of becoming like. These

changes, however, are only the first step in a receiving process that ends in the cognitive possession of sensory information at the animal's heart.

In this first chapter, I will introduce the controversy by focusing on the key texts in *de Anima* II.12 and present the puzzle that arises. Aristotle draws a contrast between receiving sensible forms without the matter and being affected with matter apparently as a contrast between the affection caused by a sensible quality in a sense organ and in a non-sentient body. But the contrast seems to fail at accomplishing this, as we shall see. Both the physiological interpretation and the cognitive interpretation have great difficulty in satisfactorily making sense of this contrast. There are two constraints that must be met: (1) decent sense must be given to the qualifying phrases "without the matter" and "with the matter", and (2) the analogy to imprinting sealing wax must illustrate receiving form without the matter. After presenting the initial puzzle, I will discuss each of the two interpretations and show each fails in meeting one or the other of these constraints.

I

The puzzle arises at the beginning of the chapter with the analogy to the signet ring and sealing wax (*DA* II.12.424a17-24).[11]

> (1) In general, it is necessary to understand that the sense faculty (*aisthêsis*) is that which is able to receive the forms of sensible objects without their matter (*to dektikon tôn aisthêtôn eidôn aneu tês hulês*),
>
> (2) just as the wax receives the seal of the signet ring without receiving its gold or its iron. It takes the sign of gold or bronze, but not insofar as it is gold or bronze (*ouk hêi khrusos ê khalkos*).
>
> (3) Similarly, each sense is affected by its relevant sensible object, the thing having color, flavor, or sound, but not insofar as each of these is the particular thing it is called (*ouk hêi hekaston ekeinôn legetai*);[12]
>
> (4) instead, insofar as it is of such a quality (*hêi toiondi*),[13]
>
> (5) that is, with respect to the form alone (*kai kata ton logon*).[14]

This standard reading is perfectly intelligible. The impression left in the wax would be the same whether the signet ring were made of iron, gold or bronze; nothing is left behind of the gold to indicate it was a gold ring that produced the seal impression. Similarly, the color seen would be the same whether a tomato or a stop sign were the visible object. It is in virtue of the redness it has, not in virtue of its being a certain kind of substance, that the object activates the sense of sight.

The point, as explained in (3), (4), and (5), seems to be that the sensible qualities special to each sense (what I will call the proper sensibles--color, sound, smell, etc.) are the causes of perception and consequently the first-level content of perception.[15] This is well and good, but if the term "without the matter" only specifies the agent and content of perception, it cannot help us in distinguishing perception from non-sentient affection. Yet, later in the chapter Aristotle contrasts non-sentient affection as affection with the matter:

> It is also clear why plants do not perceive, although they have a soul part and are affected by the tangibles since they become cooled or warmed. The reason is that they do not have a mean, nor the principle (*arkhê*) such as to receive the sensibles (*dekhesthai tôn aisthêtôn*), but are affected with the matter (*paskhein meta tês hulês*). (*DA* II.12.424a32-b3)

Receiving the sensibles must be the same as receiving the sensible forms without the matter, and this is contrasted directly with being affected with matter. If we make the plausible assumption that being affected with matter is what happens when sensible qualities like hot and cold affect any non-sentient body, not just plants, then we are led to think that receiving sensible forms without the matter must be unique to perception.

But now the difficulty arises. If the analogy of the wax and ring shows only what is the proper agent of perception, this turns out to be true for all affection and we are at a loss to give any sense to being affected with the matter. The claim that the sensible object affects the sense organ in virtue of its having a certain quality does not distinguish an affection of a sense organ from an affection of any other body. A kettle of hot water

becomes hot in virtue of some agent being hot. Whether it is hot coals, a hot iron, or a hot rock, these all heat the water by possessing the form heat, not by being coal, iron, or rock. By the same form, these agents all produce the feeling of warmth in the sense of touch. Thomas Aquinas noted this problem in his commentary on *de Anima.*

> This, however, would seem to be common to all cases of passive reception; every passive thing receives from an agent in so far as the agent is active; and since the agent acts by its form, not its matter, every recipient as such receives form without matter . . . . So it would seem not to be peculiar to sensation that it receives form without matter.[16]

We are left in a quandary. The analogy seems not to illustrate anything unique about perception. That in itself is a serious problem for a cognitive interpretation because receiving sensible form without the matter is supposed to be what it is to perceive. For a physiological interpretation, the reception of form without the matter need only be a necessary condition for perception, in which case there may be non-sentient affections that fit the description. Still, a physiological interpretation must provide an explanation of the contrast made between receiving forms without the matter and being affected with the matter. Aristotle certainly intends that the analogy clarify what he means by the reception of form without matter. Should we conclude that he means by this description and analogy only to make a point about the proper object of a sense, both as cause and content of a perceptual awareness? If that were all, then the term "without the matter" is doing nothing more than specifying that it is the form alone that affects the sense. If so, then we have no idea what it is for non-perceiving bodies to be affected with matter. For them too, the form is what acts to cause change in a patient. This puzzle will need to be solved by any adequate interpretation of *de Anima* II.12.

II

Aquinas has a response to the puzzle that he himself posed. The puzzle is this: all change for Aristotle takes place by a form in the agent, not by its matter, so how can

receiving form without matter be peculiar to sense organs? Aquinas answers that there are two ways of receiving form. One is ordinary quality change where the matter of the recipient becomes qualified like the agent. For example, the hot coals make the water in the kettle to be hot; both agent and recipient, after the change, are hot things. The other kind of receiving form is for something to receive the form without the matter of the recipient becoming so qualified. This mode of existence is different from being a thing with a quality, so the agent and the recipient in this case do not bear the quality in the same mode. The sensible quality in the object exists in the natural way and so possesses a natural mode of being (*esse naturale*). The sense, on the other hand, possesses the same quality in a cognitional and spiritual mode of being (*esse intentionale et spirituale*).[17]

This second mode of existence is what takes place in the senses when they receive the form without the matter. The force of "without the matter" is then to describe a special manner in which the form exists in the recipient and can be read to mean immaterial.[18] On this interpretation it is not the matter of the sensible object that is referred to. The complementary phrase "with the matter" means materially. Plants and other non-sentient bodies are affected with matter, which is to say that the quality comes to exist as a physical property of the body. The matter of the body offers itself as the substratum for the quality. So if the term "matter" in these qualifying phrases refers to any matter in particular, it is the matter of the recipient, not the matter of the agent. The matter of the recipient either does or does not offer itself as instantiation material for the sensible quality.[19]

The advantage to this interpretation of receiving sensible form without the matter and being affected with the matter is that it gives us a clear-cut distinction between what sentient and non-sentient bodies do. We have two different ways of existing for a sensible form. One is instantiation in a physical thing; the other is without physical

instantiation, yet some kind of presence in a cognitive faculty. It is this peculiar kind of existence that distinguishes the affection of a sense organ from that of a non-perceiving body. The common complaint against this interpretation is that it is unilluminating about perception because the phrase 'reception of form without the matter' is merely another way to speak of awareness of a sensible quality. After all, what else could this presence of form without the matter be except the content of an act of awareness? But this criticism perhaps demands too much, namely an explanation of perceptual awareness, something we still do not possess. As a formal account of perception, all we can expect of Aristotle is a theoretical description that fits perception into his metaphysics of form and matter. It is plausible that this is what he is doing in *de Anima* II.12.

In fact, a perusal of other occurrences of *aneu tês hulês* (without the matter) and *meta tês hulês* (with the matter) shows that Aristotle uses the terms in a consistent manner that is compatible with the distinction just made. The contrasting terms have two uses. One is in distinguishing two kinds of definitions, those that are of things like the snub and those that are of things like the concave. Snubness is a geometrical shape in a certain kind of substratum, noses. But concavity is just the geometrical shape. The definitions of the first kind must contain reference to the matter and so they are *logoi meta tês hulês*, accounts with the matter (*Metaph.* XI.7.1064a23). This means they are definitions that contain reference to a kind of matter that is essential to the existence of the thing defined. The *logoi* of the other kind are *aneu hulês aisthêtês*, without sensible matter (*Metaph.* VI.1.1025b33); they do not contain reference to sensible matter. These definitions correspond to essences that are separable or not separable from matter.[20] So the terms can be applied also to the kinds of things which the essence characterizes. Things like snub, which exist instantiated only in a certain kind of matter, are said to exist not without matter. These include all animal parts, since animals are essentially material. Aristotle states that all things in nature are neither *aneu hulês* nor *kata tên*

hulên, neither form alone without matter nor matter alone (*Phys.* II.2.194a12-15); that is why their definitions must not only mention the form but refer to a kind of matter as well.[21]

The other closely related and most common use of the terms 'without the matter' and 'with the matter' is to make a distinction between a form or essence and its concrete instances.[22] A concrete thing like the person Callias is the form with matter.[23] A concrete instance of a right angle in bronze is the right angle with the matter; contrasted to this is the abstract right angle which is without matter.[24] The essence of a substance is called substance without matter; the composite is substance with matter.[25] The term 'without the matter' is also used in speaking of pure forms or essences, or of separate substances.[26] Interestingly, it is used also to describe a craft: the skill the craftsman possesses is the form of the product without the matter.[27] This is relevant to our text and to the parallel discussion about the intellect found in *de Anima* III because having a skill is a cognitive state.[28]

The term 'with the matter' occurs in *de Anima* just once, in II.12, where the affection of plants is contrasted to the affection of senses (424b3). All occurrences elsewhere fall under the two uses mentioned. The subject in chapter 12 is not definitions; so it is reasonable to think that its use here would be in conformity with the most common use, to distinguish concrete individuals as opposed to the form only of such individuals. For qualities we should expect the form with the matter to be an individual occurrence of the quality inhering in a substance, such as the red in that tomato, and the form without the matter to be the quality itself, pure redness. Supposing that Aristotle's use of the qualifying phrases *aneu tês hulês* and *meta tês hulês* in *de Anima* II.12 is in line with his most common use of them elsewhere, and given that all action by an agent is done in virtue of some form, not its matter, it becomes plausible that the qualification "with the matter" applies to the recipient of a change rather than to the agent. To be

affected with the matter is to become a concrete instance of the quality. Receiving form without the matter is then to receive the form without becoming a physical instance of the quality.

Such an interpretation of receiving sensible form without the matter is usually taken to simply mean awareness. But this is not necessarily true. On this interpretation, Aristotle has explained perception and distinguished it from other affection in terms of his key metaphysical concepts, form and matter. A form can exist without matter in two cases: either it is a separate substance, as God is, or it is a form existing in a cognitive faculty, as a skill or a concept. This indicates that possessing a form in a cognitive facultyu is to have a specific cognitive capacity; and so Aristotle's focus seems not to be on the act of awareness but perhaps on the acquiring, retention, and use of information.[29] For the perceptual faculty this is perceptual information. An act of perceptual awareness is just the first stage for a matterless sensible form's existence in a perceiver, namely, the acquiring of information about sensible qualities in the perceiver's environment. But with the notion of a matterless form existing in a cognitive faculty Aristotle may be describing more the possession of information than what it is to be aware. There is at least some explanatory power in distinguishing the effect a sensible object has on a sense organ by saying that it results in information for the organism, whereas its effect on a plant or rock only results in "formation," that is, the matter taking on the form.[30]

Despite the reasonableness of drawing such a contrast with the notions of receiving form without matter and being affected with matter, there are problems with the interpretation of both sides of the contrast. Of all the examples of *meta tês hulês*, the occurrence in *de Anima* II.12 is the only one where it qualifies a verb. So, it is certainly possible that its meaning is different here. Furthermore, the verb *paskhein* (to be affected) is one that implies an agent and it is natural to understand the matter referred to to be associated with the agent of the affection, not the recipient. There is a problem also

with the interpretation of receiving forms without the matter. Here, it is not a problem with the use of the qualifying phrase, *aneu tês hulês*. We have seen that it is common for it to specify a different mode of existence for a form. The difficulty here is the wax and ring analogy. What Aristotle seems to focus on is the fact that the wax does not take into itself any gold or iron. So even here, the matter referred to seems to be associated with the agent.

Aquinas does not adequately meet this problem. Although he clearly interprets the two qualifying phrases so that they indicate ways a form exists in the recipient, he chooses to illustrate this by repeating Aristotle's analogy, as if the analogy obviously indicated this.

> 554. [Aristotle] finds an apt example of this [of the two modes of existence] in the imprint of a seal on wax. The disposition of the wax to the image is not the same as that of the iron or gold to the image; hence wax, he says, takes a sign, i.e. a shape or image, of what is gold or bronze, but not insofar as it is gold or bronze (*non inquantum est aurum aut aes*). For the wax takes a likeness of the gold seal in respect of (*quantum ad*) the image but not in respect of (*non quantum ad*) the seal's intrinsic disposition to be a gold seal. Likewise the sense is affected by the sense-object with a colour or taste or flavour or sound, "not in respect of (*non inquantum*) what each is called as a particular thing," i.e. it is not affected by a coloured stone insofar as it is stone (*inquantum lapis*), or sweet honey insofar as it is honey (*inquantum mel*), because in the sense there is no such disposition to the form as there is in these substances; but it is affected by them insofar as it is some such way (*inquantum huiusmodi*), either insofar as it is colored, or tasty, or according to a principle (*secundum rationem*), that is, according to form. For the sense is assimilated to the sensible object in point of form, not in point of the disposition of the matter.[31]

The word 'inquantum' reflects the standard reading of the Greek *hêi* as the idiomatic "insofar as." The sensible object acts on the sense in virtue of its being qualified in some way, not in virtue of its being the kind of thing it is. Aquinas seems to be taking the fact that the stone acts on the sense organ insofar as it is colored, not insofar as it is the substance it is (which is the substratum or matter for a quality), to illustrate that the sense receives the form without becoming formed in *its* matter. But how does this follow? Aristotle is quoted as saying in virtue of what property an object affects a sense (in virtue

of being colored or flavorful), but that tells us nothing about how the sense receives the affection. The most that can be gotten from the analogy on the standard reading for Aquinas' interpretation is the following. If we assume that the sense has a different disposition toward the form and receives the form in a peculiar mode, the analogy tells us that it is the relevant quality of the object that causes the sense to receive the form in this way. But this different mode is receiving form without matter, and that is precisely what is supposed to be explained by the analogy, not what in the object causes this strange kind of receiving to take place.[32]

The only way to achieve the desired shift in focus is to systematically read the analogy with a focus on the wax and the sense rather than on the manner of action by the rings or sensible objects. Perhaps this is how Aquinas read Moerbeke's Latin translation. The first part of 554 suggests this when Aquinas says that the disposition of the wax to the image is not the same as that of the metals. It may be possible to read the Greek text with a different focus if we read the Greek *hêi* clauses differently.[33] The Greek *hêi* is short for *tautêi hêi*, "in the way in which". Most commonly, it has the idiomatic meaning, "insofar as", and the clause that follows usually has an understood "it is"; *hêi khrusos* then means "insofar as it is gold".[34] There are two ways the first *hêi* clause (*DA* II.12.424a21) could be read in a non-standard way. The first is to read that it is the wax that is not gold or bronze: "not insofar as it [meaning the wax] is gold or bronze." The effect of listing different ring materials is to indicate that wax bears the sign differently from the way in which any ring bears it. So the meaning would be: "not insofar as it might be a material for a ring." It remains difficult to get over the awkwardness caused by the fact that the wax is not gold or bronze. The other reading would take the *hêi* in its original sense and supply a different verb, the verb of the main clause rather than "it is". Thus we get:

> [The wax] receives the sign of gold or bronze, but not in the way in which gold or bronze *receives* the sign. (*DA* II.12.424a20-1)

This might be a plausible way to read the Greek so that it expresses Aquinas' point that the wax does not have the same disposition to the sign as does the metals. But this kind of reading needs to be carried through on the following *hêi* clauses.

The second *hêi* clause already has an expressed verb. If we read it literally, the sentence says:

> Similarly, each sense is affected by its relevant sensible object, the thing having color, flavor, or sound, but not in the way in which it is described . . . (*DA* II.12.424a21-23)[35]

We might take the description to be what was just given, a thing colored, a thing smelly, a thing sounding. These are qualities with a substrate, i.e. with matter. The meaning then could be this:

> Similarly, each individual sense is affected when activated by the thing having color or flavor or sound, but not in the way each of these things is described, that is, as a thing possessing a quality . . .

The sort of affection that takes place in the sense is not such as to produce a thing colored or smelly. However, this experimental reading is starting to get us into trouble in that we are losing touch with the analogy. The wax does become something with a sign in it, just not a ring with the sign, just as water becomes something hot, but not hot coals or hot iron. Furthermore, it is more likely that the description Aristotle has in mind is the substance name, what the thing is called. In that case, the suggested reading of the *hêi* clause would only give us that the nose does not come to have a rose in it, but it still could have fragrance in it literally, like the heated water has heat.

The greatest difficulty comes with the last *hêi* clause, *all' hêi toiondi* (*DA* II.12.424a23-24). If the sense and not the object is the subject of the clause, then we get that it possesses a quality:

> instead, the sense is affected insofar as it is of a quality . . .

But that just is to be a thing so qualified. There is nothing about possessing the quality in a special mode, unless we pack it into *kata ton logon* (in Aquinas' Latin, *secundam rationem*). That apparently is what Aquinas intends to do when he says that the sense is assimilated in point of form only, not in point of disposition of the matter. But in any change, the patient is assimilated only with respect to form; the hot water has not become coals by being heated by hot coals.[36] The qualification *kata ton logon* makes most sense if this last *hêi* clause is referring to the object, not the sense. It specifies that it is in virtue of a sensible form, in virtue of its possessing a sensible quality, that the object acts on the sense, not in virtue of its being a rose or rock.

If we cannot read all the *hêi* clauses consistently with a focus on the recipient rather than the agent object, then it is best to stick with the standard reading of the text. But on that reading it is not possible to extract the sense which Aquinas gets from it. And if we cannot get from the analogy that receiving form without the matter is a unique way for the recipient to possess a form, then it becomes more doubtful that being affected with the matter is about how the patient's matter is affected rather than about matter that serves as the agent. So, the interpretation seems to fall apart over the wax and ring analogy, even though we had found a promising starting point in the contrast between *aneu hulês* and *meta tês hulês* as they appear elsewhere in the corpus.

This is not to say that the wax and ring analogy is completely antagonistic to Aquinas' cognitive interpretation. We must remember that it is an analogy that must be imperfect, given that wax does not perceive. The metaphor of a seal print is significant in that the image on the wax bears information; it tells the receiver of a letter that it truly comes from a certain source. Bearing a form as information about a source is quite different from bearing a form as a property of a thing. This is what we might expect Aquinas to emphasize, and perhaps that is what he means when he speaks of a different disposition of the sense from that of the matter. Sealing wax serves a unique purpose in

that it contains a content that tells about the source of a document. But this is not clarified well by either Aristotle or Aquinas. When Aristotle explains the analogy, he seems to focus on the cause of the affection rather than on a special mode of possessing the information in the sense; each sense is affected by its relevant proper object (*DA* II.12.424a21-23). All that is said about the sense and the wax is that they receive only certain information, the information that corresponds to the cause considered strictly (the proper sensibles: color, smells, sounds, etc.). But then we are still left with the puzzle Aquinas started with. What makes the sense receiving form without the matter any different from other affections where it is in virtue of a form in the agent and not its matter that a quality change occurs in a patient? Let us turn now to the physiological interpretation of receiving form without the matter.

III

The other school of thought maintains that the description about receiving sensible forms without the matter is a material account of perception. What is being described is a physical process in which the sense organ literally and physically takes on the sensible quality which is in the object.

There is much to be said for the claim that Aristotle thinks the sense organs literally become qualified with the same quality as in the object. He says that the organ must be potentially, not actually, the qualities it apprehends. When it apprehends it becomes like the object with respect to the sensible quality (*DA* II.5.418a13-16). That the likeness in question is real physical likeness and not just cognitive likeness is indicated because this becoming like is said to explain why we do not feel what is equally hot and cold, i.e. what is at the same temperature as our bodies (*DA* II.11.424a1-4). Because the organ of touch is the same temperature, there is no change that can take place from being unlike to like. A sense, Aristotle says, is a sort of mean state between

the contraries that are relevant to the sense and on account of this, it can discern all of its sensible objects which are in one direction or the other away from the mean state toward a contrary (424a4-7).[37] A very plausible interpretation of this is that there is a receptive material in each of the sense organs that becomes qualified in the same way as its object when the object is present. Aristotle's discussions of the media for the senses indicates that they carry the quality to the organ so that the quality can then affect the receptive material of the organ directly.[38] The receptive material for each organ is very much like the medium for that sense. The eye jelly is transparent and colorless; the ear has in it trapped air which is soundless in itself.[39] The transparent and the air are the respective media for sight and sound; the principle that the receiver of a quality must be potentially that quality beforehand, not actually, is applied to the media as well (*DA* II.7.418b26-27). This suggests that similar physical alterations occur both in the receptive material of the sense organ and in the medium for that sense.[40] The quality itself is borne along through air or water due to its sound-bearing or color-bearing capacities and transferred to the organ because of the same quality-bearing capacity. This is little different from how heat is borne through air or metal to heat water. When we note also that it is the sense organ, rather than the faculty, to which Aristotle attributes the power to become like the object, it seems very likely that he is speaking of its literally becoming colored or sounding in an appropriate part.[41]

It is within just a few lines of speaking of the organ of touch becoming like its object and being a sort of mean that Aristotle introduces for the first time his doctrine about receiving sensible form without the matter. It is not unreasonable to think that it is a different way of saying what he earlier described as the organ becoming like the object.[42] Receiving a sensible form is then simply the receptive material of a sense organ taking on the same property that is in the object and acting on the sense organ.

Let us suppose this is right. We still have to explain what is the significance of adding "without the matter" to the description. Why not just say that perception involves the physical reception of sensible forms into the receptive material of the sense organs? Richard Sorabji suggests that Aristotle is contrasting his theory of perception to that of his predecessors, especially Empedocles, who held that bits of matter emanated from the object to the sense organs. For example, Empedocles held that the sense organs contain the very elements they perceive, and that each element contains pores of the right sizes and shapes for receiving bits of the same element only.[43] The emanations from the objects will contain bits of the four elements and these will enter the sense organs through the pores that match. In this way, Empedocles could explain that "like perceives like." Fire perceives fire because the fire in the organ receives into its pores only fire, and similarly for the other elements.[44] In contrast, according to Sorabji, Aristotle does not think that the sense organ needs to receive matter from the object in order to perceive the object; it needs only receive the sensible form. On this interpretation, the wax and ring analogy is taken quite literally as illustrating just this point. The wax does not receive the matter of the ring but only the form; so too the sense organ receives the form without absorbing any matter from the sensible object.[45] Presumably, the second *hêi* clause (*DA* II.12.424a23) will need to be read a little differently than on the standard reading. Since it is the matter of the object that we are concerned with, the description referred to in this clause must be a description of the matter.[46] The rings are described as gold or bronze. The sensible objects must be described similarly as being of some stuff. To make the rejected Empedoclean view at all plausible, we should probably assume that it is low level matter that would be referred to, probably the elements, since these are what Empedocles thought emanated from the object, or perhaps the primary constituents of the elements, the hot, cold, dry, and wet.[47] The hot rock affects the sense of touch, not

by passing particles of "the hot" into the organ, but by making the sense organ become hot in a different way. Only the form of heat is passed on.

On this interpretation the analogy illustrates sufficiently well the alleged point being made by the phrase "without the matter". And if we look at a more explicit criticism Aristotle makes of Empedocles and a related passage, it becomes clear that Aristotle's description of perception as receiving form without the matter is meant to be an explicit rejection of earlier views. Aristotle criticizes in *de Anima* I.5 Empedocles' theory of soul, which claims that soul is composed of the four elements. A motivation for the theory is that it is able to accomodate the accepted principle that like cognizes like. The soul, being composed of everything that sensible things are composed of, will then be able to cognize all sensible things. Elsewhere Aristotle rejects the principle that like cognizes like,[48] but here he argues that, even if the principle is assumed, the Empedoclean theory of soul still does not solve the problem of cognition. It will not do to have only the four elements in the soul. Also, there must be all the different ratios of elements in order to match the ratios found in objects of cognition; but this would mean the soul must have in it bone, flesh, man, and stone, in order that it can know them. And thus the view is reduced to absurdity, "for who would seriously wonder if there is a stone or a man in the soul?" (*DA* I.5.410a10-11) This refutation is alluded to later in III.8 when Aristotle asks whether the cognitive faculty becomes identical with the object itself or the form only; certainly not the objects, as there is no stone in the soul (*DA* III.8.431b28-9). Aristotle's point is that the soul has in it only forms when it knows or distinguishes an object, not the things themselves. This, no doubt, is the point of the wax and ring analogy in *de Anima* II.12.

Note that the discussion in *de Anima* I.5 and III.8 is about cognition in general, not just perception, and that the contrast is between the physical presence of a form and the presence of form in the soul. The focus is on the question: what is in the soul during

cognition? The answer is: Not the thing itself, a form and matter composite, but only the form. Although an implication of this is that there is no need for physical emanations from the object, whether or not matter comes from the object does not seem to be the issue, but rather what must come to exist internally in the cognizer. Because Aristotle's point is about the cognitive faculties of the soul in general, intellection as much as perception, it might suggest that Aristotle has in mind a cognitive presence in contrast to a physical presence. However, this is not decisive because red in the eye-jelly is just as much the presence of the form of redness without there being a real rose in the cognizer as the awareness of red or the cognitive content of a perception of the rose contains the form of redness without containing a real rose.

The most serious difficulty for the claim that "without the matter" means without absorbing matter from the object is that it forces a strange interpretation of "being affected with the matter." It is one thing to say that Empedocles is wrong about physical emanations in the context of cognition, but quite another to say that what distinguishes affection in sense organs from that in non-sentient bodies is that in the one case bits of matter do not pass into the recipient but in the other case bits of matter do pass into the recipient from the agent. Why should we attribute to Aristotle such a view about ordinary physical affection? Surely, Aristotle did not think matter had to pass from the sun (or the air) into the rock steps in order to heat them up on a hot summer's day; nor does their warming of the bare foot require matter to pass from the rock to the foot. It is easy to understand that the organ of touch, which for Aristotle is the heart, did not absorb any matter when the warmth of the rock steps was felt, but in this it is no different from the actual warming of the foot or of the rocks. In order for the phrases 'without the matter' and 'with the matter' to make a contrast between what happens in sense organs and non-sentient bodies, the proposed physiological interpretation must attribute a

strange view of physical affection to Aristotle. Also, such a view would seem contrary to the general principle in his physics that form is the agent of change, not matter.[49]

This may not be as serious a criticism for this version of the physiological interpretation as at first it may seem. For one thing, the physiological interpretation does not need to find a meaning for receiving form without the matter that uniquely characterizes perception. Indeed, the difficulties Aristotle raises later in the chapter may be motivated precisely because he has come up with a necessary condition only and not a sufficient condition for perception. And secondly, the suggestion that plants are affected with matter may be offered only as an opening suggestion for what makes the difference, and perhaps a suggestion that is rejected a few lines later in the discussion.[50] The result would be that Aristotle does not think, by the end of the chapter, that the phrases distinguish the two kinds of affection. So, it is not a serious criticism of this interpretation of 'without the matter' and 'with the matter' that the phrases fail to make the distinction. Nevertheless, the idea that non-sentient affection requires absorption of bits of matter by the patient of change seems a strange view for Aristotle even to suggest as a first guess for the distinguishing mark of how the sensible qualities affect non-sentient bodies.

Because it is implausible that Aristotle would suggest that non-sentient affection requires bits of matter to be transferred and because Aristotle's criticism of Empedocles in *de Anima* I.5 and the related discussion in III.8 support a cognitive interpretation of receiving forms without the matter at least as easily, the proposed interpretation of receiving sensible forms without the matter and being affected with the matter is less than convincing. This certainly does not rule out a physiological interpretation of receiving sensible forms. It might still be a literal becoming like that takes place in some receptive material in the sense organs, but some other understanding of the phrases 'without the matter' and 'with the matter' must be found.

IV

We have seen that right in the seminal chapter where the doctrine of receiving form without the matter is first introduced there are great difficulties for either the cognitive or physiological interpretations of the doctrine. For the cognitive interpretation, even though the analogy of a seal impression could be used effectively to illustrate two modes of existence for a sensible form, one as a property the other as sensory information, Aristotle's explanation of the analogy does not seem to hit on this distinction. Instead, it focuses on the property in virtue of which the sense is affected and the corresponding content received by the sense. This makes one wonder if the only point is to illustrate that it is the proper sensible only that truly affects a sense and which is, strictly speaking, the content of perceptual states. On the other hand, if that were the point, to describe it as receiving form without the matter is quite unhelpful. In favor of a cognitive interpretation is the fact that the idea of a form without matter is used by Aristotle elsewhere to signify a special mode of existence for a form in a cognitive faculty, either a skill or concept in the mind. But this gets us nowhere if the explanation of the analogy does not suggest this. The contrasting description, "being affected with matter," could also plausibly be understood to express a different mode of existence for a sensible form in bodies that are not sense organs. But this is the only occurrence of 'with the matter' with this verb, and the verb cries out for an agent. So, if the analogy used to explain receiving form without matter cannot help us in this direction, it is probably safer to understand 'with the matter' to refer to matter belonging to the agent rather than a material mode of existence in the patient.

For the physiological interpretation, the explanation of the analogy is somewhat happier. The wax does not receive anything to indicate it was a gold signet ring that made the impression; no gold is left in the seal. Likewise, no bits of matter from the object enters the sense organ. But why should Aristotle be motivated to make this point?

Although he quite plausibly has the theories of his predecessors in mind as the foil he is responding to, it is not convincing that he means to draw a direct contrast with a theory of particle emanations. Besides, even though this interpretation is more easily read into the explanation of the analogy, it still is not exactly what is said when Aristotle says the sense is affected by the colored thing but not insofar as it is the thing it is called (a rose, say). Furthermore, such an interpretation gives us difficulty when we try to understand non-sentient affection as being affected by absorbing matter from the agent. There is no reason to think Aristotle would suggest this even as just a half-way plausible way of marking off non-sentient affection from affection in sense organs.

There is a way that either side can remove some of their difficulties. We could reject the idea that being affected with matter is meant to characterize non-sentient affection. Perhaps it is a point only about plants and not about rocks and water as well. But why it should be necessary for plants to absorb warm or cold vapors, say, in order to become cold or warm is not clear.[51] If all else fails, we may need to come back to the suggestion that Aristotle is not drawing a direct distinction between sentient and non-sentient affection with the descriptions 'receiving sensible forms without the matter' and 'being affected with matter'. But then we will need to provide both meaning and motivation for the latter phrase.

Even if we did decide there is not a direct contrast drawn between the two types of affection, this would be compatible with either a cognitive or physiological interpretation of receiving sensible forms without the matter. Given that Aristotle's explanation of the analogy does not seem very helpful for either interpretation, it is clear that seeking a satisfactory interpretation will entail looking outside of *de Anima* II.12 in order to understand Aristotle's theory of perception apart from the doctrine of receiving sensible forms. After a full picture is put together, then we can come back to II.12 and read it in light of the full picture.

That is the method I will follow. It is in the *Parva Naturalia* that Aristotle goes into some detail about the physiology of perception and this is primarily in the context of discussing how dreaming takes place. The most salient point that strikes one in reading these lesser works on psychology is the role of the primary sense organ, the heart, in all perception. At first, this may appear absent from *de Anima*, but on closer examination, it is present there as well, but dealt with more abstractly in arguments that show the theoretical necessity for the perceptual faculty and its organs taken as a whole to be unified. In the *Parva Naturalia* it becomes more clear that the physiological ground for such unity is a core organ that receives all the sensory information. In chapter 2, I will show the general picture of the perceptual faculty and all its organs which Aristotle consistently holds throughout his psychological works. The picture is of a single perceiving unit acting as one organ but gaining access to the different kinds of sensible qualities by means of a special receiving apparatus for each modality. Chapter 3 will discuss the physiological processes: first, in the outer organs, about which I will underscore the plausibility that the sensible qualities come to exist literally and physically in the receptive material of the organs; second, from the outer organs down to the primary sense organ, the heart. Chapter 4 will explore further the function of the heart, especially with regard to states of *phantasia*, the appearance producing faculty. Looking at *de Insomniis*, *de Memoria*, and *de Anima* III.3, I will interpret Aristotle's theory of *phantasia* and the wax and ring analogy in light of that. In chapter 5, I turn to the intellect, which also receives forms without matter, but intelligible forms rather than sensible forms. It is here that I argue for a cognitive interpretation of receiving form that applies equally to both cognitive faculties. Finally, in chapter 6, I return to the puzzles we have looked at just now and attempt to provide a reading of the whole of *de Anima* II.12 that, as best as possible, solves the difficulties and knits the chapter together. I say "as best as possible" because, in the end, I think it is impossible for either interpretation

to come out with a clean victory over the other. It will be enough if I provide a few insights, perhaps a different approach, that can be added to the ongoing debate. The debate will go on because the subject is the key to understanding Aristotle's theory of cognition. Perhaps it is because Aristotle's physics is so different from ours that his doctrine is so hard to decipher.[52] Perhaps it is a very deep and difficult doctrine. Or perhaps it is only common sense expressed in uncommon terms and not meant to say any more than the obvious. Whichever, students of Aristotle will always find that their understanding of Aristotle inevitably grows when they try to work out what it is for the sense to receive a sensible form without the matter.

Notes to Chapter 1

[1] Please refer to the List of Abbreviations for my references to works of Aristotle. Most references to a text in Aristotle will be given in parentheses like this. A footnote will be used only when a comment is required. All translations from Aristotle's Greek are my own unless otherwise noted.

[2] William Charlton, "Aristotle's Definition of Soul," *Phronesis* 25 (1980), pp. 180-1; S. Marc Cohen, "The Credibility of Aristotle's Philosophy of Mind" in *Aristotle Today: Essays in Aristotle's Ideal of Science* (Edmonton: Academic Printing and Publishing, 1987), pp. 103-125 (a revised version of this paper is "Hylomorphism and Functionalism" in *Essays on Aristotle's De Anima*, eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 57-73); Edwin Hartmann, *Substance, Body, and Soul: Aristotelian Investigations* (Princeton: Princeton University Press, 1977), pp. 188-200; Richard Sorabji, "Body and Soul in Aristotle," *Philosophy* 49 (1974), pp. 70-72, and n. 22, (also reprinted in *Articles on Aristotle*, vol. 4, pp. 47-50) and "Intentionality and Physiological Processes: Aristotle's Theory of Sense-Perception" in *Essays on Aristotle's De Anima*," eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 209-223; Stephen Everson, "The objective appearance of Pyrrhonism," in *Psychology* (Companions to Ancient Thought: 2) (Cambridge: Cambridge University Press, 1991), pp. 130-1.

[3] Franz Brentano, *The Psychology of Aristotle* (Berkeley: University of California Press, 1977), pp. 54-55; M. F. Burnyeat, "Is an Aristotelian Philosophy of Mind Still Credible?" in *Essays on Aristotle's De Anima*," eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 15-26; T. H. Irwin, *Aristotle's First Principles* (Oxford: Clarendon Press, 1988), pp. 307-311; Jonathan Lear, *Aristotle: the Desire to Understand* (Cambridge: Cambridge University Press, 1988), pp. 101-116 (for Lear, it is not just awareness, but partly that).

[4] Or more precisely, a part of a form, in that it is one of the activities that make up the substantial form of an animal.

[5] Jonathan Lear, *Aristotle: the Desire to Understand* (Cambridge: Cambridge University Press, 1988), p. 109ff.

[6] For example, M. F. Burnyeat, "Is an Aristotelian Philosophy of Mind Still Credible?" in *Essays on Aristotle's De Anima*," eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 18-22. And he is following Thomas Aquinas (*Commentary on De Anima*, sect. 553) in labelling the change that takes place in perception as a spiritual change rather than a physical change.

[7] Thomas Slakey, "Aristotle on sense perception," *Philosophical Review* 70 (1961), pp. 470-484.

[8] Richard Sorabji thinks it is a material account and finds the formal account worked out in *DA* III.3 and elsewhere where perception is distinguished from other kinds of intentional states such as believing, imagining, and thinking. See Sorabji, "Intentionality and Physiological Processes: Aristotle's Theory of Sense-Perception" in *Essays on Aristotle's De Anima*," eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992),

pp. 195-208. Jonathan Lear maintains that it is a formal account about perception, but that there are some kind of physical changes that occur in the organ. See Lear, *Aristotle: the Desire to Understand* (Cambridge: Cambridge University Press, 1988), pp. 110-116.

[9] I am sympathetic to the compromise view suggested by David Glidden, "Aristotelian Perception and the Hellenistic Problem of Representation," *Ancient Philosophy* 4 (1984) 119-131. His thesis is that "the division between cognitive representation and mechanistic transmission may possibly be too modern for Aristotle to have delineated" (p. 128). My own interpretation, to some extent, develops an idea expressed by Glidden (p. 129): "The formulae of the *De Anima* do leave open the possibility that the form physiologically received is in the company of its epistemic twin, the intentional form perceived." I go beyond the scope of Glidden's suggestion in my insistence that the form is finally received only in a state of the primary sense organ.

[10] One place where he speaks of a bodily place where the soul is located is *Mem.* 1.450a22-32.

[11] For an explanation of this standard reading of the text, see *Aristotle, de Anima*, trans. R. D. Hicks (Amsterdam: Adolf M. Hakkert, 1965, a reprint of the 1907 edition), pp. 415-17; and *Aristotle, de Anima*, ed. W. D. Ross (Oxford: Clarendon Press, 1961), pp. 264-266. Also *Aristotle's de Anima Books II and III*, trans. D. W. Hamlyn (Oxford: Clarendon Press, 1968), pp. 113-114.

[12] This last part is a difficult clause because the Greek says only: "not insofar as each is described (or called)." Various translations of this clause and what follows come to the same thing. Hamlyn, *Aristotle's De Anima*, p. 43: "not in so far as they are what each of them is spoken of as being, but in so far as they are things of a certain kind and in accordance with their principle." (I disagree with the translation of *logon* as principle here--see note 14 below.) The original Oxford translation by Smith: "but it is indifferent what in each case the *substance* is; what alone matters is what *quality* it has, i.e. in what *ratio* its constituents are combined," in *The Works of Aristotle*, vol. 3, ed. W. D. Ross (Oxford: Clarendon Press, 1931), *ad loc.* (Again, I disagree with the translation of *logon* as ratio here--see note 14 below.) Barnes' revision of Smith: "not insofar as each is what it is, but insofar as it is of such and such a sort and according to its form," in *The Complete Works of Aristotle*, vol. 1, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), p. 674. Hett: "not *qua* having a particular identity, but *qua* having a certain quality, and in virtue of its formula," in *Aristotle: On the Soul, Parva Naturalia, On Breath*, trans. W. S. Hett (Cambridge: Harvard University Press (Loeb), 1936), p. 137. All are in agreement that the describing referred to by *legetai* in this clause is the substance name for the thing possessing the sensible quality, what it is, the kind of thing it is.

[13] The neuter of the demonstrative pronoun *toios* (of such kind or quality) Aristotle uses to mean a quality or a suchness as opposed to a substance, a *tode ti* (a "this"). For an explicit statement of the contrast between a "this" and a "suchness" see *Metaph.* VII.13.1039a1-2. This contrast is also made at *Cat.* 5.3b13-18, but there Aristotle uses the other nominalized neuter adjective he uses to mean "quality," *poion*. For a *hêi* clause with no expressed verb, *esti* (it is) is normally the understood verb. See note 12 for various translations of statements (3), (4), and (5).

[14] A more literal translation of phrase (5) would be, "and according to the definition [or account]." But *kata ton logon* is a technical phrase that is used to indicate something

considered only from its formal aspect. I have added the word 'alone' to emphasize that the phrase implies a contrast between two ways of considering something. The technical phrase is most often used to distinguish two ways of considering substance, substance as form (*hê kata ton logon ousia*) and the composite substance, form with matter (*hê meta tês hulês ousia*). An equivalent phrase for the first is *hê kata to eidos ousia* (substance according to form). See *Metaph.* VII.10.1035b15, VIII.3.1044a11; *DA* II.1.412b11, 412b20. Qualities also, like *to leukon* (whiteness), can be considered *kata ton logon* (*Metaph.* XIII.2.1077b6). Sometimes the phrase is contrasted with *kata tên hulên* (according to the matter), indicating the formal aspect and the material aspect respectively (*GC* I.2.317a24). *kata tên hulên* is also contrasted with *aneu hulês* (without matter) (*Phys.* II.2.194a14). In general, to consider something *kata ton logon* is to consider the form without the matter. *kata ton logon* and *aneu tês hulês* often can be taken as equivalent terms. I take its use in our *de Anima* text to be exegetical. It is explaining that 'as suchness' means 'as the form of the quality only.' (The matter of a quality would be the concrete object that instantiates the quality.) See Hicks, *Aristotle's De Anima*, pp. 416-17, for a similar reading of this technical phrase.

[15] I call it the first-level content of perception because Aristotle allows two other levels of perceptual content, the common sensibles and the incidental sensibles. The proper sensibles are what affect only one sense. The common sensibles are shape, size, motion, rest, number, unity (*DA* III.1.425a16). These are discerned by more than one sense. The incidental sensibles are the objects that possess these sensible qualities and which are not directly the objects of perception. Still, we say that we see the banana even though it is in virtue of its color and shape that the eye is affected in a certain way. See *DA* II.6.

[16] *Aristotle's de Anima in the Version of William of Moerbeke and the Commentary of St. Thomas Aquinas*, trans. Kenelm Foster and Silvester Humphries (London: Routledge and Kegan Paul, Ltd., 1951), sect. 551 (p. 339).

[17] Thomas Aquinas, *Commentarium in Aristotelis Librum de Anima*, sects. 552-553.

[18] Aquinas is often represented as holding the view that there is no physical change in the sense organs. For example, Jonathan Lear says of Aquinas' view that "all that is involved in the sense faculty taking on the sensible form is the person's becoming aware of the sensible quality" (*Aristotle: the Desire to Understand* (Cambridge: Cambridge University Press, 1988), p. 110, note 39). Lear calls this view a spiritual account of reception of form without matter. Lear then goes on to offer a view in between a spiritual and a material account. What he offers is a formal account that does not deny there are physical alterations that bring about perception. But Aquinas also says that all sense activity occurs with a change in the body (Summa Theologica I, Question 75, Article 3). So even though sensible form is received immaterially, there is material change. There are excellent discussions of Aquinas' theory of perception in two articles: Sheldon M. Cohen, "St. Thomas Aquinas on the Immaterial Reception of Sensible Forms," *Philosophical Review* 91 (1982), pp. 193-209, and a response by Paul Hoffman, "St. Thomas Aquinas on the Halfway State of Sensible Being," *Philosophical Review* 99 (1990), pp. 73-92.

[19] This apparently is the distinction that Philoponus draws between receiving form cognitively (*gnôstikôs*) and receiving form so that the recipient is materially (*hulikôs*) affected. See Philoponus, *in de Anima*, 432,36-433,4; 438,6-15.

[20] For the distinction between two kinds of formulas see *Metaph.* XI.7.1064a21-28, *Cael.* I.9.278a23-25.

[21] For references to kinds according to whether their essence essentially contains matter, see *Metaph.* VI.1.1025b30-1026a6. Here definitions are mentioned in that the subject of discussion is about "things defined," and the point made is exactly parallel to the more direct discussion of definitions at XI.7.1064a21-28 (see previous note). At VII.10.1035a25-30 we are told that only the things that are form and matter compounded pass away, whereas those things whose definitions refer only to the form do not pass away. See *DA* III.4.429b13-14 for the reference about flesh being like the snub.

[22] The two uses of *meta tês hulês* and *aneu tês hulês* are closely related, but the matter in each case is different. With definitions, the matter that is included in a definition of something like the snub will be a general kind: noses, flesh and bones, etc. In the case of Callias, an instance of humanity, the matter that makes him an instance is the particular matter which constitutes him, *his* flesh and bones. Aquinas distinguishes these two different uses of the term 'matter' by calling the one common matter, which is mentioned in definitions, and the other signate matter, which instantiates an essence. See *Summa Theologica*, Question 85, Article 1, Response 2. The things that have *logoi meta tês hulês* are things the instances of which must be in a certain kind of matter, and so they themselves as kinds can be called things with matter; and precisely because they are such a kind, the individuals can be spoken of as a composite of the form and a specific hunk of the kind of matter mentioned in their definitions.

[23] *Metaph.* X.9.1058b11. Aristotle actually speaks here of Callias being *ho logos meta tês hulês*. The *logos* expresses the form and so this word can often be translated as 'form'.

[24] *Metaph.* VII.10.1036a20-22: *hê orthês hê meta tês hulês* and *hê orthês hê aneu hulês*.

[25] *Metaph.* VII.7.1032b14: *ousian aneu hulês*. *Metaph.* VIII.3.1044a11: *he meta tês hulês ousia*. Equivalent to substance without matter and also contrasted with the composite are substance according to form (*he kata to eidos ousia*) and substance according to the definition (*he kata ton logon ousia*) at VII.10.1035b15 and VIII.3.1044a11. See note 14 for a fuller discussion of the use of *kata ton logon*.

[26] See *DA* III.4.430a3, III.6.430b30, and *Metaph.* XII.6.1071b21.

[27] *Metaph.* VII.7.1032b12 and *PA* I.1.640a32.

[28] There are only two other occurences of *aneu hulês* and they are in strange contexts in *GC*: one about growth versus nutrition (I.5.322a28); the other about the color of tin (I.10.328b12).

[29] For forms in the mind as skills, see *Metaph.* VII.7.1032b12 and *PA* I.1.640a32. Aristotle's universals can be understood as concepts. They are said to exist in the soul (*DA* II.5.417b22-23) and are clearly the same as the intelligibles (*noêta*), which are without matter (*DA* III.4.430a3-4), and the forms of understanding (*DA* III.8.431b20-432a3). The intellect becomes a universal once it has learned it, and so retains it like a skill (*DA* III.4.429b5-9). In *An. Post.*, Aristotle speaks of universals as being the starting points for both art or craft (*tekhnê*) and theoretical knowledge (*epistêmê*) (II.19.100a6-9).

Aristotle treats both the intellect and perceptual faculty together as receivers of form (*DA* III.4.429a15-18 and III.8.431b26-432a3). So a form in the perceptual faculty might also be a state of possessing information, either immediately present as in perception, or retained for later use.

[30] It is interesting to note how the everyday words we use to speak of cognition are imbued with Aristotle's metaphysics. What is information but taking in form? The non-perceiving body gets formed, which is to say it is "ex-formed" rather than informed, i.e. it manifests the form outwardly.

[31] Thomas Aquinas, *Commentarium in Aristotelis Librum de Anima*, sect. 554. I have followed closely the translation in *Aristotle's de Anima in the Version of William of Moerbeke and the Commentary of St. Thomas Aquinas*, trans. Kenelm Foster and Silvester Humphries (London: Routledge and Kegan Paul, Ltd., 1951), sect. 554 (p. 340). But I have translated *inquantum* as "insofar as" rather than "precisely as". For the occurrence of *inquantum* in the quote from Aristotle I have kept their translation "in respect of" because it fits the clause. Here is the entire Latin text for this quotation:

> 554. Et ponitur conveniens exemplum de sigllo et cera. Non enim eadem dispositio est cerae ad imaginem, quae erat in ferro et auro. Et ideo subjungit, quod cera accipit signum idest imaginem sive figuram auream aut aeneam, sed non inquantum est aurum aut aes. Assimilatur enim cera aureo sigillo quantum ad imaginem, sed non quantum ad dispositionem auri. Et similiter sensus patitur a sensibili habente colorem aut humorem, idest saporem aut sonem, "sed non inquantum unumquodque illorum dicitur," idest non patitur a lapide colorato inquantum lapis, neque a melli dulci inquantum mel: quia in sensu non fit similis dispositio ad formam quae est in subjectis illis, sed patitur ab eis inquantum hujusmodi, vel inquantum coloratum, vel saporosum, vel secundem rationem, idest secundum formam. Assimilatur enim sensus sensibili secundum formam, sed non secundum dispositionem materiae. (from *In Aristotelis Librum de Anima Commentarium*, ed. P. F. Angeli M. Pirotta, O. P. (Taurini, 1936), p. 189)

[32] The confusion here is the source of Burnyeat's interpretation of Aquinas. See M. F. Burnyeat, "Is an Aristotelian Philosophy of Mind Still Credible?" in *Essays on Aristotle's De Anima*," eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), p. 24. He distinguishes the two ways of being affected in the following way: a recipient can become like the agent in form only, or like it both in form and matter. The former is reception of form without matter, the latter being affected with matter. As Cohen has pointed out, this is a strange way to construe Aristotle. What counts for Burnyeat as becoming like in matter is precisely what traditionally is thought to be becoming like in form. See S. Marc Cohen, "The Credibility of Aristotle's Philosophy of Mind," in *Aristotle Today*, ed. Mohan Matthen (Edmonton: Academic Printing & Publishing, 1987), pp. 113-114. What it is for something to become like something else is just for it to receive the same form. Sometimes this will involve the same kind of matter, sometimes not. But we surely do not want to say the water receives form without matter when it is heated, simply because the matter of water does not become like the matter of iron. To become like in matter, or as Aquinas puts it, to acquire the disposition of the matter, is simply to take on the form as a physical property. So there really is no becoming like in matter. This can only mean becoming a physical instance of the property. As Burnyeat formulates it, there is a way of reading the analogy that illustrates the right point. If we construe the two ways of becoming like as also two ways the agent can act, then one could read the analogy in the following way. What it is for the sensible

object to act in virtue of its quality is for it to cause the recipient to become like it in form only; and what it is for it to act in virtue of being the thing it is, a compound of form and matter, is to cause the recipient to become an instance of the form in matter, or as Burnyeat puts it, to become like it both in form and matter. That is the explanation of being affected with matter. This certainly gets Aristotle wrong. It would, however, explain how Aquinas could get the right point out of the analogy on the standard reading. I am more inclined to think that Aquinas was reading the text differently (as I will show below), although unsuccessfully.

[33] See pp. 6-7 for the text divided into parts. Parts 2, 3, and 4 each have a *hêi* clause (in lines *DA* II.12.424a21, 23, and 24).

[34] My thanks to Professor Mary Whitlock Blundell of the Classics Department, University of Washington, for help with the grammar of *hêi* clauses.

[35] This second *hêi* clause, on a standard reading, also has an understood verb 'to be': "not insofar as each is what it is called." But since there is an expressed verb, *legetai* ("is called" or "is described"), it would not be necessary to supply a verb. The reason for adding an understood verb on the standard reading is because the clause is difficult to make sense of. Literally it says, "but not insofar as each of these is called (or described)." However, if we leave aside the common idiomatic meaning of *hêi* and revert to its original meaning ("in the way in which", *tautêi hêi*), it comes out a little better: "but not in the way in which each is described."

[36] Another way of getting more out of *kata ton logon* is suggested by Jonathan Lear, *Aristotle: the Desire to Understand* (Cambridge: Cambridge University Press, 1988), p. 109ff. But it involves taking this phrase to mean "according to the ratio," an interpretation which I reject on grounds independent of the context. See note 14. Lear's view is that the sense organ does not receive the quality literally as it exists in the object but a pure ratio that corresponds to the ratio of the contraries that constitute the quality in the object. For Aristotle, the different colors are ratios of the extremes white and black, different smells and flavors are mixtures of the extremes sweet and bitter, etc. The ratio of contraries in the object is form + matter, but the abstract ratio itself is the form, in the same way as Aristotle suggests that duality or the number two might be the form of a line (*Metaph.* VII.11.1036b11-16). The sense organ is what can receive the ratios for a certain sense modality, which are transferred through a medium. They are not ratios of the relevant contraries because then you would have the actual quality present; they are the ratio itself abstracted from the constituents. The color red may have the same ratio of the color contraries as the flavor of curry has of the flavor contraries, but within a certain sense modality the ratio will be interpreted correctly as a color or a flavor. Lear's interpretation is cognitive in that he takes the description to be a formal account of perception: to receive these ratios is what it is to perceive. But he has de-spiritualized it so that reception of form without matter does not mean awareness of the form but the reception of ratios.

[37] For Aristotle, each sense has a pair of opposites between which fall all of the sensible qualities for that sense. All the colors are different ratios of white and black, flavors of sweet and bitter, sounds of the high and low. Touch has more than one set of opposites, but one of them is temperature which ranges between the hot and cold. See Hamlyn, *Aristotle's De Anima*, the notes to *DA* II.10.422b10, p. 111, and to II.12.424a28, p. 114. See also *Sens.* 3.439b19ff., 4.442a12ff., and 7.447a29ff.

[38] See *DA* III.12.434b27-435a10; III.13.435a15-19; III.7.431a17-19; also *Phys.* VII.2.244b2-245a11. For the application of the principle to each sense see *DA* II, chapters 7-11.

[39] That the receptive material of the eye is colorless, see *DA* II.11.424a7-9; that it is transparent, see *Sens.* 2.438b5-8. For the ear, Aristotle says that the air outside is continuous with the air inside, and the air deep inside the ear, still in itself, is able to accurately record all disturbances caused by the sound-bearing air on the outside (*DA* II.8.420a2-11).

[40] The degree of similarity between the medium and the sense organ varies between sense modalities. I work this out in more detail in chapter 3.

[41] At *DA* II.5.418a3-6 it is the *to aisthêtikon*, the thing able to perceive, which becomes like the object. The thing with the capacity can be understood to be the organ. At II.11.423b30-424a2 it is *to aisthêtêrion*, the sense organ, which is said to be the part (of the body) which is potentially such as the object and is made like it actually during perception.

[42] One might think that because he here speaks explicitly of the sense faculty, *aisthêsis*, receiving sensible forms without the matter, rather than the organ, *to aisthêtêrion* or *to aisthêtikon*, that he is now speaking of something different, perhaps the affection in the soul rather than in the organ (*DA* II.12.424a18). However, this may not be too significant because there is evidence that Aristotle uses the terms interchangeably. Just above in the discussion of touch, Aristotle is talking about the sense organ as becoming like the object and how the thing perceiving must be in a mean state toward its range of proper objects. But right in the middle of this discussion he says that the sense faculty, *aisthêsis*, is a mean between the opposites and that is why it is able to discern and distinguish all the qualities (*DA* II.11.424a4). Furthermore, in *DA* III.2, he says that it is the sense organ, *aisthêtêrion*, that is receptive of sensible forms (425b23-24).

[43] J. I. Beare, *Greek Theories of Elementary Cognition* (Oxford: Clarendon Press, 1906), pp. 14-24.

[44] Aristotle pays some heed to this received opinion about perception. He states it at *DA* II.5.416b35-417a2 and refers to his discussion of affection in general in *GC* I.7. His own explanation of how like perceives like is found at *DA* II.5.417a17-20 and 418a3-6. When cognition is taking place, the sense organ has become like the object, but before cognition it must be unlike so that it can become like. Aristotle has other criticisms of Empedocles' theory of perception in *DA* I.5, especially 409b23-410b15.

[45] Richard Sorabji, "Body and Soul in Aristotle," *Philosophy* 49 (1974), p. 74 (*Articles on Aristotle*, vol. 4, p. 52).

[46] See note 12 about the second *hêi* clause.

[47] See *GC* II.1-4 for a discussion of how the contraries make up the elements. It is a little difficult to read the second *hêi* clause to refer to the elements. We must take "what each is said to be" to mean a composition of the elements. It is much easier to take it to mean the individual substance it is, e.g. a rose or the sun. But for both Empedocles and Aristotle, the individual substance is a composite of the elements.

[48] See *DA* II.5 and *GC* I.7.

[49] In a later paper, Sorabji argues that the example of the air in the thunder splitting the tree is meant to be an example of affection with the matter. See Richard Sorabji, "Intentionality and physiological processes: Aristotle's theory of sense-perception," in *Essays on Aristotle's De Anima*, eds. M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), p. 218. I argue against this interpretation of the air and thunder example in chapter 6, part IV.

[50] For both of these points, see Richard Sorabji, "Intentionality and physiological processes: Aristotle's theory of sense-perception," in *Essays on Aristotle's De Anima*, eds. M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 217-219.

[51] See Hicks, *Aristotle's De Anima*, p. 419 (notes for *de Anima* II.12.424b3).

[52] M. F. Burnyeat argues that, because Aristotle's physics is archaic, what he has to say about cognition is useless for contributing to contemporary philosophy of mind. See "Is an Aristotelian Philosophy of Mind Still Credible?" in *Essays on Aristotle's De Anima*, eds. M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 15-26.

Chapter 2

The primary sense organ and the unity of the perceptual faculty

A common interpretation of Aristotle's *de Anima* has it that the five sense organs bring about perceptions of their proper objects independently and that a central organ for a common sensibility is required only for judgments more complex than judgments about the proper sensibles.[1] The eye and sight on its own can discern that something white is present; but for the comparison of two proper sensibles, such as in "This white thing is sweet,"[2] a central organ and a common faculty, the common sense, is necessary to unite the discernings of the individual organs. Also, this common faculty is required for apperception of the sense activity. However, in the *Parva Naturalia*, Aristotle's fuller discussions of the changes that take place in perception from outer organ to heart suggest that there can be no perception of even the proper sensibles until a change is effected at the heart. The heart as the primary sense organ is much more prominent in these treatises. Some think this reflects a change in doctrine. Irving Block considers the *Parva Naturalia*, especially *de Memoria*, *de Somniis*, and *de Insomniis*, to reflect Aristotle's "matured and crystalized views."[3] Others consider *de Anima* to be later, reflecting a fully developed hylomorphic theory of soul which abandons talk of a place of the soul, as the heart is called in the *Parva Naturalia* and *Partibus Animalium*.[4] Charles Kahn, on the other hand, has argued that "the *De Anima* and the *Parva Naturalia* form a continuous and progressive exposition."[5]

In this chapter I will examine Aristotle's concept of a primary sense organ and the discussions of the unity of the perceptual faculty in *de Anima*. I will argue that even in *de Anima* Aristotle holds that all perceptual activity finds completion in a central interior organ. *De Anima* and the *Parva Naturalia* are in agreement not only about the structure of the perceptual faculty and its fundamental unity. They also share the same terminology for speaking of this unity and they use the term *prôton aisthêtêrion* to refer

to the central unifying organ. I will explicate Aristotle's theory of the unified perceptual faculty and the organic basis for this unity, a theory clearly evident in both *Parva Naturalia* and *de Anima*. The results of this study will suggest far-reaching consequences for interpreting what it means to receive the sensible form without the matter and will provide a framework for the plan of inquiry in the remaining chapters.

I

In this first part, I will examine the role of the central perceptual organ as presented in the *Parva Naturalia*.[6] In this collection of psychological treatises, the central organ is most often called the *prôton aisthêtêrion*, primary sense organ. We learn that it is the heart and that it is essential to all perception. For example, when Aristotle is explaining sleep, he says:

> But sleep intervenes when such incapacity of exercise [of the senses] has neither arisen in any chance sense organ, nor from some chance cause, but when, as has been just stated, the incapacity is in the primary sense organ with which we perceive all things. For when this is powerless, none of the sense organs can perceive, but if one of these are powerless it is not necessary that the primary sense organ be powerless. (*Somn.* 2.455b8-13)

And a little later:

> It has already been determined elsewhere that the origin (*arkhê*) of perception exists in the same part of animals from which also arises movement. . . . In animals with blood this is the region of the heart, since all animals with blood have a heart and the origin of both movement and the governing perception are there. (*Somn.* 2.455b34-456a6)[7]

The heart is the primary sense organ and it must be functioning for there to be any perception. Hence it is the origin or cause (*arkhê*) of perception in general.[8]

We also learn that the primary sense organ is the *arkhê* of all life functions, and that touch is associated with the primary sense organ in a way different from the other senses. After noting the functions of the individual sense faculties, and that there is a part that is common to all the sense organs, Aristotle says:

> For there is one single perceptual faculty, and one chief organ, but the being (*to einai*) for the sense faculty of each genus (such as sound or color) is different [scil., one perceptual faculty with many functions]; and this chief sense organ is present first and above all in conjunction with the faculty of touch, since this is separable from the other sense organs, but the others not separable from this, as has been stated in the speculations on the soul. (*Somn.* 2.455a20-25)[9]

And again, in *de Iuventate*, after speaking of the heart as the center of both the nutritive and the sensitive soul (*Iuv.* 3.468b28-469a10), he goes on.

> Indeed, the chief part (*to kurion*) of the senses for all animals with blood is in this [the heart]; for in this chief part must be the common sensing part for all the sense organs. Two of them clearly are connected to the heart, both taste and touch, so it must be so for the others; because it is possible for the other organs to produce a change in this part [the heart]. But taste and touch have no connection to the upper regions of the body. An independent consideration: if in all creatures life resides in this part, clearly it must also be the fundamental (*arkhên*) perceptual faculty. For it is in virtue of its being an animal that we say it lives, but it is in virtue of the perceptual faculty that we say a body is an animal. (*Iuv.* 3.469a10-20)[10]

The sense of touch is the first and basic sense, one that all animals have, and so it is a defining characteristic of animals. One empirical reason Aristotle may have associated touch with the heart is because even very simple animals have touch, and the only organ structure that may be apparent in some of these is a central organ which is analogous to the heart of more complex animals. Aristotle gives other reasons for the close association of touch and taste with the heart; one reason is that their objects are, roughly speaking, composed mainly of water and earth, the colder elements, and so to be affected by them, the organ for these must be hot and the heart is the hottest part of the body (*Sens.* 2.438b16-439a5). So the organ for these is at the heart.[11] Another reason is that Aristotle conceives of all the senses according to a single model and every sense must have a medium. So flesh must be the medium for touch with the heart as the organ (*DA* II.7.419a18-31, II.11.423b17-26). I will speak more of this model later.

So, it is clear in the *Parva Naturalia* that the heart is most important for all the vital and perceptual functions and that touch is intimately associated with this central organ. The heart is referred to as the primary organ, *prôton aisthêtêrion*, but also called

the chief or governing part, *to kurion*, and the source and cause, the *arkhê*, for life, nutrition, and perception.[12]

For perception, the heart is the most important for two reasons: (1) it is the organ for touch and touch is the first sense, the one that all animals have as a defining characteristic, (2) all the other senses are connected to it. Two characteristics of this connection are that the other senses cannot operate without the central one being active, and the central organ receives all information that comes to the other senses.[13] This would remain compatible with an interpretation that made the senses that have external media somewhat independent in that an act of seeing takes place in the eye. On such an interpretation, the primary sense organ is like a power source that must be turned on for seeing to take place; but given that the power is on (the animal is awake), the affection in the eye is all there is to a simple seeing. In a later chapter I will show that Aristotle's discussion of dreaming suggests that no perceptual acts, not even a simple act of seeing by itself, are complete until a change is brought about in the heart, and that only then is there an appearance or perceptual awareness.[14] Presently, I wish to establish that the theoretical basis for this view is laid out consistently in both *de Anima* and the *Parva Naturalia*. My thesis is that for Aristotle every act of perception takes place only when the primary sense organ is affected. So to call the heart the primary sense organ is not to say merely that it is the most important organ, but that, strictly speaking, it is *the* organ for all perception and that for the senses that require external media, the outer organs are special receptive tentacles of that primary organ.

My support for this claim is in the next three parts. Firstly, I will show that it is more or less explicit in what I will call the "one thing, many functions" doctrine Aristotle gives us for the entire perceptual faculty. Secondly, I will provide a sketch of the entire perceptual apparatus, suggested by several texts in *de Anima*, that shows Aristotle thinks of the perceptual apparatus as one core organ, the *prôton aisthêtêrion*, which is also the

organ of touch, with specialized receptors for some of its other functions. Finally, I will draw out the implications of my claim that Aristotle uses the term *prôton aisthêtêrion* in this way throughout *de Anima*, including chapter II.12.

II

In *de Anima*, the subject of the unity of the perceptual faculty does not come up until the first two chapters of book III. After arguing that there must be a common perceptual faculty for perceiving the common sensibles, Aristotle turns to the simultaneous perception of proper sensibles of different kinds, like the yellow color and bitter taste of bile.

> The senses perceive each other's proper objects incidentally, not insofar as they are themselves [e.g., sight does not perceive flavors *qua* sight], but insofar as they are one [sense], when all at once there happens an act of perception with respect to one object, as in the case of bile, that it is bitter and yellow. For it is not any one of them that says that the two sensible objects are one object. (*DA* III.1.425a30-425b2)

The key phrase is "insofar as they are one [sense]" (*hêi mia*). The question is how they are one. It could be that they are one sense faculty only in that the central organ is needed for this kind of task. On this view the unity would be a looser unity. The individual organs would have full-blown perceptions on their own. Then there would be, so to speak, second "perceptions" by the central organ, which then puts the information together. This, however, would not completely solve the problem. There would still be distinct perceptions of the yellow and the bile and no reason why the object should not be perceived as two things. This would be avoided if the perception of bile is really one perception by one perceptual faculty. Such a stronger unity is what is suggested in this passage. Aristotle does not say that perception of the yellow and the bitter together is possible because of a central faculty that puts two independent perceptions together; he says the sense faculty is a single unified perceptual faculty that has a single perception.

This is not to deny that there are individual sense faculties, but their independence may only be in definition, not in actual fact.

This is exactly what becomes more explicit in later passages. The character of this stronger unity is laid out a little later in III.2.

> Is it then that the judging faculty is on the one hand both indivisible in number and inseparable, and on the other hand separable in being (*tôi einai*). Somehow then it is as the divisible that it perceives things divided [the proper sensibles in themselves], yet it does this at the same time as if indivisible; for it is divisible in being (*tôi einai*) but indivisible in place and number. . . . just as what some call a point can be considered both *qua* one and *qua* two, and in this second way the point is divisible, so too the thing judging insofar as it is indivisible is a unity all at once [in one single act], yet it exists as divisible--it uses the same dot twice at the same time [the dot shared at the point of convergence of two drawn lines]. Insofar as it uses the limit twice, it judges two distinct things, as if it is separable itself; but insofar as it is a unity it judges by one simultaneous act. (*DA* III.2.427a2-5, 10-14)[15]

To be separable in being is to be separate in essence, that is, different in account or in definition.[16] To be one in number but separable in account is to be a single thing that has different functions, in this case a single perceptual faculty with distinct sub-faculties. The different functions referred to here are perceiving the different kinds of proper sensibles. Aristotle has given accounts of these in *de Anima* II, chapters 7-11. We can understand the dot to represent the central organ and the unified perceptual faculty; the lines converging at the point stand for the different modes of receiving sensory information. Because the faculty is truly a unity, any perception and judgment of two proper sensibles (that white and sweet are different, or that they belong to one object) is made possible (*DA* III.2.426b8ff.). This is because it is really one single perception, but the single dot can be viewed as being used twice if the complex perception is considered in terms of the sub-faculties involved. Considered in this way, it is judging two distinct things independently ("perceiving things divided"), that something is white by sight and that something is sweet by taste. On this way of looking at it, we are treating the

perceptual faculty as if it were separable, but its separability is only in the account of the sub-faculties and their respective kinds of content.[17]

An interpretation that makes the individual sense faculties reside in the distinct organs would not be able to make sense of the point analogy. The dot taken twice, on such a view, would have to stand for the central organ receiving a bit of information from sight and receiving a different bit of information from taste. And then we must allow that there is an account of the central organ's function as a receiver of visual information, and a different account for its function as a receiver of gustatory information. There will also be the function of the central organ as common sense faculty. But now we will have the individual sense faculties residing in the outer organs, plus the faculties of the central organ to receive each of these kinds of information, plus the functions that are common. This is an unnecessary multiplication of functions.

It is much simpler to understand the different accounts to be the accounts for the individual sense faculties themselves, sight, hearing, touch, etc. If we consider the entire perceptual apparatus as really one organ, then we can say that this one organ functions as sight when the information comes from one kind of proper sensible through its special receptor to the heart and functions as hearing for a different kind of object through a different receptor. Also, it will function as perception in general (no specific mode) when it does something more complex than simply perceive a proper sensible. Then the point analogy is quite straightforward. The single unified perceptual faculty, when perceiving a proper sensible, is functioning *qua* sight or *qua* taste, say. In a complex perception like the white thing is sweet, there are two judgments made by the perceiving faculty *qua* individual sense faculties as well as a judgment made by the same faculty *qua* the common faculty. Hence the dot, standing for the unified perceptual faculty, is used in two ways, both *qua* two and *qua* one. Aristotle's view is that one unified perceptual faculty functions in many ways, as sight, as taste, and, when the function is

not attributable to one specific faculty alone, it functions as the common perceptual faculty.[18] In most perception, several functions are simultaneous; whether the faculty is operating as several functions or as just one individual sense (if this ever actually happens), the perception is always a unified act of the one over-arching faculty. This is what I call the "one thing, many functions" doctrine.[19]

This doctrine is stated in one other place in *de Anima*, quite tersely. Aristotle is speaking of thinking with mental images and he says that what happens here is like what happens in perception.

> . . . just as the air produces a certain effect in the eye-jelly, and that produces an effect in something else, and similarly for hearing. But the last thing [in which an effect is produced] is one and a single mean; but the being [or, way of being] (*to einai*) for this single mean is many. (*DA* III.7.431a19-20)

This quote comes in the context of a difficult discussion of thinking and *phantasia*, but it clearly says that the perceptual faculty is one thing with many functions. The passage also suggests that the effect in an outer organ is only part of the process that takes place within an act of perception.[20]

It is true that the passage about the point used once or twice is presented aporetically. Nevertheless, Aristotle uses the same terminology later in the *Parva Naturalia* where the "one thing, many functions" doctrine is presented with more certainty. We should expect it to be presented in a dialectical fashion in *de Anima* because of the nature of this work, but this need not mean that Aristotle was less sure of the goal he was leading his students toward.[21] The brief aside at 431a19-20 suggests that it was firm in his mind. Presented aporetically or not, the same solution to the problem of how perceptual experience is unified is pointed to in both *de Anima* and the *Parva Naturalia*: the perceptual faculty is one unified faculty, not a federation of faculties. Let us look at the later presentations of this doctrine.

The doctrine as presented in *de Sensu* is a little bit more explicit.

> It must be that the certain part of the soul by which we perceive all things is one, although it perceives different kinds of objects through different [bodily] parts. Well then, is that which is perceptive of sweet and white, when actually perceiving such, one thing insofar as it is indivisible, but a different thing when actually perceiving these separately? Or is it this way: what is possible for the objects is possible for the soul. For the same numerically one thing is both white and sweet, and many other qualities (if they are not independent of one another), but the being (*to einai*) for each is different. So too for the soul, what is perceptive of all things is one and the same in number, but different in being (*tôi einai*), sometimes different in genus, sometimes in species. So, it perceives at once by one and the same thing, but not the same in account. (*Sens.* 7.449a8-20)[22]

The alternative rejected midway is something like this: when perceiving a proper sensible alone, a certain part perceives it (the eye, say, for a color); but during a complex perception, such as occurs when something is perceived in a single indivisible act of perception as both white and sweet, then it is a different part (the common faculty at the heart) that perceives one and the same thing as being both white and sweet. This would mean there are two different parts that see, depending on whether it is only seeing or seeing plus making some other perceptual judgment. Aristotle takes the obvious strangeness of this view to count as support for his suggestion that it is the single unified perceptual faculty that is exercised in all perception; it's divisiblity is only because we can define its sub-faculties according to the different objects. Of course, different outer organs will be employed by the unified faculty for diffent genera of objects (*Sens.* 7.449a8-10). If the perceptual faculty centered at the heart employs only the organ for a single sense, say the eye (along with the heart, of course), then the unified faculty is operating *qua* sight. When it is using more than one in a complex perception, then it is operating also *qua* what is common to perception in general, sometimes called the common sense.[23]

This *de Sensu* passage also is aporetic in style; nevertheless, the solution is stated quite explicitly and with the same terminology as in *de Anima.* In *de Somniis* Aristotle states the doctrine straightforwardly. After stating that we have faculties for the proper sensibles and a faculty for performing functions only a general or common sensibility

could accomplish, he explains briefly this diversity within the unity of perceptual experience.

> For there is one perceptual faculty, and one chief organ, but the being for it is different for each individual sense faculty, for example, the faculties for sound and for color. (*Somn.* 2.455a20-23)

There is one general unified perceptual faculty and its central organ always active in perception, but it has different ways of being according to the function performed. What it is to be an act of sight is different from what it is to be an act of tasting, and these both differ from an act of comparing the white and the sweet or perceiving motion or perceiving that one is perceiving. All functions that do not belong specifically to one of the individual sense modalities get lumped together under the function of the common sense, i.e. perception in general.

Though more fully and explicitly expressed in the *Parva Naturalia*, the same doctrine is pointed to in *de Anima*. The two works do present a "continuous and progressive exposition" with regard to the role of a central organ and common sense faculty and the unity of the perceptual faculty. The perceptual faculty is a single faculty with many sub-faculties and the organs that make up the entire perceptual apparatus should be regarded as a unitary organic structure with the central primary organ playing the most important role for all the different functions.

III

Apart from the statements of the "one thing, many functions" doctrine, it can be shown that in *de Anima* Aristotle conceived the entire perceptual apparatus, heart and outer organs, as really one organ, more like a starfish than a sun and planets; by this I mean that it is a single perceiving unit that has tentacles reaching to the surface for some of its functions, and not a collection of independently functioning perceiving units with a central organ required only for more complex judgments. First I will argue that Aristotle

holds in *de Anima*, exactly as in the *Parva Naturalia*, that the heart is the organ of touch and the term *prôton aisthêtêrion* refers to it as both the organ of touch, the first organ, and as central organ unifying the perceptual apparatus; and then by other considerations we will be able to sketch out the relation of touch and its organ to the other senses.

We have already seen that throughout the *Parva Naturalia* the term *prôton aisthêtêrion* means the heart considered in its role as source and cause, the *arkhê*, of perception and also as having a special association with touch.[24] We run across the term for the first time in *de Anima* in a discussion of touch.

> It is a problem whether [the sense of touch] is many or one, and what is the organ of touch, whether it is the flesh and what is analogous to flesh in other animals, or it is not the flesh, but this is the medium, and the primary sense organ (*to prôton aisthêtêrion*) is some other internal thing. (*DA* II.11.422b19-23)

Most translators and interpreters understand the last phrase to mean that what is primarily the sensitive part for the faculty of touch is interior to the flesh. The force of *prôton aisthêtêrion* is taken to be "what most truly should be called the organ of touch." On this interpretation there would be a different thing that is *prôton aisthêtêrion* for each sense faculty; for example, the eye-jelly would be the *prôton aisthêtêrion* for sight. If Aristotle's use of the term is consistent with the *Parva Naturalia*, we should understand it here to mean the core organ for sensibility in general. At first reading this does not seem to fit the context here because the alternatives would no longer be exclusive: either the organ for touch is the flesh or the core perceptual organ is interior. Both could be true. However, if there were independent evidence to show that Aristotle considered it as a given that touch must go along with a core organ, then the alternatives remain exclusive: either the organ of touch, which is always assumed to be identical with the core organ, is the flesh, or that core organ is something interior. I will argue that that is the correct reading and that Aristotle does assume the core organ and organ of touch are identical.

There is evidence that such an assumption is operative elsewhere in *de Anima*. The first evidence is that it allows us to make good sense of another passage that otherwise is obtuse. In *de Anima* III.2 Aristotle has just argued that it must be by the sense faculty that objects of different senses are compared and he is leading to the conclusion that it must be by a single central sense faculty, not an individual sense. In the middle of this he throws in an aside.

> By this also it is clear that flesh is not the ultimate sense organ (*to eskhaton aisthêtêrion*), because it would then be necessary for the thing discriminating [the difference between white and sweet] to judge by immediate contact with it. (*DA* III.2.426b15-17)[25]

It is most natural to understand *to eskhaton aisthêtêrion* to mean the same thing as *prôton aisthêtêrion* means in the *Parva Naturalia*, the common core organ;[26] this is because the discussion is about tasks that require a common organ. Why should this discussion about discriminating whiteness and sweetness have anything to do with the flesh and touching? This all makes sense if we take it as an underlying assumption that the sense of touch goes with whatever organ is the core perceptual organ. It is certainly natural to think that flesh is the organ of touch. Given the underlying assumption, this would lead to the conclusion that flesh is the core organ. But this is impossible because the core organ must have the capacity to distinguish the different genera of sensible qualities; flesh can do nothing more than touch things, so it has no way of receiving information about color or taste.[27] Of course, it is not immediately clear why any part of the body should be able to discern all sensibles; that requires a long story, both for Aristotle and for us. But it is a cogent point about flesh. Given the assumption about touch and the core organ, the argument here for a central organ gives Aristotle a further argument to show that flesh is a medium and not the organ of touch; he clearly has his discussion of II.11 in mind here when he throws this remark in as an aside. Aristotle argues that flesh is not the unifying

organ for all the senses, and takes this to support the claim that flesh is a medium and not the organ of touch.

The primary sense organ is primary for more than one reason. It is the core unifying organ, but it is also the organ that is first because it is present in all animals, as the organ of touch. So we could understand its use in *de Anima* II.11 to mean the first organ. Still, it would mean organ of touch and core organ, and it would remain true that *prôton* is not being used in a way that could apply to eye-jelly or the still air in the ear canal, or any other part which Aristotle considers to be the receiver for a genus of proper sensibles outside the tangibles. The first organ, for Aristotle, is also the core organ, and that is why a discussion of the core organ in *de Anima* III.2 easily leads Aristotle to remind us of the earlier discussion of the first organ and whether flesh is that organ. Why the first organ, the organ of touch, must also be the core organ, will become clearer as we sketch the picture of the senses that Aristotle has in mind.

There is more to be said about touch being the first organ. Aristotle thinks there is an essential link between having the sense of touch and being an animal. There are probably many considerations that led him to this. Even the simplest animals have a way of feeling their environment so that they can take in food; otherwise they would not survive (*DA* III.12.434b11-18). So no animal is without touch (and taste),[28] but there are simple animals that lack the three senses that perceive across external media. Every animal has touch, even if no other sense, and it must have this in order to have any other sense.

> Without touch no other sense can exist. . . . It is clear as well that necessarily an animal deprived of this sense dies; for nothing but an animal is able to possess this sense, nor is it necessary for an existing animal to have any other sense except this one. (*DA* III.13.435b2-7)

Even the animals for whom it is natural to have more than touch can lose them, or be born without them, and still live; but the only time an animal loses the sense of touch is

when it dies; at least, so Aristotle thought. After noting that the other sensible qualities in excess destroy only their respective organs, Aristotle says the tangibles in excess cause death:

> But the excess of tangibles, like hot and cold and hard, destroys the animal. Indeed, an excess of any sensible destroys the sense organ, and so too a tangible destroys the sense of touch, but touch is what defines the living [of an animal]. For it has been shown that without touch an animal cannot be. (*DA* III.13.435b13-17)

So Aristotle takes touch as a defining characteristic for animals. Hence, his statement that without touch an animal cannot be should probably be taken as a point about definition as much as about surviving.[29] It is more than an empirical fact that an animal without touch dies; if a thing does not have touch it will not count as an animal.[30]

Because the sense of touch is the first kind of perception, and perception differentiates animals from plants, possessing the sense of touch by nature would seem to Aristotle a plausible defining characteristic for animals. But it is not inconceivable that a particular animal could exist without touch as an accident of nature, and survive if it were a domesticated animal. Aristotle does not seem to allow this as a possibility. Why does he think an excess of the tangibles destroys the animal and why should he think that the other senses could not possibly exist without the sense of touch? It must be because of his assumption that the organ of touch is the heart or whatever is analogous to the heart. Aristotle was likely aware of people freezing, or burning, their feet or other extremities and perhaps losing the sense of touch locally, or the limb, and yet staying alive. The cause of these must certainly be an excess of a tangible quality. The kind of excess Aristotle has in mind must be one strong enough to destroy the sense organ, and there is good reason to think that the destruction of the heart would mean death. This, however, is not in virtue of its being the loss of touch, but the loss of the organ which is the source, the *arkhê*, of life. If touch were not linked to the essential organ for life, as Aristotle

links it, it would be easily conceivable that an animal could exist even after its organ of touch were destroyed.

In *de Iuventate* 4, Aristotle says that life depends on the warmth in the heart. The soul is, as it were, set aglow with fire in the heart, and is the source of the internal natural heat of the animal. When the heart gets chilled, the fire goes out, and death results. So excess in the tangibles destroys the animal because it upsets the heart, the seat of the animal soul, the continued presence of which depends on maintenance of the heart's warmth at the proper temperature. Because the heart is the organ of touch, the destruction of the organ of touch is the destruction of the animal's source of life. Because the heart is the primary sense organ and the source-point of perception in general, destruction of it is also destruction of what defines an animal, namely, its perceptual faculty. So, if Aristotle, in *de Anima*, holds that the heart is both the primary organ for all vital functions and the organ of touch, this would provide the basis for the connection between destruction of the organ of touch and the death of the animal which Aristotle makes in *de Anima* III.12 and 13. This is indirect support for my thesis that such a view is present in the background for *de Anima*.

We can get a better idea why Aristotle might link touch with a central chief organ by considering (1) the model he has in mind for a sense and its object, and (2) his step-by-step building up of the hierarchy of animals. Using these considerations, we can put together a schema for the senses and their relation to the chief organ.

An interesting argument offered in *de Anima* II.11 to establish that flesh must be a medium shows quite well the model by which Aristotle conceives of a sense and its object. One argument to show that flesh is the medium, not the organ, and that the organ is deep inside the body, is the following thought experiment. I will develop it more fully than Aristotle does. Suppose the body had a natural envelope of air around it which remained intact; suppose also that objects could not penetrate this envelope (or perhaps

penetrate only a little way) and that the edge of the envelope were the limit of our senses of sight, smell, and hearing. Whenever an object came against the outer envelope, then we would see it, smell it, and hear it, if it had color, odor, or was sounding. In this case we would be in exactly the same position for these senses as we presently are for touch. We would be tempted to think that there is one organ for perceiving all three kinds of sensibles, namely, the envelope of attached air. The difference between them would be considered specific, not generic, in the way that we consider hot and cold, hard and soft, wet and dry, all objects of one organ, the flesh. It is the attached envelope that misleads us; in reality, it would only be a common medium. Similarly, Aristotle concludes, we are misled by the the attached envelope for the tangibles, our body of flesh.

For touch and taste, we have a clue they must be different because taste is localized, touch is all over the skin. But where are the organs for these? Aristotle has a principle that no sense organ perceives by direct contact. He uses the model of the three senses in the envelope to suggest how it must be for taste and touch. They must be at a central organ "peering out" to the edge of the body, just as the other senses peer out from the head to the edge of the envelope in the thought experiment. It is not clear why we should accept the principle about no direct contact, except for theoretical simplicity,[31] and so the argument may not be forceful in proving that touch and taste have an organ in the middle of the body. But the thought experiment illustrates Aristotle's model for a sense organ: a peering point, a field of apprehension through a medium, and objects across the medium. Even the idea of a limit which is determinate, as in the case of touch, is applied to the other senses seriously at the end of *de Sensu.*[32] With this model in operation, just the fact that the limit of touch and taste is the skin would suggest to Aristotle that the peering points are in the middle of the body. Aristotle also has reasons to put the power source of all other life functions in the middle as well; everything will be more efficient that way (*Iuv.* 4.469a28-33). This central power source is the heart or

whatever corresponds to the heart in simpler animals as the controlling part.[33] So Aristotle comes to the reasonable conclusion that touch (and taste, which is a form of touch) is a function of that same controlling organ.

This linkage of touch with the central organ becomes even more understandable when we consider Aristotle's method of generating the hierarchy of living beings by step-by-step addition. The soul faculty of plants, the nutritive capacity, is brought up intact into animals and to it is added the perceptual faculty; and then all that an animal has is brought up into humans, but with the addition of intellect. A similar method is in operation in building the hierarchy of animals. Consider first the most basic animal. It must have a certain minimum of organic structure which possesses a power to digest food and a way of telling what is food. It must then have a way of being aware of bodies outside itself. So it must have touch and taste (though taste in the lowest animals may be no more than the touching sensitivity at the intake aperture).[34] Aristotle probably examined many animals at a low level of organic differentiation; and even these must at least notice what they bump into, take in food, and digest it. Given the "peering out" model of sensing and the fact that the limit of the field of apprehension for these animals is the edge of their body, and given that there is little organic differentiation evident in these lowest of animals, but usually a digestive organ, we can picture Aristotle coming up with a notion of the most basic animal unit, the least that anything must have to be counted as an animal. It must have some organ-like structure in the middle of the body that is the source of both digestive power and sensitivity.

Notice the unity of the perceptual faculty in this basic animal. There is one perceptual organ, but it still conceivably functions in different modes. If it has taste beyond just feel, it can perceive that this soft thing is sweet; and it can perceive motion, which Aristotle attributes to the perceptual faculty *qua* general sensibility, not *qua* touch or taste. So we have, even in simple animals, a perceptual apparatus to which the "one

thing, many functions" doctrine applies. The unity of perception is achieved by the organic unity of the perceptual organ, which, as central organ, is simultaneously the *arkhê* of life and nutrition for the organism.

As we climb the hierarchy of animals, we would expect that nothing is removed from the basic unit, while complexity is added, just as Aristotle's method is to add perceptive soul to nutritive soul, and rational soul to perceptive soul. The lower element is lifted up intact; of course, the lower element may become greatly more sophisticated at the higher level, but essentially the same. In the simple animals there is a single organ that "peers" to the edge of the body and senses things that contact it. This faculty has taste as a sub-faculty in that taste is whatever sensitivities it has at the body opening for food intake. It is essential to maintain the unity of the perceptive bodily parts even while we add more functions. The higher animals need to perceive their food from a distance and pursue it. This will require senses with a field of apprehension that goes out beyond the body. To do this, a receiving organ must be on the surface of the body. We could put full-blown perceiving units there, but then the animal's awareness would be divided. We could perhaps solve this by sending these full-blown perceptions on down to the heart; but still they would be separate bits and would need to be put together. The simpler way to preserve a unified sensibility would be to draw tentacles out from the central organ. The outer organs are just the receiving tips of these tentacles. Now the animal has five modes of peering from a central organ: two of them are internal modes of peering from the central organ to the body's edge and three are external modes that use special organs at the body surface in the head. These modes are like periscopes that provide a viewpoint from outside the animal's vehicle of transportation. Always it is one primary organ that is doing the perceiving. There is no problem now about unity because every act of awareness is a unity from its inception at the source-point of perception, the *prôton aisthêtêrion.* It is very clear, on this picture, why no animal has the outer senses without

touch. That would be to have the tentacle tip without the core organ that is its base and controller.

This starfish-like picture of an animal's entire perceptual apparatus is the picture I think Aristotle has in mind. This is not obvious in *de Anima*. The reason may be the purpose and plan of attack in *de Anima*, which discusses all the faculties of soul in general. The different sense faculties are distinguished by object. Because the definitions of the sense faculties start with the object, Aristotle has to work backwards from object to individual sense organs, then finally to the perceptual faculty as a unified whole. So it is not until Book III that we are pointed, through painstaking aporetic probes about the perception of different kinds of objects, to the unity of perception. It is understandable that this can be more easily discussed from a physiological perspective by speaking of the heart and its connection to the other organic structures involved in perception. This type of discussion comes later in the *Parva Naturalia*.[35] Although these two works differ in approach, the underlying picture in both is of a single perceptual faculty with many modes operating via a central organ, with tentacles added for the modes of sensibility that must peer through external media.

All these considerations--the explanation for why flesh cannot be the last (*eskhaton*) sense organ, the connection of loss of touch with loss of life, Aristotle's model for a sense and object, and his hierarchical scheme built up by addition--make it very likely that Aristotle assumes the organ of touch to be the central and chief organ of an animal body, the organ associated with all soul functions. This view, consistently maintained through *de Anima* and the *Parva Naturalia*, gives us all the more reason to understand the term *prôton aisthêtêrion* as it occurs in *de Anima* to mean this chief organ. This is what I take it to mean at II.11.422b22, and not that that there is something that is primarily the organ of touch in contrast to something that is not so properly the organ,

such as the eye-jelly might be called what is primarily the organ of sight in contrast to the muscular container or the eyelids.

A final consideration in favor of this interpretation is that Aristotle never uses the terms *prôton* and *aisthêtêrion* to describe what might count as the primary sense organ of an individual sense other than for touch.[36]

The only occurrences of these terms together outside the psychological works are two in *de Partibus Animalium*, again with regard to the sense of touch, and they can be treated in the way I propose, as a reference to the chief organ and organ for touch. In the first case, Aristotle is discussing how each sense organ is double, as the body has a right and a left:

> This is not clear with respect to touch. The reason for this is that the primary sense organ is not the flesh or what corresponds to it, but it is interior. (*PA* II.10.656b34-36)

The term 'primary sense organ' can easily be read as a reference to the organ of touch, the first sense organ and chief organ.

The second passage may at first seem to contradict my claim, because it first appears as if whatever is primarily the sense organ for touch is compared to the *korê* (the eye-jelly)[37] of the eyeball as what is primarily the organ for sight. But that is not truly the comparison being made.

> For [flesh] is fundamental and an essential stuff of animals. For we define an animal by its having perception, and primarily by it having the first sense, which is touch. Such a body part [the flesh] belongs to the organ of this sense, and either is the primary sense organ, just as the *korê* is the organ of sight, or is the medium taken together [with the organ], just as if someone considered the entire diaphanous medium with the *korê*. (*PA* II.8.653b23-27)

As the second alternative--on which the medium is taken together with the organ--I suggest that Aristotle is thinking of the heart as fleshy as well, and that is why some part of the flesh could be considered the organ. The two alternatives for flesh are compared to (1) the sensing part of the eye, which is the transparent jelly (the *korê*), considered by

itself, and (2) the jelly and the surrounding transparent medium together. In no way is the jelly being contrasted as the primary sensing part in contrast to some other part of the eye. There is really no need ever to speak of certain parts as the primary organs of sight, hearing, or smell. The sensing parts are clearly (as Aristotle would see them) the inside of the eyeball filled with diaphanous liquid, the air chamber in the nose, and the air chamber of the ear canal; and each of these receiving parts is in contact with the respective external medium. So it is not that the *korê* is spoken of as what is primarily the organ of sight rather than some other body part which also has some claim to be involved in seeing. It is spoken of just simply as the organ of sight. 'Primary sense organ' in this passage simply means the first organ, the organ of touch, which also is the core organ; it does not mean something that is most properly the organ of touch in contrast to something that can secondarily be called the organ of touch. If flesh turned out to be that core organ, then obviously flesh itself would be the organ of touch in just the way the *korê* is the organ of sight. We have already seen how in *de Anima* Aristotle opts definitely for the second alternative: body flesh is the medium which is continuous with the flesh of the heart, just as the diaphanous medium of air is continuous with the diaphanous liquid in the eyeball.

In conclusion, we have solid grounds for maintaining that the term *prôton aisthêtêrion* always means the first and chief animal organ in its function as the *arkhê* of the perceptive faculty. Touch comes with this organ as the first and essential sense every animal has. When other senses are present, this organ is not only the first but the central core organ, and still in a sense the only sense organ, because the others are tentacles pulled out like periscopes to peer through external media.

IV

This interpretation of the meaning of *prôton aisthêtêrion* has been applied everywhere both outside *de Anima* and in *de Anima* at II.11.422b2 in the discussion of touch. If I have provided an accurate sketch of Aristotle's picture of the organization of the perceptual faculty, one would expect every occurrence of the term *prôton aisthêtêrion* in *de Anima* to be a reference to the core perceptual organ. But if that is so, it will have important implications for our inquiry into the doctrine about the senses receiving the sensible forms without the matter.

There are only two other occurrences of the term. One is again in *de Anima* II.11.

> The tactual organ for these [the qualities of body *qua* body], i.e. the primary [or first] organ[38] in which resides the sense called touch, is the part potentially such [as the tangible qualities]. (*DA* II.11.423b30-31)

Given what has been shown, I see no reason to read *en hôi hê kaloumenê haphê huparkhei prôtôi* to mean "that is, in which the sense called touch primarily resides".[39] That certainly is an acceptable translation of the Greek; but mine is equally so. And given what has been established, if there is no hindrance in translating it my way, then it is likely correct because it is then consistent with the other occurrences of *proton* with *aisthêtêrion*, and especially with the earlier occurrence in this chapter at 422b22.

It is the remaining occurrence of *prôton aisthêtêrion* in *de Anima* for which my interpretation will be controversial and may have far-reaching significance. It is in a discussion not of touch but of all the senses in general in *de Anima* II.12. After saying that all the senses have, or simply are, the capacity to receive sensible forms without the matter, Aristotle continues:

> But the primary sense organ (*aisthêtêrion de prôton*) is that in which such a capacity resides. (*DA* II.12.424a24-25)

This is sometimes translated differently: "But it is the sense organ primarily in which such a capacity resides."[40] It is difficult to see why such a qualification would be called

for; there is nothing else in the body that could secondarily be attributed this capacity.[41] If I am right that in every other occurrence of *prôton aisthêtêrion* Aristotle means the central and common sense organ, the heart, then we are led to a perhaps surprising interpretation of II.12. The forms received without matter certainly include the forms of the proper sensibles; color, flavor, and sound are given as examples (*DA* II.12.424a22-23). But if it is the primary sense organ which receives the sensible forms, then Aristotle is not here speaking of what happens in the outer organs; and so, it is stated explicitly that an act of perceiving even a proper sensible requires the heart as the most important and ultimate receiver.[42] The use of the term *prôton aisthêtêrion* here certainly does not settle the matter. If it were established that the reception of sensible forms without the matter spoken of here had to be an event in the outer organs, that would be a strong reason to doubt my claim about the use of the term in *de Anima*, and perhaps to doubt the compatibility of *de Anima* and the *Parva Naturalia*. In subsequent chapters I will establish, independent of this text, that the heart must be the receiver of sensible forms without the matter.

My suggestion that the reception of sensible forms without the matter occurs at the single core perceptual organ is not altogether unheard of among recent commentators.[43] Rodier takes *prôton aisthêtêrion* at 424a24 to mean the heart and he calls this organ the common root of the special organs.[44] J. L. Ackrill, in discussing the receiving of sensible forms without the matter in II.12, clearly reads *aisthêterion de prôton* to mean the core organ of the entire perceptual system.

> Aristotle supposes that changes of some kind are conveyed to our sense-organs through a medium--air or water in the case of sight and hearing and smell; and that they are then passed onto the centre, 'whether heart or brain makes no difference'. This centre is itself strictly speaking the primary sense-organ. . . . The two crucial points he is making are that in sense-perception there must be a physical and physiological causal chain from object to primary sense-organ, and that the change at the end of the chain must be like, or in some way correspond to, the changes at earlier stages and at the beginning.[45]

He goes on to propose that a theory about encoding of information in the brain is one way to understand the correspondence and might be regarded as a refined version of what Aristotle means by the reception of form without matter.[46]

All I have established in this chapter goes to prove that Ackrill is exactly right about his reading of *prôton aisthêtêrion* in *de Anima* II.12. This poses a new set of constraints and options for an interpretation of what it means to receive sensible form without the matter. Since there is no reason to think the heart becomes literally red or fragrant, the physiological interpretation immediately becomes suspect; I mean the standard physiological interpretation that understands the sensible form received to be a literal case of becoming colored or smelly in the eye or nose. At the same time, a cognitive interpretation that equates reception of sensible form with simply the act of awareness of the form taking place in the individual sense faculty will turn out not to be the only alternative to the physiological interpretation. The reception of sensory information at the heart (or the brain, on our view) would certainly be a different sort of possessing form, but still a physical alteration of the organ. Pursuing this line of thought further may open up a way to understand the wax and ring analogy to be an appropriately suggestive picture of the imprinting of information on the primary sense organ. When we recognize that in *de Anima* as well as in the *Parva Naturalia* Aristotle holds a fairly complex view of the physical organization of the perceptual faculty, we have much more room to maneuver with regard to the doctrine of receiving sensible forms. There may even be room to accomodate to a great extent the textual support for both a physiological interpretation and a cognitive interpretation. The outer individual organs for sight, hearing, and smell may very well take on literally the quality of the object. But this is only the first step of the receiving process; the completion of it will be the cognitive possession of information at the heart in some physical state which is a physical imprinting of information like the seal impression on wax.[47]

V

I will close with some thoughts about Aristotle's notion of soul. At the beginning of this chapter I remarked about views that maintain there is a difference in doctrine between *de Anima* and the *Parva Naturalia*.[48] One of the reasons for such a view is that there is thought to be an incompatibility between talking about the soul having a special place in the body and the hylomorphic theory that makes the soul the form of the body and hence the set of natural functions of a living thing. But, in fact, these are not incompatible, and Aristotle speaks as if the soul has a place not only in the *Parva Naturalia*, but also in *de Anima* and the *Metaphysics*.[49] Both in the *Parva Naturalia* and the *Partibus Animalium* Aristotle says that the heart is the center of all life activities, and that is the clue to the compatibility of the two views. Even though the soul is the set of capacities for life activities, and hence either not in a place strictly speaking or in the place of the whole organism, the heart (or what is analogous to it) is the most essential organ for all of them, and the primary one in that it is the *arkhê* (source and cause) of all life functions and activity: nutrition depends on the heat and blood generated by the heart; perception takes place when the heart is stimulated; movement of the animal is initiated by the heart on account of appearances and desire which start a motion in the connate spirit (*sumphuton pneuma*) which transfers movement to the sinews and limbs; the faculty of *phantasia*, the appearance producing faculty, resides in the heart, as we will see later; and life itself depends on the heart.[50] The heart is not the soul, for the soul, as functional capacities, is not something physical or extended; still, the heart is the place of the soul because all animal activities depend on it as the *arkhê*, some because changes in the heart initiate (nutrition and locomotion), for perception because the change in the heart is the last change necessary for perception to take place.

So it should not be considered an awkward formulation or a remnant of an earlier discarded view when Aristotle speaks of perception being an alteration of the body

through to the soul.[51] This does not mean a movement through the body to an immaterial entity like the connection DesCartes' conceived of at the pineal gland. It means a series of bodily changes from the outer regions of the body to the heart, at which point the soul activity is actualized. In *de Anima* I.4, Aristotle is arguing that the soul itself does not move or undergo alteration; he concludes that it is not as if movement or change (*kinêsis*) takes place in the soul, but that sometimes there is change up to it, and sometimes starting from it.[52] Perception is the prime example of the former. What takes place at the soul is an actualization, not a true affection.[53] This is restated in *de Somno*:

> Since perceiving does not belong exclusively to either soul or body (for what is the subject of a capacity, this also is the subject of actuality; and what is called perception, as actuality, is a certain kind of change of the soul through the body), it is clear that the pathos [sleep] is not an affection of soul exclusively and that an unsouled body is incapable of perceiving. (*Somn.* 1.454a7-11)

The kind of change is an actualization, as is spelled out in *de Anima* II.5, and the physiological changes from outer organ to heart ("through the body") are a necessary condition for the actualization.

That the physiological changes in an outer organ are not enough to bring about perception, Aristotle attests to by the example of a soldier who gets struck on the temple and is temporarily blinded (*Sens.* 2.438b8-16). Presumably, his eyeball is still responding to color as normal, but the connection is severed between the eyeball and the central organ. Aristotle offers this example as proof that both the soul and the sense organ associated with the soul must be within the interior of the body. Again, we see that the soul is localized, and that the organ in which it resides must be stimulated in order for perception to take place. Or stated differently, the physical alteration of the heart is the most essential for actualization of the faculty, and hence an animal's soul, which is the faculties of the animal, is more associated with that chief organ than any other sense organ or body part.

If receiving sensible form without the matter is said to take place at the primary sense organ, the heart, and if the heart is the place of the soul for the reasons given, then it is likely that "receiving a sensible form" is a description of a state which is closely associated with the actualization of the perceptual faculty. It is either a physical state of the heart or a state of the soul, or both. Whatever the choice, it is because of the association of the primary sense organ with the perceptive soul that Aristotle can say in *de Anima* III.8 that it is the perceptive part of the soul (*to aisthêtikon tês psukhês*) that receives sensible forms (431b26-432a3). The thesis that I will be developing is that a sensible form received is both a state of the heart and a state of the soul, because it is when the heart is put into such a state that the actualization of the soul faculty takes place. This state is what the imprint on the wax is meant to represent, a state of possessing sensory information cognitively and at the same time a physical alteration brought about by the sense object, like an imprinting of a sign.

Notes to Chapter 2

[1] For example, see J. I. Beare, *Greek theories of elementary cognition* (Oxford: Clarendon Press, 1908), pp. 326-7 and Irving Block, "The order of Aristotle's psychological writings," *American Journal of Philology* 82 (1961), pp. 63-4.

[2] I will assume, without argument, that perceptions, for Aristotle, are judgments that can be stated propositionally. Nothing hinges on this for my purposes; it is just that a proposition easily expresses the content of a perception, especially a complex perception. For an argument for the propositional content of perception in Aristotle, see Richard Sorabji, "Intentionality and physiological processes: Aristotle's theory of sense-perception," in *Essays on Aristotle's De Anima*, eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 195-208.

[3] Irving Block, "Three German commentators on the individual senses and the common sense in Aristotle's psychology," *Phronesis* 9 (1964), p. 58.

[4] For example, W. D. Ross, *Parva Naturalia* (Oxford, 1955), pp. 5-7; and F. C. J. C. Nuyens, *Ontwikkelingsmomenten in de Zielkunde van Aristoteles* (Nijmegen-Utrecht, 1939), p. 257. See Block's discussion of their views in "The order of Aristotle's psychological writings," pp. 50ff. Lulofs, following Nuyens, also holds that "the view that the soul must exist in some part of the body . . . is contrary to the theory of *De anima*." See H. J. Drossaart Lulofs, *Aristotelis: De Insomniis et de Divinatione per Somnum* (Leiden: E. J. Brill, 1947), p. xiv. Lulofs gives a short summary of Nuyens work on pp. ix-xi.

[5] Charles Kahn, "Sensation and consciousness in Aristotle's psychology," *Archiv für Geschichte der Philosophie* 48 (1966), p. 63. Also, on p. 61: "Whether or not the treatises of the *Parva Naturalia* were all planned and composed at one time, they clearly form an integrated exposition of a single doctrine, with a definite relationship to the *de Anima* as far as the theory of sensation is concerned." Nearly the entire article makes up the proof of this point.

[6] The same view is held in the biological works, esp. *Parts of Animals* and *Generation of Animals*. I will note parallel passages.

[7] The same view is expressed in *PA* III.4.666a10-b1.

[8] The Greek word *arkhê* means several things all in one: beginning, source, principle, cause, ground. The richness of this word is important. To call the heart the *arkhê* is certainly more than to say it is a necessary condition. It is the most important causal condition, as well, and a cause of the highest order. The presence of a sensible object is certainly an important causal condition, too, but not of the same sort. As we will see, the heart is the *arkhê* because it is the place of the soul and so the very source of sensitivity.

[9] I will translate the article and infinitive of the verb 'to be', *to einai*, in a traditional way as 'being'. We must keep in mind that this is close to a shorthand for an Aristotelian coinage, *to ti ên einai*, "the what it was to be," i.e. essence. It perhaps would not be incorrect to translate, in many cases, *to einai* (literally, "the to be"), as essence. To be different in being is to be different by definition; what it is to be one sense modality is

different from what it is to be another. Perhaps Aristotle refrains from using his technical phrase for essence because, on his view, only substances have true essences and hence true definitions. Faculties are parts of a substance, but still each must have a way of being that makes it what it is. This is *to einai*, the "to be" for it.

[10] The view is expressed also in *PA* III.3.665a10-12 that the heart is the *arkhê* of life, sensation, and movement as well. How it is the source of movement is explained in *MA* 9 and 10.

[11] It is not made explicit whether it is the heart or something immediately surrounding the heart that is the organ of touch; but because there is nothing distinctively organ-like around the heart, and presuming that touch must have a distinct organ, not just a location, it can be concluded that Aristotle considered the heart itself to be the organ for these senses, especially since he rules out the flesh.

[12] And the *arkhê* of animal movement, as well. See note 10.

[13] Aristotle speaks of one part receiving all information at *Sens.* 440a7-9 and *PA* II.1.647a25-30.

[14] Two texts that most clearly suggest this are *Insom.* 3.461a1-8 and 461a30-b1. On my interpretation, everything that takes place physiologically during a dream takes place during perception with two differences. The external object is the present cause of the physical changes during perception and the stength of the impact is sufficient for stimulating the heart, whereas in dreaming it is residual states of the outer organs that cause dreaming and the reverse flow of blood after digestion and during sleep is needed to give the weak residual states the capacity to stimulate the heart.

[15] There are many manuscript choices for the last two lines. I construct lines 14-15 in this way: *hêi oun dis khrêtai tôi perati, duo krinei kai kekhôrismena, estin hôs kekhôrismenôn; hêi de hen, heni kai hama.* With *kekhôrismenôn* after *hôs*, the *estin* means "belongs to": ". . . as if it (the judging faculty) belongs among (is of) the things that are separable." Another choice is also quite plausible, *kekhôrismenôs*; then *estin* must be taken existentially: ". . . as if it exists separably."

[16] See note 9.

[17] A similar interpretation of the point and converging lines analogy is given by Alexander of Aphrodisias in his *de Anima*, 63,12-25.

[18] The same view, I think, is expressed by Alexander of Aphrodisias in his *de Anima* at 63,6ff. and especially at 64,17-65,1. Whatever information the central organ receives simultaneously, it judges in a single act. If this information is of a single proper sensible only, then the single unified perceptual faculty judges only of that. Alexander does not say that this single faculty is acting *qua* sight or hearing in such an instance. He says the common sense judges in all cases. But the common sense can be nothing other than the point of union of all the senses, since in this case it would not be the common sense in virtue of judging a common sensible. So, if my view is different from Alexander's, it is only in insisting that the unified faculty can be called sight, if all it is doing is seeing. This step is warranted by Aristotle's claim that the point itself can be considered as two, i.e. as the endpoint of both sight and hearing, say.

[19] The "one thing, many functions" doctrine is stated at *DA* III.2.427a2-5, 7.431a19-20, *Sens.* 7.449a19-20, and *Somn.* 2.455a20-22.

[20] A different interpretation would be that the effects subsequent to the eye mentioned here are outside of the simple seeing: simple seeing takes place first, and then subsequently will come complex perceptual judgments, or perhaps memory images, since the discussion just above is about mental images. However, in my favor is the term "mean" (*mesotês*). Elsewhere Aristotole speaks of the sense of touch as being a mean and this enables it to discern its objects (*DA* II.11.424a4). So, what is the mean is what does the perceiving. To call the central organ a single mean for sight and hearing suggests that it is ultimately the receiver of all perceptual information within an act of perception even when it involves only simple seeing or hearing, a single sense modality. At *PA* II.1.647a25ff., Aristotle calls the heart the part that is receptive of all the sensibles. What follows immediately in *DA* III.7 may also provide support for my interpretation. Aristotle says the unity of the perceptual faculty can be arrived at equally whether you consider two sensible objects of different genera, such as white and sweet, or two of one genus, such as white and black. Only if the same organ and faculty combined them would these be the same. If the eye itself united the perception of white and black, this would say nothing about the overall unity of the perceptual faculty. See also *Sens.* 7.449a8-20 and note 22 below.

[21] We might expect both *de Anima* and *de Sensu* to arrive at a formulation of the unity of perception only at the end of inquiry and only briefly because both of these works start with the sense object and work backwards, *de Anima* because the faculties are defined by their objects, *de Sensu* because it is the physical process from object to sense organ that is the focus of study. See Charles Kahn, "Sensation and consciousness in Aristotle's psychology," *Archiv für Geschichte der Philosophie* 48 (1966), p. 61, for a short discussion of this.

[22] Note that Aristotle considers that it makes no difference if one considers two specifically different sensibles or two generically different. This suggests that there are sub-faculties and a different account for the different objects in one sense modality, a sub-faculty for seeing white, and another for seeing black. The two levels of difference could be considered on a par only if it was the very same organ and faculty that perceived all sensibles. If it were not so, the sub-faculties for perceiving white and black at the same time would be in the eye, and the sub-faculties for perceiving color and taste would be in the heart. In that case, he would not be able to say of one single perceptual faculty that it is divisible in the "to be" by both difference in genera and in species. It must be that there is one organ and faculty and it's way of being is determined by the object, whether white, black, sweet, or bitter. Refer also to *DA* III.7.431a20-25, where it is said that the same requirements for unity of perception apply to perceiving white and black as much as sweet and hot.

[23] References to the common sense (*koinê aisthêsis*) are found at *DA* III.1.425a27, *Mem.* 1.450a10, *PA* IV.10.686a31. Later, we will see that the common faculty has several more functions; for instance, memory and imagination, dreams and false perceptual judgments are all attributed to the perceptual faculty operating *qua phantasia*, the appearance-producing faculty. Aristotle speaks in the same way about numerical unity but difference in account when he speaks of the relation of *phantasia* to *aisthêsis*. That which produces sensory appearances and that which perceives are the same thing,

but different in being. Dreams belong to the perceiving part but *qua* the appearance producer, *to phantastikon*. See *Insom.* 1.459a15-22.

[24] The most concise statement of this is at *Somn.* 2.455a20-25.

[25] I follow Hicks' rendition of the Greek text in considering *autou* to be correct rather than *auto* as Ross has edited it in the *OCT* text. See Hicks, *Aristotle, De Anima* (Amsterdam, 1965, reprint of 1907 Cambridge Univ. Press edition), at 426b16. It really makes no difference in meaning. Both ways it refers to the sensed object; it is just a matter of whether we take it as the grammatical object of *krinein* or of *haptomenon* (which takes a genitive object).

[26] See Hicks, *Aristotle's De Anima*, p. 446 (first note for 426b16). The primary organ is referred to as *to eskhaton* also at *DA* III.7.431a19.

[27] See Hicks, *Aristotle's De Anima*, pp. 446-7, for a discussion of how others have tried to make sense of this text. Hicks supposes that Aristotle is here assuming, with common opinion, that flesh is the organ of touch and that is why, if it were also the primary organ, the discriminating faculty would have to discriminate all the objects it compares by being in immediate contact. But the assumption here is not that flesh is the organ of touch, a view which has been clearly rejected. Rather, the assumption is that the organ of touch is the primary sense organ. Since flesh would only be able to apprehend different objects by contact, it cannot be the primary sense organ. Thus, the conclusion that flesh is a medium is further corroborated, not ignored or contradicted as Hicks would have it. This should be expected, since in *DA* II.11 the conclusion that flesh is not the primary organ goes hand in hand with its being the medium. It would be very strange if the very same conclusion here depended on flesh being not the medium but the organ. The passages which Hicks cites to show that Aristotle tends to revert to the common opinion (*DA* III.1.424b27-30, III.13.435a17, and *Sens.* 7.449a24) do not really suggest this. Aristotle accounts for the common opinion at II.11.423b12-17 and makes the common distinction of touch and taste as contact senses intelligible in terms of his own theory; so he is free later to use the common way of expressing the distinction. Furthermore, regardless of any theory, it remains true that the objects of touch are apprehended only when the object makes direct contact with the body, whereas for the others an external medium must be affected which in turn makes contact with the perceiver's body. Rather than relying on the unrefined common opinion to make the point that the organ of touch cannot be the central discriminating organ, he is attacking the common opinion to prove further his refined view. The underlying assumption is that the organ of touch has to be associated with whatever is the interior core and essential organ of the perceptual apparatus.

[28] There will always be taste as well as touch, if we consider whatever perception of food there is at the intake opening to count as taste, even if it is nothing more than feel with no flavor discrimination. Aristotle considers taste to be a species of touch because it is by contact with bodies (*DA* II.3.414b11, II.10.422a8, and III.12.434b18-19).

[29] The point has been made previously at *DA* III.12.434a30-b2, 434b11-18, 434b22-4 that an animal could not survive without touch.

[30] Aristotle often speaks of perception as the defining characteristic of animals, because what makes them different from plants is having perceptive soul as well as nutritive. If touch is the first sense, then it is the first distinguishing mark. In *Generation*

of Animals, Aristotle applies the same idea of a defining characteristic to the beginning of life: until the embryo has sensation (when the heart is formed) it cannot be called an animal, and so its state cannot be called sleep, but rather a state like plant life (*GA* V.1.778b33-779a1). Another passage where perception is the defining characteristic of an animal is *Sens.* 1.436b10.

[31] Another reason may be that a medium is necessary to separate the sensible form from the matter, as Myles Burnyeat has suggested at a seminar at Oriel College, Oxford, May 1991. But if flesh can separate a tangible from the object, why shouldn't the flesh of the heart be able to to the same? And then we could easily allow that the tongue is the organ of taste, for example, and say that it separates the sensible form on contact. It should not have been inconceivable to Aristotle that some senses use a medium and others do not, while all of them still receive a separated sensible form. So it seems that the model of an organ peering through a medium is forced on all the senses just for uniformity.

[32] On the assumption that there is such a determinate limit, Aristotle proves that all sensible objects must have magnitude. Otherwise, an extensionless or indivisible object at the limit would be both perceptible and imperceptible with respect to the very same indivisible part; which is impossible. (*Sens.* 7.449a20-449b4)

[33] *Iuv.* 3 and 4, and *PA* III.3.665a10-13.

[34] Taste is a form of touch in that it is the contact with bodies that goes on in the mouth for distinguishing what is food and taking it in. See note 28.

[35] For discussions of why there is a difference in approach between the more formal and abstract discussion in *de Anima* and the more physiological focus in at least part of the *Parva Naturalia*, see Charles Kahn, "Sensation and consciousness in Aristotle's psychology," *Archiv für Geschichte der Philosophie* 48 (1966), pp. 61, 64-5, 68. Also, Michael Wedin, *Mind and imagination in Aristotle* (New Haven, Conn.: Yale University Press, 1988), p. 3. And see Aristotle's own explanation at the beginning of *de Sensu.*

[36] He does say, in different terms, that certain parts of an organ are the sensitive parts. For example, the discussion of the air in the ear at *DA* II.8.420a2-7 may be taken as pointing out that only the air in the ear canal is the part that receives sound. One mention of *prôton aisthêtêrion* might be taken as an exception but I will discuss this below. It is in *DA* II.12, where it is said that the reception of form without matter takes place in the primary sense organ. It is an exception only if reception of form without matter is taken to be an event in the outer individual organs. But whether that is so is up for grabs; so this text cannot be an exception without first accepting a much bigger interpretative story.

[37] The transparent eye-jelly in the eyeball Aristotle calls the *korê*; though often translated as 'pupil', Aristotle evidently means the dark space behind the lens (*Sens.* 2.438b16). See Richard Sorabji, "Body and Soul in Aristotle," in *Articles on Aristotle* vol. 4, eds. Jonathan Barnes, Malcolm Schofield, and Richard Sorabji (New York: St. Martin's Press, 1978), p. 49, footnote 22.

[38] *aisthêtêriôi* does not actually occur in this clause, but, given its occurrence earlier in the sentence, it can easily be supplied with the adjective *protôi* by reading the adjective as a substantive: "the organ . . . the primary or first one."

[39] Hicks, *Aristotle's De Anima, ad loc.* Hett translates it similarly in the Loeb.

[40] For example, Smith and Hett translate *prôton* as "primarily" while Hicks and Hamlyn translate it as I have. However, neither Hicks nor Hamlyn take it as a reference to the core organ of the entire perceptual faculty as I do.

[41] At least in the discussions of touch, because of the question about flesh versus interior organ and the strong intuition that touch is in the flesh, one could take it that the flesh in a secondary way would be the organ even if the heart is primarily the organ. Of course, even here, once we understand with Aristotle that the flesh is a medium, we see that it cannot be the organ even secondarily. But the natural intuition and the fact that the "truth" about it is not obvious could justify allowing such an attribution to flesh. For the three senses that use a medium exterior to the body, there is no question what part of the body is the organ. There is, however, one consideration that could support reading *prôton* as "primarily" here. Perhaps the external medium could count as receiving form without matter in a secondary way. This would justify such an interpretation, but there is no evidence that Aristotle has the media in mind in this short discussion of receiving sensible forms. I suppose, too, one could say that the qualification is there just because of the problem with touch and not because there is ambiguity for the other senses as well. But the discussion is about all the senses, with no special emphasis on touch.

There is another way one can understand "But it is the sense organ primarily in which such a capacity resides." The contrast implied by 'primarily' can be taken to be not between what is most properly the receiving part of an organ and what is not, but with the first line of the chapter where the faculty, not the organ, is said to receive sensible forms. On this interpretation, Aristotle is qualifying the first statement: the sense faculty receives sensible forms, but this process of reception is something which is undergone primarily by the organs, i.e. it is a physical affection. This is Richard Sorabji's view, expressed in "Intentionality and physiological processes: Aristotle's theory of sense-perception," *Essays on Aristotle's De Anima*, eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), p. 213. I will deal with this interpretation in chapter 6. The issue is whether receiving sensible forms is the material description of perception or the formal description.

[42] Another place where this is stated explicitly is at *Sens.* 2.438b8-16. A blow to the temple breaks the connection of the eyeball to the heart. The soul, Aristotle says, must be within, i.e. at the heart, because if it were in the eye, the change in the eye would be sufficient for actualization of sight even when the connection to the heart is obstructed.

[43] It also can be found among ancient commentators. Alexander of Aphrodisias held that the affection by which the perceiver comes to be like the sensible object takes place in the primary part of the body, around the heart, where the soul resides. See his *de Anima*, 39,11-22. At 60,1-6, he speaks of the faculty receiving sensible forms without the matter through the instrumentality of special sense organs. They are instrumental in that they report the effect produced in them and thereby the common sense faculty comes to contain all the sensible forms (63,25-64,4). This is compatible with the special organs also becoming like and receiving sensible form, and Alexander discusses this at length as well. In the next chapter, I will examine closely the affection in each individual organ.

[44] Rodier, *Aristote, Traité de l'ame* (Paris: Leroux, 1900), pp. 332-334.

[45] J. L. Ackrill, *Aristotle the philospher* (New York: Oxford University Press, 1981), p. 66. Just previous to this quote on p. 65 Ackrill has translated the opening of *DA* II.12 and for the key sentence he has this: "The primary sense-organ is that in which the above power resides." The quoted "whether heart or brain makes no difference" is a reference to *Metaph.* VII.10.1035b25-27. Aristotle does think it is the heart, but for theoretical discussion, it makes no difference.

[46] *Ibid.*, pp. 66-7. In the next chapter, I will explain why I doubt that Aristotle had any idea of encoding. He was indeed perplexed about how the sensible form, a picture of the object, could get into the heart; but the images of *phantasia* are proof that they do get there, and Aristotle takes these to be the sensible forms in the heart (physically in, I will argue, as well as cognitively in). Nevertheless, my interpretation is in agreement with Ackrill about the heart being spoken of in *de Anima* II.12 as the receiver of sensible forms, not the outer organs.

[47] Aristotle uses the wax and seal ring analogy one other time, at *Mem.* 1.450a32. Here the discussion is about memory and it is clear that the heart, the organ for *phantasia*, is what is being imprinted. In chapter 4, I will argue that the analogy is used in both places to represent exactly the same event, the last change in perception, through the body to the soul. In *DA* II.12, the focus is on the act of impressing; in *Mem.* 1, the focus is on the impression that remains.

[48] See note 4.

[49] *Metaph.* VII.10.1035b25-27; *Sens.* 2.438b8-16; *Mem.* 1.450a27-30; *Iuv.* 3.469a5-7; 4.469a24-b7; *Respir.* 483b11. Less explicitly at *DA* I.4.408b15-18; *Sens.* 1.436b6-8; and *Somn.* 1.454a7-11.

[50] These ideas are found at *Somn.* 2.456a1-6, *PA* III.3.665a10-13, *Iuv.* 3.468b28-469a12, 4.469b6-20. In *MA* 9 and 10, the source of animal movement is linked to the heart; but this is part of a continuous discussion from chapter 6 about how desire and *phantasmata* cause movement. Also in chapter 9 and 10 the soul is said to be the origin of movement situated in the central interior organ. The role of the connate spirit (*sumphuton pneuma*) is discussed at *MA* 10.703a9ff. This is an airy like substance which apparently can be pushed and pulled like a hydraulic system and thus move the muscles. This special substance also plays the role of bringing sensory information from the outer organs to the heart. It is diffused through the blood and it is the *pneuma* in the blood which is the vehicle of transfer and what stimulates the heart. Being like air, it may be that it transfers smells, sounds, and colors in much the same way as the medium does. I discuss this further in chapter 3. See also *DA* III.9-11 for how desire and *phantasia* cause movement.

[51] *DA* I.4.408b15-18; *Sens.* 1.436b6-8; and *Somn.* 1.454a7-11.

[52] *DA* 408b1-18.

[53] See *DA* II.5 for the distinction between an actualization of a faculty and an affection, esp. 417b2-9.

Chapter 3

Assimilation of the sense organs to the sensible object

In chapter 2, I supported the claim that on Aristotle's view the heart plays a central role in all perception. The physical changes in an outer organ, such as the eye, are not all there is to the physiology of seeing. It is no doubt universally accepted that Aristotle holds that the heart, as primary sense organ, plays a role in complex perception, such as seeing that the sweet thing is white, but I have maintained that, for Aristotle, even in the simple seeing of white, with the simple judgment, "This is white," or perhaps no judgment at all, the primary sense organ is what does the seeing while it uses the outer organ as a specially designed instrument.[1] Further support for this claim will be forthcoming in the present chapter and chapter 4. While chapter 4 will examine the cognitive states of both perception and *phantasia*, which occur when the heart is stimulated by physical alterations in the individual organs, the present chapter will focus on those physical alterations that take place in the outer organs and in the heart *qua* the organ of touch.[2] I will determine both what kind of physical alterations take place on Aristotle's view and how they fit into the rest of Aristotle's physiology of perception concerning the primary sense organ as receiver of all sensibles, insofar as it can be gleaned from the biological works and the *Parva Naturalia*.

In part I, I will establish that Aristotle thinks the sensible quality perceived comes to exist momentarily in the receiving organ. This is fairly easy to establish for all the senses except sight; but this difficulty for sight might be expected, given that the transfer of color to the eye is quite different from the transfer of the other sensibles. I will conclude that Aristotle thinks that the receiving part of the organ is like the medium of perception and bears the sensible quality in much the same way as the medium does. With some qualification needed to take account of the differences between kinds of

sensible qualities and their respective media, we can conclude that an outer sense organ is physically assimilated to the sensible object, i.e. comes to possess the quality in itself.

In the part II, I will examine how the physical assimilation in an individual sense organ fits into the overall physiology of perception. This will provide a clue as to why Aristotle proposes physical assimilation as the first change that takes place when a sensible object affects a perceiver. The individual organs are supposed to capture a physical picture of the sensible object, and when the information in this picture is conveyed to the heart, the result is perceptual cognition, which in some way is like a picture in that it is a view on the world.

In part III, I will examine Aristotle's fullest discussion about the assimilation of the senses to their respective sensible objects, *de Anima* II.5. Given that there is physical assimilation in the sense organs, it is reasonable to think this is the subject of II.5. However, there are reasons to think the idea of assimilation has a broader application in this chapter, one that includes the cognitive content of the perception. Thus, the evidence of this important chapter in *de Anima* corroborates what is suggested in part two: the assimilation of a sense to a sensible object involves both the receiving of a physical picture and a cognitive view on the world.

I

My argument for the thesis that Aristotle thinks the alteration in the individual sense organs is a physical assimilation is based on Aristotle's discussions of (1) the sense of touch and (2) the media for the senses. His discussion of (1) comes as close as anything to stating such a view; his discussion of (2) indicates that the media must receive the sensible quality in much the same way as the sense organ does. For touch, taste, and smell and their respective media, this reception of the quality is a

straightforward physical assimilation. For sight and sound certain qualifications will need to be made.

The text that most obviously suggests physical assimilation is in the discussion of touch, *de Anima* II.11.

> The sense organ (*to aisthêtêrion*) able to feel, that is, the primary sense organ in which the sense called touch resides, is the part which is potentially such as its object. For perceiving is a certain kind of being affected (*paskhein ti*), so that when the object makes the organ like the object in actuality, it does so because the organ is potentially like it. (*DA* II.11.423b30-424a2)

The first clue that this is physical assimilation is Aristotle's explicit mention of the sense organ rather than the faculty. Of course, it would be possible that he is speaking of the organ only with respect to its cognitive capacity, in which case it could be perceptual awareness he is speaking of; but it becomes clear by what follows that he is speaking of a physical change in the organ by which the organ becomes like the object.

> For this reason, what is equally hot and cold or equally hard and soft we do not perceive, but we do perceive the excesses [of one of a pair of opposite qualities], since the sense (*aisthêsis*) is like a sort of mean between the opposites for its sensible objects. And on account of this it discerns its sensible objects; for the middle is able to judge. This is because with respect to each kind of sensible object it changes toward one or the other of the opposites. (*DA* II.11.424a2-7)

The organ's becoming like could not provide a reason for blind spots in a perceptual field unless the becoming like is a physical change. If the becoming like were an encoded message, or simply the awareness, it would provide no barrier to perceiving a middle range sensible object.[3] Aristotle's point must be the following. The physical organ is in a mean physical state, a state of balance between the opposites that make up its proper sensibles. An object that has the same mean state can cause no change in the organ. Only if there is an excess of one of the opposites, with respect to the mean state of the organ, will the object be able to act on the organ so that it changes toward becoming like the object; a hot object makes the organ of touch to change from its mean state to a hotter state.[4]

This principle that the organ must be physically in a neutral mean state Aristotle applies to all the sense organs.

> Just as what is ready to perceive white and black must be neither of those in actuality, but both potentially, and similarly for the other sense organs, so also for touch, the thing ready to receive must be neither hot nor cold. (*DA* II.11.424a7-10)

What is poised ready to perceive is the sense organ, that physical part that has the capacity because of its balanced composition. Its having a mean state is what makes it stand in potentiality toward all its sensible objects. During perception it changes from this state of neutrality and becomes like the object by taking on the quality in the object. What this neutral state is for sight is not so clear as it is for touch. Aristotle thinks that all the colors are certain ratios of white and black.[5] He certainly does not mean that the eyeball is some middle color in tone, like red, for then it could not perceive red. The receptive material cannot be any color; and this is just the case, since the receptive material is the transparent eye jelly. It is perhaps because the mean state for senses other than the sense of hot and cold is not really a midpoint of the opposites that he qualifies his statement about a sense being a mean, "like a sort of mean" (*hoion mesotêtos tinos*, 424a4). Every sense can be considered a mean so long as we understand the mean to be whatever physical composition that is responsive to the full range of a particular sense's proper objects. This will not always be a literal mean of the opposites, but it will be a physical state of a certain receiving material in the sense organ, a state ready to be altered by becoming like the object with respect to a quality proper to that sense.[6]

The second source of support for physical assimilation comes from Aristotle's discussion of the media for the different senses. The media must be receptive of the quality in the same way the sense organ is: "What is receptive of color is the colorless, of sound the soundless." (*DA* II.7.418b26-27) These are the transparent (activated by light) common to air and water for color, and air for sound (418b4-11, 26-28, 419a32-35).[7]

Aristotle makes it clear that the receptive material of the sense organ is continuous with its medium (419a13-16) and bears the quality due to its having the same quality-bearing characteristic as the medium. The interior liquid of the eye is transparent, so that the motion or change (*kinêsis*) set up in the transparency of the surrounding air can be received into the eye (*Sens.* 2.438b3-16).[8] This principle of continuity of similar material is applied to sound, and is even more striking because the receptive material is the same stuff as the medium, namely, air. The sounding object moves the air, and the air outside the ear is continuous with the air trapped deep in the ear (what we would call the outer ear canal). By this continuity, the motions in the external air produce motions in the internal air (*DA* II.8.420a2-5). The air in the ear canal is deep in order that it be still in itself; that way it is receptive of all differences of motions in the external air (420a9-11). It is this trapped air which Aristotle considers to be the receptive part of the ear (420a5-7). Because animals that live in water also smell, Aristotle treats the medium for smell as similar to the transparent in that it is a common property that air and water share which enables it to transfer odors (*DA* II.7.419a32-35). We can safely conjecture that the nose cavity is the place of reception for the organ of smell. The air or water in this cavity is continuous with the air or water which is the medium between the nose and the odiferous object.[9]

The two contact senses are a little different. The tangibles are mediated through the flesh (*DA* II.11.423b26). The organ of touch, the heart, is itself fleshy and I presume it is the fleshy part of the heart that is the organ's receptive material with respect to tangible qualities.[10] So the flesh of the organ is continuous with the flesh of the medium. For taste, the medium seems to be moisture on the tongue; and moisture or liquid is likewise the flavor-bearing medium outside the mouth, e.g. in the soup.[11] However, Aristotle hesitates to call moisture a medium because it is not something through which we perceive a distant quality, but the actual stuff we taste (*DA* II.10.422a9-14). This

seems to be what forces him, part of the time, to count the heart as the organ of taste, because every sense organ must have a medium between it and its object.[12] But he never suggests that the tongue and flesh are only a medium for flavors in the same way that the skin and flesh are only a medium for the tangibles.[13] Understandably so, because he would then be at a loss to explain why flavors are not perceived by the heart through any part of the skin. But if the tongue is the organ, then one sense organ is stimulated by direct contact with the object. It seems the only way out for Aristotle would be to allow that in some cases the same thing is both medium and object. If we consider moisture to be in some sense the medium, then taste is much like smell in that some external stuff (air or liquid) possessing the quality needs to be taken into or onto the organ.[14] The receiving part of the organs would be the nostrils containing the odiferous air and the moistened surface of the tongue in contact with the flavor-laden liquid. In this way, all the sense organs can be understood to have a receiving part that is made of the same stuff as the medium, is continuous with the medium, and comes to possess the sensible quality.

It can safely be concluded, then, that the potentiality of the sense organ of touch to become hot or cold, and likewise for all the sense organs, is the very same potentiality the medium has to be affected by the sense object. In both organ and medium, the soundless air receives sound, the colorless transparent receives color, the mean temperature of flesh responds to different degrees of hot or cold. Hot and cold provide the simplest example where the entire process involves something taking on the property of the object. Fire heats the air, which heats my skin and flesh, which finally heats my heart, and I feel warm. Taste and smell can be treated similarly: the flavor of the herbs is first received in the liquid of the soup and through that it is received by the moisture on the tongue (or the soup becomes the moisture on the tongue); the fragrance of the apple is received first by the ambient air and then by the air in the nose (which is the ambient air inhaled, just like the soup brought onto the tongue).

This simple model whereby a medium and then an organ literally become warm or smelly requires some modification for sight and sound. The air does not become colored like the rose nor tone-producing like the bell. Smell is a distance sense, like these two, but yet differs from these because its medium does become smelly. Smell has characteristics of the contact senses on the one hand, and characteristics of the other two distance senses on the other. Aristotle recognizes this in the last part of *de Anima* II.12 where he ponders the affects of sensible qualities on non-sentient bodies. Although on first thought it may seem that the sensibles for the three distance senses cause no change in non-sentient bodies, further reflection shows that sometimes they can make indeterminate bodies, like air, come to possess the sensible quality. The most obvious examples are odors in air. If the air smells, and we breathe in the air that smells, then the nose comes into contact with the sensible object just as the tongue does. At the same time, the sense of smell detects odors coming from a distant source, just as we hear sounds and see colors that originate from or reside in a distant object.[15] The suggestion in II.12 is that sound also can pass into indeterminate objects and make them possess sound (424b12-16), but no example is given. We do say that bird songs are "in the air." At the same time, Aristotle does not allow that the ambient air becomes a sounding object in the way that air becomes a smelly object; air is sounding only when it is trapped by smooth and hard surfaces (*DA* II.8.420a7-9). Even though Aristotle does not allow that the intervening air is literally sounding, in the way that the brass bell is, it seems clear that the air in the ear canal, on his view, does sound with the same sound as the bell. The purpose of the ear canal, according to Aristotle, is to be a resonating chamber with hard and smooth surfaces where the motions in the air can once again become sound and it is the air enclosed in this chamber which Aristotle considers to be the receptive material for the ear (420a3-11). So it seems that the medium for sound is more like that for color than that for odors in that the air becomes neither colored nor sounding, but air does become

smelly. Still, the organ comes to possess the sound in much the same way as the sounding bell does, albeit on a smaller scale, and in this it is like smell, touch, and taste. These differences among the distance senses suggests a more complex model: the media in some cases transfers the quality without literally taking on the quality, i.e. without manifesting it as a property of itself. Still, it does bear the quality along to the organ, and this is because it is receptive of the quality.

Is the quality received always manifested in the sense organ? The evidence so far indicates Aristotle thinks it so for touch, taste, smell, and even hearing. Does Aristotle think that patches of color come to exist in the eye-jelly when seeing occurs? From what has been shown about sound, we can make a conjecture about the eye-jelly. Just as the indeterminate air is incapable of being a sounding object (*DA* II.8.420a7-9), the transparent also is not colored in itself (*DA* II.7.418b4-6). We are aware of the transparent only because of the colors of something else, just as we are aware of the intervening air *qua* medium of sound only because of the sounds that come to us from other things. Aristotle speaks of the sounding object causing a motion or change (*kinêsis*) in the air (*DA* II.8.420a3-11); similarly, it is the nature of color to move or change the actualized, i.e. light-filled, transparent (*DA* II.7.418a31-b2). These movements in the media bear the qualities without the media themselves becoming sounding or colored. In both cases the media are indeterminate. I suggest that in both cases what causes the quality to remanifest itself is the confinement of medium-like material in the sense organ. Because of the spherical confinement of the eye-jelly, I conjecture that Aristotle thought images show there, just as the confinement of the air between smooth and hard surfaces in the ear makes the vibrations in the air to once again resonate as sound.

Such a view actually makes sense of Aistotle's discussion of the transparent in solid bodies. The transparent in an unbounded state is actualized as light, but when

bounded in a body, it is actualized at the surface as color (*Sens.* 3.439a26-29). The transparent in a body is conditioned by its confinement so as to manifest color (*Sens.* 3.439a18-439b18). Similarly, the jelly in the eyeball, like a crystal ball, receives color from the medium and reproduces a refracted image of surrounding objects. At least, this is a quite plausible conjecture about Aristotle's view. He says that a liquid substance is more easily controlled and confined, and that is why the eye has liquid instead of air (*Sens.* 2.438a15-16).[16] Being confined is a property of a solid body. All solid bodies, Aristotle says, contain the transparent to a greater or lesser extent, and it is at the boundary of the object that the transparent manifests the color of the object (*Sens.* 3.439a21-30). A crystal ball or confined ball of a thick clear liquid is much like the medium in that it is fully transparent and so can bear all colors, but it is also able to manifest the colors (the refracted images)[17] like the object because of the confining boundary.[18] In this way hearing and sight would fit the same paradigm. The medium-like material is in a special condition at each end so as to manifest sound or color, something that the intervening medium does not do; instead, the medium, being an indeterminate mass, only bears the sound or color to a place where it can again be manifested. Some kind of change (*kinêsis*) takes place in the indeterminate medium to effect the transfer, but it is not the straightforward acceptance of the sensible quality by the medium such as what takes place for heat, odors, and flavors.[19]

Further support for my interpretation might be found in Aristotle's comparison of echoes and light. It is not just in sense organs that the *kinêsis* borne along by a medium is turned into a manifestation of the sensible quality. I have mentioned a crystal ball as an example outside of the organ of sight. An echo in a canyon is an example outside the organ of hearing, one that Aristotle mentions himself (*DA* II.8.419b25-420a2). The condition Aristotle describes as causing an echo, a body of air which is prevented by confinement from dispersing, is precisely what he attributes immediately following to the

ear canal (420a3-11). Aristotle compares echoes to the reflection of light. Just as reflection makes it so light is everywhere, sound, he suggests, is always rebounding, but not always noticed. Just as smooth surfaces are needed to make light rebound in unison so as to cause shadows, a smooth object is needed to make the air a continuous unity and produce a sound. This discussion of echoes, although it confirms what I have said about hearing, is not certain support for my extension of the model to sight. The example about light, smooth reflecting surfaces, and shadows in no way is meant to illustrate what happens in the eyeball.[20] Nevertheless, it indicates that Aristotle did consider certain natural phenomena to be instructive for our understanding of the sense organs because of similarity. My suggestion of the crystal ball is in the very same vein, and although not mentioned by Aristotle, has been shown to fit his own discussion of the properties of the transparent.[21]

Let me summarize my interpretation of Aristotle thus far. According to it, all the senses are the same in the following way. There is a receptive material in the sense organ that is contiguous with the medium, which is, in turn, contiguous with the object. The object effects changes in a medium which in turn causes the receptive material to come to possess the same quality in the object. For some media, the medium comes to possess the quality temporarily, just as the sense organ does, but for hearing and sight, the media, although bearing the quality in some changed state, does not manifest it as a temporary attribute of itself. This is because the medium is unbounded; when confined, as it is in the object and in the sense organ again, it does manifest the quality. A smooth surface surrounding and trapping air manifests sound; the confining boundary of a solid or liquid manifests color. Confinement is not the entire story: the receptive material of a sense organ must also be receptive of all the qualities proper to the sense. Hence, the air in the ear canal is still and the eye-jelly is fully transparent.[22] So, too, the other sense organs are made of stuff that is receptive of the whole range of the sense's proper objects, air for

odors, moisture for flavors, flesh for tangibles (because it is neither hot nor cold, soft nor hard, wet nor dry). For these three kinds of sensibles, the receptive stuff in the organ is affected by the sensible quality in the same way as the medium; confinement or indeterminacy make no difference.[23]

Let me reiterate that my suggestion that Aristotle thought the eyeball possessed color images like the refracted images in a crystal ball is only a conjecture. For the other four senses, it is sufficiently clear that Aristotle held that the sensible quality comes to exist literally in the receiving organ. It therefore makes sense to try to assimilate the remaining sense.[24] Later, we may have other reasons for modifying this conclusion. In the final analysis, it may not matter much whether color patches come to be in the eyeball. The reason will become clear if we look at how the physical assimilation fits into the entire physiological story, including the heart and the *sumphuton pneuma.*

II

With a fuller picture of the physiology from first reception to stimulation of the primary sense organ, we will be able better both (1) to ascertain the correct reason for Aristotle's holding a theory of physical assimilation in the sense organs, and (2) to understand why ultimately it would not matter whether or not the eye-jelly literally becomes colored. Indeed, given that the heart must receive all the sensibles by some means other than straightforward physical assimilation, it would be quite satisfactory if, for all the sense organs, there were only some information-bearing changes like what happens in the media for sound and sight and not necessarily the manifestation of the quality itself. This becomes clear when we look outside the *de Anima.*

The clearest statement that seeing does not take place solely in the eye is found in *de Sensu.* After pointing out the necessity of a transparent material in the body for receiving visual information, Aristotle supports this claim by showing that the soul and

primary sense organ is interior and so could not receive the visual information unless there was transparent material acting as the receptor, which can then transmit the information to the soul.

> For the soul or the organ of the soul is not in the eyeball at the exterior of the body,[25] but clearly is within. Hence, the inside of the eyeball must be transparent and receptive of light. This is clear from what happens: soldiers wounded in battle by a blow to the temple so as to sever the passages (*poroi*) from the eye experience darkness as if a lamp was put out. This is because the transparent stuff, what is called the pupil, has been cut off, like a lampscreen [being put in front of a lamp]. (*Sens.* 2.438b8-16)

The passages spoken of are the optic nerve sheaths. When these are cut or temporarily obstructed, the soul and its (primary) organ lose contact with the first receptor for the sense modality of vision. The fact that this happens Aristotle offers as support for the claim that the soul is within. But that the soul is within supports the claim that a transparent substance is essential for the eye. Otherwise, it could not receive and transmit visual information inward.

From this, it is clear that the eyeball on its own is not a thing that sees. It merely passes on information and is capable of doing so because it has transparent stuff inside it. Its function is little different from the medium, except that it is a part of an animal body and is the point of first reception for the animal. What, then, happens between the eyeball and the heart? If transparent stuff in the body is necessary to first receive visual information, the same kind of stuff might be necessary to get it down to the heart; and then what? About this, Aristotle says little and is usually satisfied to say that the information is carried by the blood.[26] What little else we can make of it must come from brief discussions of the passages (*poroi*) that lead from the sense organs to the heart and of the connate spirit (*sumphuton pneuma*) that runs in or fills them.

Aristotle says that all the outer organs for the distant senses are connected to passages.[27] For smell and hearing, the organ just is a passage full of *sumphuton pneuma* which makes a connection between the outer medium and the small blood vessels around

the brain which in turn connect to the heart; the eye, in contrast, has a truly independent organ made of transparent jelly.[28] Aristotle apparently thought the optic nerve was a continuation of the transparent fluid and that it transmitted the visual information from the eyeball to the same blood vessels in the brain. Once the information gets there, then changes or movements (*kinêseis*) in the blood are carried down to the heart (*Insom.* 3.460b28ff.). We can conjecture that it is the *sumphuton pneuma* in the blood which is the carrier of the *kinêseis*.[29] It is clearly stated in *de Motu Animalium* 6, 9 and 10 that the *sumphuton pneuma* is the means by which the soul transmits physical movement to the body, initiated by *phantasia* (imaging or representation of an object) and *orexis* (desire); the *sumphuton pneuma* resides at the heart, the place of the soul; it is a stuff that expands and contracts and strength is given to the muscles when it expands (*MA* 10.703a9-22).[30] Elsewhere it is said that *sumphuton pneuma* is throughout the body (*de Spiritu* 2.481b19, 482b33).[31] It is most probable that the *sumphuton pneuma* is the intermediate between soul and body for intake as well as output, bringing in sensory information and initiating movement in muscles.[32] A thumbnail sketch of this view, without mention of the physiological details, is suggested in *de Anima* when Aristotle says the movements associated with such functions of the soul as pitying, learning, thinking, and getting angry, sometimes penetrate to the soul, sometimes start from it (*DA* I.4.408b15-18).

The *sumphuton pneuma* is closely related to air. A discussion of how it is maintained in the body suggests that air must be available for the *sumphuton pneuma* to be maintained; but there is a puzzle about how fish maintain theirs (*de Spiritu* 2.482a6-27). The source of fresh *sumphuton pneuma* is the lungs and *sumphuton pneuma* pervades the whole body (*de Spiritu* 3.482a34).[33] It must be air-like, and is even described as hot air (*GA* II.2.736a2), especially the hot air associated with the inside of an animal body. It is especially associated with soul in that a soul faculty requires a physical substance that is more divine than the elements and analogous to aether; and for

whatever kind of soul, its own appropriate kind of hot substance is the fertile part of semen, bearing the life principle.[34] To sum up, *sumphuton pneuma* is a special hot air which the soul uses as its instrument for all enmattered animal activities.[35] So we can think of *sumphuton pneuma* as hot air with life force (which is to say, soul-imbued).[36]

Given this, it is probably no contradiction on Aristotle's part to say at one point that the passages of ear and nose are filled with *sumphuton pneuma* and at another point that the organ of hearing is of air and connected to an empty space in the head (presumably filled with air). In fact, the air of the ear is described as *sumphuê* (naturally joined, part of the animal). It may be that all air that is within the body Aristotle thought to be of a slightly different sort because of the presence of life and heat in it and the function it serves for soul faculties, and hence called it *sumphuton pneuma.*

Here is a sketch of the perceptual organs and their connection to the heart as Aristotle conceived them. The liquid transparency of the eyejelly is continued on through passages (what we call the optic nerve sheaths) to the brain. Since *sumphuton pneuma* pervades the entire body, it probably is mixed with the liquid in these passages. The air of the nose cavity and ear canal perhaps both link with passages inside the head also filled with *sumphuton pneuma*, in this case not mixed in liquid but simply internal hot air with "life force," and by these internal passages connect to the brain. The end points of all these passages link with *sumphuton pneuma* in the blood which carries the information from brain to the heart. The *sumphuton pneuma* in the blood is also air-like, but in minute bubbles in the blood, perhaps. Whether this means that the *sumphuton pneuma* transfers visual information in virtue of its transparency and odors and sounds in virtue of the same property air has with respect to these is not clear; but it becomes a little far-fetched. I am more inclined to think that Aristotle's view was that the *sumphuton pneuma* in the blood, just like that at the heart, has unique properties that enable it to bring sensory information to the heart and present it as cognitive information. Aristotle

had no idea what these properties might be, but they are whatever is necessary for cognitive activity. A contemporary philosopher or physiologist might suggest that the information gets encoded.[37] But I do not think Aristotle had such an idea. The *sumphuton pneuma* is just a mysterious vehicle that bridges the gap between the merely physical presence of a sensible quality in the outer organ and its cognitive presence in the soul and its organ, the heart. As Beare says, "if we could discover all the properties and functions of *sumphuton pneuma*, we should have penetrated to the inmost secrets of sense perception" as Aristotle understood it.[38]

I leave open the slight possibility that Aristotle thought the bubbles of *sumphuton pneuma* in the blood carry (nearly instantaneously?) tiny bits of odor, captured bits of sound, displayed color images, at the same time that these sensible qualities are affecting the outer organs. But are these little bubbles stored in the heart for imagination? It seems inevitable that at some point we need to allow that the *sumphuton pneuma* has properties more extraordinary than what the external media could conceivably possess and it seems more plausible to allow this property to be present in the blood. After all, how is an image or a sound or smell going to meander through the blood vessels? The passages from the brain to eyes, ears, and nose are full of *sumphuton pneuma*, and I suggest that in the blood the transfer is different from what takes place in the media and outer organs. Wherever we begin to attribute extraordinary properties to the hot air vehicle, it remains true that the first reception of a sensible quality is no more extraordinary on Aristotle's view than the transfer through the medium. Still, even at this point, since the organs are part of the body, the receiving material may rightly be called *sumphuton pneuma* or filled with it. This would be one way of saying that, although the outer organ is continuous with the medium and is changed in the same way, the change in the organ is still special because it takes place in the context of an animal body imbued with life and it plays a role in serving a soul faculty.

While granting its special role in serving a soul faculty, we still must conclude that the reception in an outer organ in itself is completely non-cognitive, just as the change in the medium is. I think this underscores the import of Aristotle calling the heart the *arkhê* of perception.[39] It is truly the sourcepoint and cause of all perceptual cognition; cognition can be said to take place nowhere else. This is because it is only when the heart is stimulated that the perceptual faculty is actualized, which actualization is a change in the soul. A perceptual cognition and subsequent memory and imagination are states of the soul and at the same time states of the primary sense organ, while the alteration in an outer organ merely registers a sensible quality by physically bringing it into the body. The *sumphuton pneuma* reaching from heart to sense organs via blood vessels and passages is the intermediary between the non-cognitive registering and the change in the soul. It too is a physical stuff, but with special undetermined properties that must bridge the gap between the non-cognitive and the cognitive, between body and soul. The end result is perceptual cognition and the retention of sensory information in *phantasia* (memory and imagination). Aristotle is equally elusive, as we shall see in the next chapter, about how the heart retains information, and understandably so; on his view, it is enough to say that it is the place of the soul[40] and that perceptual cognition and states of *phantasia* (memory and imagination) are psycho-physical states.[41]

Given that the physical states of the heart cannot conceivably be physically like the sensible object, even on Aristotle' view, we must wonder why it is important that the outer sense organs literally manifest the sensible quality perceived. That they do on Aristotle's view I take to be the primary evidence for claiming Aristotle did not have any notion of encoding. The fact that the *sumphuton pneuma* is medium-like suggests that no transformation is necessary, but just a continuation of what is already taking place in the medium, or at least something not too different from that. At some point, and certainly at the heart, it does have to be different, but Aristotle gives no indication that he grasps how

different.[42] Without a notion of encoded information, it is quite understandable that the only alternative is to bring the sensible quality itself into the perceiver. Furthermore, Aristotle had resources in his physical theory that could easily explain how that would happen: the agent makes the patient like itself, object to medium, and then medium to receiving organ.[43]

Furthermore, the step from having an accurate physical picture in an outer organ to having an accurate cognition may not have seemed so great for Aristotle as it does for modern philosophers. Perhaps the idea of a picture (not just visual, of course)[44] is the key to understanding how Aristotle can slide so easily from the non-cognitive to the cognitive. The goal is to get the picture (the sensible forms) into the mind or soul, and in some way, it is obvious that to get it into the soul at the heart it must first be got into the body in the sense organs with complete accuracy. Surely, the one "presence in" is non-cognitive and not much different from the presence in the external object, while the other is cognitive, and Aristotle recognizes this in distinguishing soul from body and saying that perception is a change in the body through to the soul.[45] But how radically different are they? That may depend on one's approach. For Aristotle, they are two modes of existence of the same sensible form, not radically discontinuous. After all, a red rose imagined is just like a red rose in form, the first being sensible forms in the mind (a state of the soul), the second sensible forms in a physical object. Mediating between these two modes are the media, the receptive medium-like material in an outer organ, and the *sumphuton pneuma* in the passages, blood, and heart. Why shouldn't the intermediate step be an accurate physical picture of the sensible forms in the object captured in the animal body's receiving part?

However, to get an accurate picture in the outer organ, first the medium must receive an accurate picture. If we can stretch the notion of having a picture so that it can apply to the media, even to the *kinêseis* in the transparent caused by colors, then it will

become irrelevant whether the eye-jelly really becomes colored. For most of the senses, there is no problem in counting the reception by the medium as being a picture of the sensible in the object. The air contains exactly the same fragrance as the rose emits; the flesh is warmed within its own range of responsiveness proportionately to the position of the object's temperature between not being hot or cold and being very hot or very cold. What then of the transparent? The *kinêseis* in it must count in some sense as an accurate picture of the color of the object, even though there is no color visible in it. If Aristotle were to countenance this as a "picture" of the object, then he needs nothing more in the eye-jelly.

Such an interpretation could be supported in two ways. First, Aristotle says that the media of sight and sound are receptive of color and sound (*dektikon khrômatos* and *psophou*, *DA* II.7.418b26-27). Being receptive of the sensibles in general (*dektikon aisthêtôn*) is a defining characteristic of the senses (*DA* II.12.424a18). A sense faculty does receive a picture, so it is likely that the receptivity of the media can count as receiving pictures. A second support comes from Aristotle's statement that the transparent is visible, not in itself, but on account of the color of something else (*DA* II.7.418b4-6). In a starless outerspace, looking away from a light source behind, the transparent would be invisible, even though, in Aristotle's terminology, it is in an actualized state because of the light source. If a red object is put out in front of me, then only the sensible form red is coming through the medium to my eyes (we would say only red light waves are being reflected), and on account of that, I would become visually aware of the medium in between. It is only on account of red coming through that it is visible, so it must be red, in some sense.[46] Considered in one way, there is little difference between this red in the transparent and bird songs or the rose's fragrance in the air. If we abstract from the difference in physics for the different sensibles, they are the same in this: the medium receives the sensible quality of something else, and is itself

sensible on account of that borrowed quality. Aristotle says the quality in the medium is *allotrion* (foreign), rather than *kath' hauto* (its own) (*DA* II.7.418b4-6). In itself, the medium is colorless, soundless, odorless (*DA* II.7.418b26-27, II.8.420a7-8). So, when there is transmission, each medium has only a borrowed quality. In whatever way the borrowed quality is there, that way may count as having a "picture" of the source, and so would be all that is needed for the receiving material in a sense organ. Hence, the eyeball need not have red images any more or less than the external transparent.[47] The same could be said about the ear canal; it might not actually reproduce sound, on Aristotle's view, but just collect very accurately the *kinêseis* that are in the ambient air.[48] For smell, however, there is no question that the odor is literally in the air, both the external air and the air taken into the nostrils. It still is a borrowed quality, but also can be said to become an attribute of the air, especially so in certain circumstances such as in a closed room; again, confinement plays a role in increasing the degree of manifestation of the quality in the medium.

Aristotle tried to apply the same model to all the senses, and where this does not work very well, he tended to keep silent. Hence, we have been forced to conjecture about his physiology of sight. Later commentators were more willing to recognize the great differences between the different senses and their respective media and they fit them into a scale of more corporeal versus more spiritual. Because color is neither dispersed by the material properties of air nor muddled by contrary colors passing through the air, it was said to have a spiritual existence in the air and in the sense organ, as opposed to a natural or material existence; next follow sound, for which wind can disperse, but different sounds remain distinct; and then smell, for which there can be both dispersion and muddling in the medium. Touch is the most corporeal because the medium and the sense organ contains qualities such as hot and cold in the same way as the objects, i.e. by being simply hot or cold itself.[49] The difference in physics for each

sensible was thus respected. The perception itself, in any sense mode, came to be considered as a spiritual change, regardless of the varying degrees of corporeality accompanying the transmission and reception.[50] In this scheme, there is no need for any images in the eye-jelly nor even any physical changes in the transparent medium. But this scheme is foreign to Aristotle.[51] True, he would consider that there is a different kind of change in all perception, over and above the physical changes in the organs, namely the actualization of the soul's faculty, but there is no place for varying degrees of spirituality within the changes in the organs and media. Thus, even if Aristotle was not sure whether actual images arise in the eye-jelly, he would have considered that some physical change took place that accomplishes the transfer of the sensible quality separated from the object and that in some sense this change could be considered a physical picture of the sensible quality.

Earlier, I offered what is a very plausible interpretation according to which sound and color are reproduced in the outer organs. I think that remains the best choice. Crystal balls and canyons suggest that the media for sight and sound are capable of making the borrowed color also their own momentarily under conditions that are exactly like what are present in the respective sense organs.[52] On this first interpretation, what most properly counts as a "picture" of the object is when the medium does reproduce it.[53] Still, the runnerup interpretation that counts the changes in the media as accurate pictures as well has much to be said for it.[54] Either way, the result is that there are physical pictures of some sort in the outer organs and these will count as physical assimilation to the object.[55] That is why it really matters not whether Aristotle thought the eye-jelly becomes literally colored during seeing. All that matters is that a physical picture is captured, which in an unexplained way becomes a cognitive picture physically grounded in the *sumphuton pneuma* at the heart.[56] In the next section, we will see that this

cognitive picture, too, must count as a case of having been assimilated to the agent object.

We can conclude that Aristotle sees no need to change the form of the information by encoding, such as we understand the change from light waves to electro-chemical signals that takes place at the retina and then the brain. He goes no farther than to say that the organs receive the sensible qualities of each genus and the heart receives all sensible qualities.[57] My interpretation is that Aristotle is referring to merely physical assimilation of the quality in the outer organs (and in the flesh of the heart *qua* the organ of touch) but to cognitive assimilation at the heart (realized somehow in the *sumphuton pneuma* there). The point of collecting the sensible qualities in the outer organs is not as the receiving end of a transducer that changes the form of information, but only as a means of collecting an accurate "picture" of the world, which is then sent on as an accurate "picture" in some form. The assimilation continues on in a medium-like, but also life-filled (= soul-filled) material called *sumphuton pneuma* which brings the "picture" to the primary organ, which is seat of the soul. The end result, both the perceptual cognition and the retained memory image, is still a picture (at this point a combined picture), but now a quite different sort of a picture, namely the content of a cognitive state. At this point, my use of the idea of a picture is metaphorical. This picture is simply having a perceptual view on the world, being aware perceptually; it is not an internal icon that is viewed or interpreted. I suggest that Aristotle did not have any motivation to dwell on, what for us, is a vast difference between the first picture, the physical replica in an outer organ, and the last picture, the view on the world. The principle that an agent makes a patient like itself provided the tool by which he could explain the physical interaction of object and sense organ; awareness he accepted as a basic fact; and by thinking in terms of analogy, he could weave the physical and the psychic together. In section III, I will speak more at length about how the notion of

becoming like (the result of an accurate becoming like is a picture of the agent) is stretched by analogy to the perceptual awareness.

I have provided an interpretation of Aristotle's physiology and psychology of perception according to which there are two completely distinct stages, first a non-cognitive change in an outer organ, and second a change at the primary sense organ which is both physical and cognitive. Completely independent confirmation for this interpretation can be found in *Physics* VII.2. The general principle being argued for in that text is that all things causing *kinêsis* do so by direct contact with the thing moved or changed (244b2-5, 245a2-11). This applies to qualitative alteration as well: a hot fire touches the air, and air the body (245a6-7). Perception involves qualitative alteration and it too illustrates the working of the principle.[58] A second principle for qualitative change is that the alteration is caused by the presence of the very same quality in the agent (244b5-6, 245a2-3); something already hot makes something else hot.[59] In the following passage, Aristotle treats the qualitative alterations in sense organs on a par with those in other bodies:

> For we say that what is altered is the thing becoming hot or sweet or thick or dry or white, and we say this in the same way of both the inanimate and the animate, and again of the animate both in the parts not able to perceive and in the senses themselves. For the senses too are altered in some respect (*alloiountai pôs*), since an act of perception is a change (*kinêsis*) through the body, the sense undergoing a certain kind of being affected (*paskousês ti*). (*Phys.* VII.2.244b7-12)

The part of perception being focused on as a kind of affection is the *kinêsis* through the body, the most obvious being the alteration in the outer organ, not the change brought about at the endpoint in the soul. Since this affection is in the class of all qualitative alteration, it must take place in the same way. This strongly suggests that if I were to make a realistic teddy bear with eyeballs of transparent jelly, a nose cavity, and ear canal, and even further, a body of flesh-like consistency (a mean of all the tangibles) connected to a flesh-like artificial heart, what happens in each of these artificial organs is exactly

what happens in an animal, because the affection is no different, sentient or non-sentient. The fake eye-jelly receives color because it is transparent, the air in the teddy bear's nose and ear receive smell and sound just as it is in the medium, and the artificial flesh will be warmed at the fireplace and pass on the warmth, albeit proportionately, to the fake heart.

Of course, not everything that happens in the animal will happen in the teddy bear. Lacking a sentient or animal soul, it lacks life and the life-imbued *sumphuton pneuma*. The text continues:

> So, in every way inanimate (*apsukhon*) things are altered, the animate (*empsukhon*) things are; but the inanimate not in every way the animate. That is (*kai*), in the one case [the inanimate or unsouled] it does not notice (*lanthanei*), but in the other [the animate or ensouled] it does notice (*ou lanthanei*) when it is affected. (*Phys.* VII.2.244b12-245a1)

Here it is clear that it is the soul part of perception that is under discussion. Our teddy bear's "heart" is not enlivened, and so, even though it may register the warmth of the fire, it does not feel it, and even though its "eyes," "ears," and "nose" register colors, sounds, and smells, the information is not transferred to the heart. Even if we put vessels and passages, with blood-like stuff and hot air, it would not be *sumphuton pneuma* because no life is present. It would be only hot air, and even though it might transfer a little the colors, sounds, and smells, being medium-like, it cannot do it in the right way to result in cognition at the heart. In this teddy bear there is physical assimilation in the individual sense organs, just as in the media, but no cognitive assimilation at the heart.

Aristotle says that the animate body notices the affection. I take this to mean that the affection, although no different in it as a physical change than in other bodies, plays a role in cognition. I do not think there is any implication that in the animal the immediate object of cognition is the affection in the outer organ. That would not be in the spirit of Aristotle's direct realism. It is significant that Aristotle does not use the verb *aisthanesthai* (to perceive); instead he says that the affection does not escape notice (*ou lanthanei*). It is not that the inanimate do not perceive the affection while the animate do;

it is just that in the animate body there is a further cognitive effect resulting from the affection, namely perceiving, which does not happen in the inanimate. This is because of the presence of sensitive soul and its primary organ.

We can conclude that Aristotle conceived the individual organs as receptors of a physical picture of the sensible object, and then the information in the picture is carried on to the heart by *sumphuton pneuma*. In the process it becomes a cognitive picture, a view on the world, somehow physically grounded or realized in the *sumphuton pneuma* in the heart. This fills out what Aristotle means when he says that perception is a state of the soul that comes to be through the body.[60]

III

The manner in which perception is an affection is developed further in *de Anima* II.5. The first part of the chapter develops the point that anything affected must be only potentially like the agent of change, and become like it during the change; and this applies to an act of perception as well. The second part deals with the complexity that arises because perception is a faculty, the actualization of which is not merely an accidental change in the perceiver. At the end of this discussion, Aristotle countenances the use of the term 'affection', with qualification, to apply to the change of state from mere capacity to actualization of a faculty; and, immediately following this, he repeats that what perceives becomes like the sensible object. Since the actualization of the faculty is a cognition, an act of perceptual awareness, and the becoming like is juxtaposed with the actualization in the chapter's conclusion, one wonders whether the becoming like principle is meant to apply to the content of awareness. But Aristotle makes no indication that he is changing or broadening the application. So what is the becoming like involved in perception? A physical assimilation or the awareness of the object, or both? The discussion of capturing a picture in the last section gives some

ground for thinking it should be both. In this last section I will show that such an interpretation best fits *de Anima* II.5

The subject of discussion in this chapter from beginning to end is *to aisthêtikon* (*DA* II.5.417a6 and 418a4), the thing able to perceive, and this can be understood either as the organ which possesses the faculty of perception or as the faculty itself, the part of the soul that perceives, or perhaps as both, the psycho-physical unit that perceives. It is also unclear at what level to apply the term, whether the macro-level where it is the whole living animal that is *to aisthêtikon*, or the organ level, where it can either be (1) the individual organ or (2) the perceptual apparatus as a whole and chiefly the heart as seat of the perceptive soul. The final claim of the chapter is that *to aisthêtikon* is potentially such as the object already is actually, and that, as it undergoes alteration, it is first unlike but becomes like the object.

If we understand *to aisthêtikon* to mean always the soul faculty, then the becoming like would be cognitive. But this interpretation runs into difficulty in the beginning part of the chapter. Soon after beginning chapter five, Aristotle raises a puzzle:

> Why doesn't there arise perception of the senses, i.e. why do they produce perception only of external things, given that there is in the senses fire and earth and the other elements, which we do perceive either directly or indirectly by their properties? (*DA* II.5.417a2-6)

The solution is that *to aisthêtikon* is not in actuality, but only in potentiality. If this refers to the soul faculty, then the solution means that the power of perceiving is just that, a power, not an actuality on its own, and it needs something else to actualize it.[61] This is hardly astounding. But worse, it makes the mention of physical elements that make up the sense organs quite irrelevant and the motivation for the puzzle quite elusive. After all, there is no puzzle about our not being able to see the eyeball; it is for the same reason that we cannot see our liver--they are not in the field of apprehension. And the fact that

we cannot see the eyeball in no way proves that the sense faculty is a potentiality; even if our senses were continually activated by external objects, we still would not perceive the organs themselves. So asking why we do not perceive the sense organs does not seem the right way to make the point that the sense faculty has only a potential existence on its own.

The puzzle makes more sense if we understand it in terms of what precedes. Aristotle starts the chapter by saying that perception is thought to be an affection and alteration[62] and that some think that like is affected by like. He refers us to *de Generatione et Corruptione* I.7 where he has examined this view.[63] That discussion is about physical change in general and Aristotle there lays down the principle that he will apply in *de Anima* II.5 to perception:

> And, since it is in [the contraries] that perishing and coming to be (in the wide sense) occur, it is now therefore understandable that fire heats and cold things cool, and generally what is active makes the patient like itself. For agent and patient are contraries, and coming to be is to the contrary. So it is necessary that the patient change into the agent, because this is the way in which coming to be will be to the contrary. (*GC* I.7.324a7-13)[64]

So Aristotle sides with the opposing view that like is affected by unlike. During the process the patient does become like the agent.[65] The puzzle in the beginning of *de Anima* II.5 is presented as a *reductio* argument against like perceiving like. The view, as proposed by Empedocles, is that a sense organ can perceive things only if it is made up of the same stuff: fire in the organ perceives fire, air in the organ perceives air, etc. But then, since the sense organ is already like its objects, it ought to be perceiving itself always.[66] The discussion is clearly about the physical state of the sense organ.

The question is not so much why the sense organ is not perceived, but why perception is not continuous, always active, given the accepted opinion that like perceives like. In fact, Aristotle rephrases his puzzle in just that way: "Why is there not continuous perception, without external objects, given that the sense organ is initially like

its objects in many respects?" (*DA* II.5.417a3-6, paraphrased) It is not so much that we would be perceiving the sense organs as objects, but that, on the Empedoclean theory, the condition that counts as perceiving the elements and some of their properties is satisfied before perceiving takes place.[67] The fact that we are not continuously in a state of perceiving (or seeming to perceive) the things that the organ is actually like shows that the theory is wrong.[68] The correct theory is that unlike affects unlike, and so unlike must perceive unlike. Stated in terms of potentiality and actuality, the organ must be potentially like, not actually like the object. The conclusion then is not that the sense faculty has no actual existence, but that the organ must not be actually like its object before perceiving, just as the fuel is not yet on fire before it burns. So, in the beginning of the chapter, *to aisthêtikon* clearly means the sense organ, and more particularly, the individual organs that are first affected by the sensible quality.[69] Hence, the first time Aristotle states the principle about becoming like in this chapter (*DA* II.5.417a17-20), he is referring solely to the first physical alterations in the individual sense organs.

But then the chapter changes radically. Perception does involve physical alteration which follows a general principle for all change, but the potentiality spoken of in that principle, the potential of the unlike to become like, is only the broadest sense of potentiality. Other senses of the word must be distinguished which apply appropriately only to things with faculties, perception being the case in point. This discussion takes up the greater part of the chapter. The important point made is that potentiality in the broad sense applies properly to all qualitative alteration considered as just that, but that to faculties, such as perception, another kind of potentiality applies and it has two levels, usually called first and second, with corresponding first and second actualities.[70] An untutored child is potentially a knower because he has got the native equipment to become one through education. When he is educated, he is a knower at first actuality. But this is at the same time a second potentiality, because he can enter, when he wishes,

into the state of actually exercising what he understands. The exerciser is at second actuality with respect to the faculty he is exercising. These changes from potentiality to corresponding actuality can be called alterations of the subject only with a completely different meaning to 'alteration' from the alteration in qualitative state from one quality to its opposite (such as a non-red thing becoming red, or a cold thing becoming non-cold). These special kinds of alterations involve a completion of a thing's nature, a development toward being more perfectly what it is.[71] These can be called faculty-enhancement alterations: an animal actually perceiving is exhibiting more what it is; a young person educated is more fully realizing his potential as a being with the capacity to know, and even more so when using the knowledge.

Now, what becomes a puzzle is that at the end of the chapter the principle about becoming like is juxtaposed with the two senses of potentiality appropriate only to faculties.

> [1] For now, let it be sufficient distinction that saying something is in potentiality does not have an unqualified meaning [with respect to faculties], but that just as we say a child is potentially a commander, and also the man of mature age, so too for what perceives (*to aisthêtikon*). Since there are not names for each meaning, now that it has been determined that they are different and how they are different, we must speak of being affected and being altered as if they were proper terms [for these two changes of a faculty]. [2] And what perceives (*to aisthêtikon*) is potentially such as the sensible object (*to aisthêton*) is in actuality, just as has been said. So that, being unlike, it is affected, but having been affected, it is assimilated and becomes such as the sensible object. (*DA* II.5.417b29-418a6)

I have indicated the two parts of this conclusion with numbers. The first difficulty within this text is that the summation is incomplete; there are really three different uses of the term 'potentiality' distinguished in the chapter, the two for faculty enhancement and the one for qualitative alteration. And it is to this third usage that the general principle presented in *de Generatione et Corruptione* applies most appropriately. The first part of the chapter leaves us thinking that the manner in which perception falls under this principle is in the fact, and presumably only in the fact, that a qualitative alteration does

take place; and the alteration under consideration seems to be solely what occurs in the outer organs. The chapter's summary accurately restates the main point about faculty enhancement and then tags on the conclusion of the first part of the chapter, which, insofar as it was developed, is quite distinct, being about the third kind of potentiality. What is the connection between the two conclusions and the two parts of the chapter?

One answer is that the summary is just a listing of the two conclusions arrived at in the two parts of the chapter. Then we need not seek any closer relation between the two. And the chapter itself is presenting perception under two levels of description, one as a physical alteration fitting Aristotle's physical theories, the other as a faculty of an organism. The implication would be that perception is a becoming like (and being first potentially such as it later becomes actually) only when considered on one level, *qua* a qualitative alteration in the receiving organs for each sense modality. When considered as a faculty of an organism, we must speak of potentiality and of affection/alteration with quite different meanings. On this level, it would seem that becoming like is out of the discussion. After all, the one exercising knowledge he has is not becoming assimilated to an agent, and the builder building does not become like something which is making him build. These are both just doing what they are well-equipped to do. But alas, Aristotle does bring the notion of becoming like into the discussion of these new kind of potentialities. That is why the "mere list" explanation of the conclusion is not satisfactory.

This wrench in the works arises when Aristotle first distinguishes the two contexts for the term 'to be affected'.

> [Like 'potentiality',] 'to be affected' does not have a single unqualified meaning, but on the one side there is some kind of destruction (*phthora*) by an opposite (*hupo tou enantiou*), and on the other there is instead a preservation [enhancement?] (*sôtêria*) of a thing existing in potentiality (*tou dunamei ontos*) by a thing existing in actuality (*hupo tou entelekheiai ontos*) and like it (*kai homoiou*) in the manner in which a potentiality is related to an actuality (*houtôs hôs dunamis ekhei pros entelekheian*). (*DA* II.5.417b2-5)

Since two senses of potentiality have just been distinguished, both of which apply to faculties, one might think these two meanings of being affected offered in this passage will apply to the same. A person in the learning process has one state destroyed by another, ignorance by understanding.[72] But the second kind, i.e. exercising a faculty, though certainly an example of faculty enhancement or "preservation" of what makes the organism what it is, is very difficult to fit to the explanation given in this passage. Only for learning can we say that the knower becomes like something already in actuality, namely the teacher. This example is given just below to illustrate a change of the *sôtêria* type (*DA* II.5.417b12-14). Hence, we must take it that the destruction by an opposite has to do with the notion of potentiality applying to the first and most proper meaning of alteration or affection and that *sôtêria* changes include both levels of faculty enhancement. But then, for second level enhancement, we cannot understand what is meant by a *sôteria* of a thing existing in potentiality by a thing existing in actuality and like it.[73] Worse yet, it seems not to characterize changes of the *sôtêria* type as different from changes of the *phthora* type at all. Suppose the teacher is the agent in a case of learning. Before learning, the student is ignorant, unlike the teacher who has knowledge. During the process the student becomes like the teacher in having knowledge. This is no different, in terms of the likeness of the states of agent and patient, than the non-red fence being made red by some red paint, a simple change of the *phthora* type.[74]

Regardless of how this is sorted out, it is difficult to deny that the teacher-student example is described as a case of the student becoming like the agent bringing about the change. And this is a case of faculty enhancement and of a change in cognitive state described at the level of cognitive activity rather than physical alteration. So it seems that Aristotle is willing to apply the becoming like principle beyond describing physical alterations.[75]

This forces us to re-evaluate the two conclusions at the end of the chapter. Perhaps restating the becoming like principle as it applies to perception is not simply the repetition of the earlier conclusion about physical assimilation unrelated to the discussion of faculty enhancement. It was applied to changes in cognitive state with respect to learning, and so it may be that Aristotle means it to apply to perception *qua* cognitive state and faculty actualization, not simply *qua* physical alteration. If that is the case, then perhaps we should understand the chapter as leading us from the more basic understanding of becoming like as it applies to physical alteration to a new understanding of it as it applies to faculty actualization, and in particular to perceptual cognition *qua* cognition.[76] I am not certain about this, but it is certain that it is difficult to maintain that Aristotle applies the becoming like principle only to physical alteration *qua* such. Indeed, when Aristotle discusses the intellect, he treats it as parallel to perception with respect to being potentially the same as the object but not actually the same (*DA* III.4.429a13-18). Any likeness for the intellect must be cognitive likeness, since there is no organ which is physically assimilated to intelligible objects.[77] Hence, we have no reason to limit the principle in the case of perception to only the physical alteration. So, I conclude that we must leave it open that *to aisthêtikon* becoming like the sensible object has more than one meaning in *de Anima* II.5. Certainly it is meant to apply to the physical assimilation in the outer organs. But there is good reason to think it goes beyond that to the cognitive likeness that takes place simultaneous with a change in the primary sense organ. If that is included, then there is a very close connection between the two conclusions at the end of the chapter. The entire process of becoming like, outer organ and primary organ, physical assimilation and cognition, is the second actuality of the perceiving subject. We must then take *to aisthêtikon* to mean the psycho-physical unit that perceives. It would be correct to conceive of this either as the whole person or as the soul-possessing perceptual apparatus as a whole with the heart as the chief part.

Either way, it is a unit that becomes cognitively like as well as physically like in some part. It will not do to limit *to aisthêtikon* to individual outer organs considered independently, because these do not accomplish cognition, and hence second actuality, in themselves.

One can hold a contrary view only by claiming that cognition takes place in the eyes, ears, and nose. Then it could be argued that the physical becoming like is all that constitutes perception. This can be either an interpretation that makes Aristotle a materialist like contemporary philosophers who maintain that cognitive states are identical with brain states,[78] or a functionalist maintaining that the physical becoming like is all that constitutes perception but that another level of description, the functional one, is necessary to fully explain what makes it perceiving.[79] These would be open if *de Anima* were treated as holding different views from the biological works and the *Parva Naturalia*. The view that the heart is really the one sense organ with several special receptors would have to be one held at a different stage in Aristotle's development. I have rejected such a view, and admittedly not with a complete defense. But let me offer one further item of indirect support. The becoming like principle (or the related doctrine that the organ is potentially such as the object) is applied to the individual sense organs in the works that clearly state the central role of the primary sense organ.[80] So the fact that in *de Anima* II.5 Aristotle does not explicitly broaden application to the primary sense organ in no way indicates that he did not hold the same view about the primary sense organ. If the whole physiological story is much more than the physical alteration in each sense's special receiving organ, then it cannot be all that constitutes perception. If the actualization of the faculty requires more, then the functional level of description is not just another way of describing the physical becoming like in the outer organs. So, then, if we are to understand the becoming like in perception in a way that makes it co-extensive with faculty actualization, we must allow that the primary sense organ becomes

like the object. And we have indicated above that the manner in which it becomes like is cognitively, not physically, but with some physical change as the material explanation of such a cognitive state.

Aristotle never speaks of the heart becoming physically like,[81] unless one understands its receiving all sensibles to mean it physically takes on all sensible qualities. It would be possible to understand it this way and then follow the functionalist interpretation in a way that includes the physical assimilation of the heart. The physical description will include both outer organ and heart becoming physically like, and the functional description would explain how these changes all together play the role of perceptual cognition for the animal. But it is too implausible to attribute to Aristotle the view that the heart becomes green and squeaky and onion smelling.[82] So we are forced to understand becoming like on more than one level, if the process of becoming like is to be co-extensive with the actualization of perception. I have argued that the conclusions of *de Anima* II.5 suggest that they are coextensive and that we probably should include the cognitive content of an act of perceptual awareness as an example of becoming like the object. In no way does this prevent some kind of functionalist interpretation of Aristotle. It only blocks an interpretation that takes the becoming like to be solely the material description of perception. Aristotle's use of this notion is more fluid and relies on analagous applications rather than making a clean cut between terms used for a material description and those used for functional or formal description. Although he has given a clear example where the material description and formal description are distinct for a psychological state, the example of anger (*DA* I.1.403a27-b9), when it comes to describing perception, Aristotle uses the same description, becoming like, differently but analogously. The analogy between them I have attempted to capture in the previous section in the notion of having an accurate picture of an object. But just as the two kinds

of becoming like are quite distinct, so too are the two pictures, the one like a portrait, the other the experience of having a view on the world or being appeared to.

It still remains that the basic and most common use Aristotle makes of the becoming like principle is for physical alteration, and this is so even with respect to perception.[83] So, the most proper use of becoming like is for the same types of change to which 'affection' and 'alteration' properly apply. But just as these are given a special use with respect to faculty enhancement, so too is the idea of becoming like. Because perception is psycho-physical, both kinds of use apply: there is an ordinary kind of alteration in an individual sense organ that is a physical assimilation; there is also an actualization of a cognitive faculty and a cognitive assimilation. We have arrived at the same conclusion by two routes, the first an examination of the physiological processes from outer organs to the primary sense organ, the second a close look at the application of the notion of becoming like in *de Anima* II.5. Aristotle thinks of the entire affection of the sense organs as an assimilation to the object, but this includes both a non-cognitive assimilation in the outer organs and a cognitive assimilation in the soul and primary sense organ.

In this chapter, I have made as explicit as possible Aristotle's physiological theory of perception, first the physical assimilation in individual sense organs, and then the physical transfer of the picture to the primary sense organ in a mysterious stuff called *sumphuton pneuma*. In chapter 4, I will fill out Aristotle's understanding of the cognitive side of perception by examining closely his theory of *phantasia*, the faculty of appearances.

Notes to Chapter 3

[1] Of course, it is the living animal that sees by means of the primary sense organ, which uses the eyes. But the point is that, if we are to pick out a part of the body that does full-fledged seeing, it would not be the eye, but the heart via the eye. "There is one sense faculty and one chief organ, but the mode [the 'to be'] is different for perception of each class of sensible object." *Somn.* 2.455a20-22

[2] When I refer to outer organs, I usually mean to refer to the collection of proper organs. For touch, this is not an outer organ in the most obvious sense, because there is no organic instrument on the outer surface of the body that first receives tactile information *qua* a sense organ. But in another sense, part of the heart can be considered an outer organ. On Aristotle's view, the flesh receives heat, cold, hardness, etc. as a medium, not as a sense organ (*DA* II.11.423b7-21). So the heart is the first receiver for the sense of touch just as an outer organ is for the distance senses. I mean by the "distance senses" the senses that receive from distant objects across an external medium. The heart as central unifying organ uses the outer organs as instruments, and for touch it must use itself as an instrument. As we will see, it is probably in virtue of *sumphuton pneuma* that the heart is central receiver for all sensibles, but in virtue of its fleshiness that it is the first receiver for touch. The flesh of the heart is then the outer organ for touch in that, just like the other outer organs, it is the part in contact with the medium.

[3] Richard Sorabji, "Intentionality and physiological processes: Aristotle's theory of sense-perception," in *Essays on Aristotle's De Anima*, eds A. Rorty and M. Nussbaum (Oxford: Clarendon Press, 1992), pp. 214-215.

[4] One might wonder why Aristotle mentions the sense faculty in the middle of the above quote: ". . . since the sense (*aisthêsis*) is like a sort of mean . . ." Shouldn't he say that the sense organ is a sort of mean? Some take the fact that Aristotle speaks interchangeably of the sense organ, the sense, and the act of perceiving in the above two quotes (*DA* II.11.423b30-424a7) as evidence that he means to explain perception as nothing more than a physical event in the sense organs (see Thomas J. Slakey, "Aristotle on Sense Perception," *Philosophical Review* 70 (1961), pp. 470 & 472). We should be wary of such a conclusion since Aristotle is always at pains to distinguish the matter and the form of an organism's functions; besides, in the very next chapter he draws a clear distinction between the sense organ and the sense faculty (*DA* II.12.424a24-28). Because he is speaking here of the sense as a capacity, there is no problem in saying that this capacity resides, at least partially, in the fact that the organ is constructed with a certain mean physical balance so as to be able to respond to the sensible objects. It is a necessary condition for perceiving that the organ be poised so as to respond to the sensible objects. So the sense as a capacity is, in part, this necessary condition about the organic composition.

[5] See *Sens.* 3.439b19-440b25. Aristotle discusses several views, but all of those he considers reasonable maintain that colors are ratios of white and black.

[6] It may be that Aristotle has no intention of applying the notion of a mean to all the sense organs, but is only showing that by being a mean the organ of touch satisfies a more general principle satisfied by the other senses. This more general principle is that the organ must be unlike its objects before perceiving them. Alexander understands it to

apply only to touch and he gives a good explanation of why it applies only there: only for touch is it necessary that the receiving part already possess some qualities that are its proper objects (see his *de Anima* 59,12-20). Even if this is right, it still remains true that Aristotle does extend the notion of a mean to the primary sense organ as receiver of all sensible qualities (*DA* III.7.431a17-20), in which case it is not a literal mean.

[7] Aristotle seems to have thought that sound can travel only through air. It is not clear why he limited sound-bearing material to air. Did he think that fish could not hear? He does allow that we can hear under water because of the air trapped in our ears (*DA* II.8.420a11-12). But in that case, the water must bear the sound to that point. The evidence he provides for not counting water as a medium is that if the ear canal gets filled with water, we cannot hear (420a13-14); presumably, he thought this was evidence that water is not a medium. Or else, we must take this discussion to be only about land animals. It is true that because of the way our ears are made this happens, but it would not have been difficult to conceive that a fish's ear could be designed to register sound-producing motions in the water just as our ear does in air. I would think that Aristotle would be happy to say that the medium for sound is an unnamed characteristic common to many things just as the medium for colors is transparency, a property shared by air, water, and even some solids (*DA* II.7.418b6-7) and just as the medium for smell is a property common to air and water (*DA* II.7.419a32-35).

[8] The transparent eye-jelly in the eyeball Aristotle calls the *korê*; though often translated as 'pupil', Aristotle evidently means the dark space behind the lens (*Sens.* 2.438b16). See Richard Sorabji, "Body and Soul in Aristotle," in *Articles on Aristotle*, vol. 4, eds. Jonathan Barnes, Malcolm Schofield, and Richard Sorabji (New York: St. Martin's Press, 1978), p. 49, footnote 22.

[9] Aristotle puzzled over why we have to inhale in order to smell (*DA* II.9.421b13-26); but this is really no puzzle at all once it is understood that smell is transferred differently than sound, smell by particles, sound by waves. Not knowing that sound travels by waves, and expecting medium transfer to be similar for different media, Aristotle was rightly puzzled. If he knew this difference, then he might have been inclined to treat smell and taste more similarly and might have allowed more readily that the tongue is quite properly the organ of taste. See notes 11-15.

[10] Flesh is what seems to have the mean composition of all the elements and the organ of touch has such a composition (*DA* II.11.424a1-10, III.13.435a11-435b3). In *DA* III.13 it seems that flesh is being treated as the organ of touch. Perhaps Aristotle is speaking in terms of popular opinion at this point, less technically, but that his more technical view is what he has stated in *DA* II.11. Regardless, the heart is a fleshy organ, and what applies to flesh will apply to the heart with regard to receptivity of tangible qualities. In *PA* II.1, Aristotle explains that only homeomerous parts can receive the sensibles. For some of the senses, being homeomerous is accomplished by being composed of a simple element, like air or water (647a7-8); but for both flesh and the heart, it is by being a homogenous mixture. Homeomerity is not only what provides the capacity for the heart to receive all the tangibles, but all the sensible qualities (647a25-29). But, as we shall see, it cannot be the same homeomerity for these two capacities. Flesh receives only the tangibles.

[11] Being a form of touch, taste has no external medium (*DA* II.10.422a8-9). But there cannot be any perception of flavors without moisture (422a15-19). The tongue must not be so dry as to prevent easy salivating when food is placed on it, but must be able readily to moisten (422b1-11). It is not that there is already liquid on the tongue that comes into

contact with the liquid of the soup, but that the tongue becomes moist in the tasting. Hence, moisture, which is the bearer of flavor (422a10-11), is also the bearer of flavor on the tongue. It is no different from the inhalation of air into the nostrils in that odor-laden air from outside the nose becomes the air inside the organ of smell.

[12] The principle that no perceiving takes place when there is direct contact between organ and object is stated at *DA* II.7.419a19-31 and II.11.423b17-26. The result will be that the organ for taste is interior, and indeed, that is what is stated at *Iuv.* 3.469a10-23. Elsewhere, too, the organ of touch and taste are said to be the same (*Sens.* 2.439a1-2). But in the discussion of taste by itself in *DA* II.10, there is no indication that the tongue is not the organ of taste.

[13] At *DA* II.11.423b17-20, the tongue is mentioned with the flesh as being the medium for touch, but this is because we sense the tangibles through the tongue just as through all other surface flesh as stated at *DA* II.11.423a17-18.

[14] Aristotle very nearly suggests this solution when he works out in *de Sensu* that smell and taste are analogous (*Sens.* 4.440b28-30, 5.443a21-b16). For both, Aristotle concludes, the medium is something that can take the sensible qualities out of something dry by a process like dissolving away. He must certainly have in mind for taste the way soup absorbs the flavors from dry herbs. Similarly, air absorbs odors and becomes a smelly object itself (as Aristotle indicates at *DA* II.12.424b18). For animals who smell in water, the analogy is even closer. The implication in the analogy is that both senses have an outer organ and that for both a medium bearing the sensible qualities comes into contact with the organ.

[15] Aristotle's recognition that the medium for smell becomes smelly should have led him to revise his requirement that a sense organ cannot perceive when in contact with the object. All he needs of that requirement is that we perceive things that are external to the sense organ by receiving the sensible quality (sensible form) of the thing separated from the object (i.e. without the matter). The odor in the air originated from some other source, and hence the odiferous air inhaled into the nose contains a separated form. For taste, Aristotle could say that the object is the spices in the once dry ingredients of the soup and these affect the tongue by being made moist. Hence, moisture bears flavors that originate from something else just as air bears odors originating from some source. Aristotle makes this very connection at *Sens.* 5.443a21-b16. See note just above.

[16] cf. *PA* II.10.656b2-3.

[17] It may seem that Aristotle rejects a view that says an image comes to be in the eyeball when he criticizes Democritus for his thinking that vision is a mirroring (*Sens.* 2.438a5-16). The phenomenon in mind seems to be the reflection of objects we see in the pupil of another person's eye. Aristotle says this image is only a reflection due to the smooth outer surface of the eye and it is seen only by the second observer, not by the one on whose pupil it appears. Aristotle is not denying that vision involves an image in the eyeball; he is only denying that this reflected image has anything to do with vision. Reflection does not require transparency. It would be only the refracted image that is received into the eyeball. For Aristotle, vision involves receptivity and manifestation of an image due to the confined state of some stuff that is full of the transparent (if my conjecture is correct). It is plausible that Aristotle thought the image appeared on the inner surface of the eye jelly toward the heart, like the images that appear on or close to

the surface toward us when we look through a crystal ball. This image in the inner eyeball must then cause changes in the blood that are transferred to the heart.

[18] Alexander suggests that, while some transparent things are only transparent and do not let images appear in them (such as air), other transparent things, because of smoothness and density, are able to show images because they can preserve and gather together the images that pass through the transparent. He even mentions clear stones, so perhaps my example of a crystal ball would not be at all foreign to Aristotle. See Alexander, *Mantissa*, 142,21-143,2. This showing of images Alexander also speaks of as a receiving and preserving of the forms (*in De Sensu*, 25,4-5). The forms are also spoken of by Alexander as being transmitted to the primary sense organ, but in what manner he is no more clear about than Aristotle (see his *de Anima*, 39,11-22; 60,1-6; 63,25-64,4). See the discussion in part II of this chapter. Philoponus offers a similar explanation of the affection in the eyes: because the eye-ball is a solid body, the activities of color that pass through the air without making it colored imprint color and shape on the eye-ball, just as light passing through colored glass makes any object on which the beam falls colored. On account of this, the discrimination passes through to the sense faculty. (*in De Anima*, 335,14-29) Philoponus admits the serious limitations of the analogy, since in seeing there need not be a beam and an image does not appear on anything put in the path between object and eye (*in De Anima*, 335,30-336,3), but the suggestion remains that in some way the activities of color in the medium imprint color images on the sense organ.

[19] About flavors, this is presuming the suggestion I have made that moisture is best thought of as the medium for the sense of taste. See notes 11-15.

[20] Aristotle's focus here is on the external media themselves, rather than the reproduction of the sensible quality, and it is light rather than color that is being compared to sound. The helter-skelter reflection of light is the cause of white light being everywhere, and the dissipation of air, hides the fact that sound nevertheless disperses through air in all directions. It would be more germane to my purposes if Aristotle had said that colors emanating from objects are dispersed everywhere but only under certain conditions are they reproduced, e.g. as reflections in smooth surfaces. It is possible that Aristotle considered neither the canyon nor the ear canal to reproduce sound, but only to reflect it or collect it. See below for an alternate interpretation of what takes place in the ear and eyeball. Note that Aristotle continues to see analogies between sight and hearing. At *DA* II.8.420a26-29 actual sounding is like light in that it makes distinctions of potential sounds in different kinds of sound-producing objects distinguishable just as light makes the different colors to be seen.

[21] Alexander of Aphrodisias did consider clear stones as illustrative of what happens in the eye. See note 18.

[22] Outside the organs, too, this second condition must be met if there is to be reproduction of the quality. I suppose that on a windy day it is difficult to make echoes. Aristotle might say that it is the dissipation of the air that prevents the formation of a continuous surface to the air mass in the canyon. Analogously, an opaque crystal ball does not produce refracted images because it is not receptive.

[23] The difference in how the different media transfer the quality is considered at more length by the commentators. A distinction is made between more corporeal and more spiritual senses. Touch is the most corporeal, sight the most spiritual. According to Philoponus, all the senses must receive the quality incorporeally, since that is his

interpretation of receiving form without matter; but for touch, taste, smell, and hearing there is also a corporeal transfer of the quality in varying degrees (*in De Anima*, 413,4-12; 416,30-4; 413,9-12). Aquinas reiterates this view (*ST* 1, Q78, A3; *Commentary on De Anima*, sects. 418, 493). Aristotle himself remarks that the organ of touch is the most corporeal of the sense organs (*PA* II.1.647a20-21), but the reason seems to be its composition (it contains earth), not the mode of transfer through a medium. He is not implying that the others are more spiritual, but touch is the only one that uses a solid body as the receptive material. Why it must be so is explained at *DA* II.11.423a12ff. Touch has to be dispersed over the body, and it will not do for an animal to have a body of air or water.

[24] On my view, there is little to recommend a contemporary interpretation according to which what is received in the eye is not the color but just a ratio that corresponds to the ratio of black and white that makes up the color. This ratio would be the form of the color as opposed to the form with matter, which is the color as it exists in the object. See Allan Silverman, "Color and Color Perception in Aristotle's *De Anima*," *Ancient Philosophy* 9 (1989), pp. 271-292; Julie K. Ward, "Perception and *Logos* in *De Anima* ii12," *Ancient Philosophy* 8 (1989), pp. 217-233. Lear has expressed a similar view in *Aristotle: the Desire to Understand* (Cambridge: Cambridge University Press, 1988), pp. 110-116. The eyeball, on any of these interpretations, does not become literally colored, but it receives the essence of color, which is an abstract ratio. Lear's view is that this is a physical change (p. 112), and he describes it as the sense organ taking on an order (p. 116). It would be difficult to make such an interpretation apply to all the senses consistently, since this would mean that for none of the senses does a receptive material come to possess the quality literally, but only an abstract ratio. For four of the senses Aristotle makes it relatively clear that the organ does possess the quality itself. So it makes more sense to assimilate sight to the others rather than vice versa.

[25] Or perhaps, "is not situated at the external surface of the eye" (J. I. Beare, *De Sensu*, in *The works of Aristotle*, vol. 3, ed. W. D. Ross, Oxford 1931). It makes no difference because the point is clearly not that the soul is in the middle of the eyeball rather than on the surface. If it were, the example of the wounded soldiers would be irrelevant. The point is that the soul is not on the exterior of the body like the eye is.

[26] See *Insom.* III.

[27] This is said explicitly about the eyes and ears at *PA* II.10.656b17-18. The nostrils are evidently the passages for the sense of smell (*PA* II.10.657a4, *PA* II.16.659b1ff.) Even if some animals lack nostrils, they smell by the *sumphuton pneuma*, and for all animals the purpose of the passages is either to connect to the *sumphuton pneuma* or they are filled with it themselves (*PA* II.16.659b14ff. and *GA* II.6.743b33-744a12).

[28] *GA* II.6.743b33-744a12, *PA* II.10.656b17-19, *Sens.* 2.438b5-16. See Appendix B of A. L. Peck, *Aristotle, Generation of Animals* (Harvard University Press (Loeb), 1943) for an extended discussion of *sumphuton pneuma.*

[29] The blood is formed in the heart and "pneumatized" by the heating that takes place in the heart during the process of changing nutriment into blood (*de Respiratione*, 20.480a2-15). See Peck, *Aristotle, Generation of Animals* (Harvard University Press (Loeb), 1943), pp. 592-3.

[30] cf. *Somn.* 2.456a11-20.

[31] Whether or not *de Spiritu* was written by Aristotle, I take the remarks about *sumphuton pneuma* to be consistent enough with what is said in other works, especially with *de Motu Animalium*, that it reflects an Aristotelian approach.

[32] This view is explicit at *GA* V.7.788a21-33. Our ability to repeat immediately words heard is because of a direct connection between the ears and the *sumphuton pneuma* at the heart. The reason is that the *arkhê* (sourcepoint or principle) of the organ of hearing is at the pneumatic part (viz. the heart) and the *pneuma* there is shaken and set in movement at the same time as the outer organ. The *pneuma* at the heart receives an imprint, so to speak, and passes it on via the output path to the vocal chords. The same theory is operative in *MA* 6 where sensation and imagination are said to move desire and this moves the animal. This is worked out more fully in *MA* 9 and 10 where we learn of the role of the *sumphuton pneuma* in causing action. The soul is what possesses the intentional states of perception and desire, and its organ, the heart, is in the center of the body from which originates all movement.

[33] See also *Somn.* 2.456a11-20 for the association of the *sumphuton pneuma* with breathing.

[34] *GA* II.3.736b30-737a7. See also Peck, *Aristotle, Generation of Animals* (Harvard University Press (Loeb), 1943), p. 586-9.

[35] Which includes all activities except that of intellection. See *GA* II.3.736b27-29 and *DA* II.1.413a4-8.

[36] Two other indications that *sumphuton pneuma* is nothing other than hot air plus an association with life: (1) It is the frothiness in semen and in stuff from which comes spontaneous generation that is caused by the *pneuma* (see Peck, *Aristotle, Generation of Animals* (Harvard University Press (Loeb), 1943), p. 586). (2) It is by evaporation within the heart during the heating process of nutriment assimilation that the blood becomes pneumatized. It is this evaporation which is the pneumatization of the blood and this is supposed to be the cause of the pulse in our veins. See *de Respiratione* 20.480a9-15 and *de Spiritu* 4.482b32-36. This reflects the ancient association of life, soul, and breath. It is quite understandable that Aristotle would seek an answer to how the *sumphuton pneuma* is maintained by looking to respiration.

[37] Of course, encoding is only a physical transformation of the sensory stimulus. What happens beyond that to result in cognition remains as inaccessible to us as it was to Aristotle.

[38] J. I. Beare, *Greek Theories of Elementary Cognition* (Oxford, Clarendon Press, 1906), p. 336.

[39] *Somn.* 2.455b34-456a24, *Iuv.* 3.468b28-469a20, *PA* II.10.656a27-30, III.3.665a10-13, *GA* II.6.743b25-26. There are other places where the *arkhê* is referred to in which it is clear that the heart is meant although not specified, e.g. *Insom.* 3.461a5-7, 461b4.

[40] Places where Aristotle refers to a body part as the place of the soul are *Mem.* 1.450a28-29 (the context indicates it is the heart because it is the part where *phantasia* resides and this is the primary sense organ), *de Spiritu* 5.483b11 (reference to primary receptacle of the soul), and *Metaph.* VII.10.1035b25-27 (where either heart or brain are

offered as possibly the body part to which the form (*logos*) and essence (*ousia*) primarily is associatetd. *Sens.* 2.438b8-16 argues that the soul is in the inner part of the body. Also in support of the soul having a place are all the references in the previous note, if we understand the *arkhê* to be the primary place of soul. *Iuv.* 3.469a6-7 speaks of the heart not only as the *arkhê* of the faculty of perception, but as the *arkhê* of the nutritive and sensitive soul. Just a little further on, at *Iuv.* 4.469a24-b7, it is stated that the nutritive and sensitive soul must be in the middle of the body and distinct in place, as well as capacity, from the body parts it uses in performing life functions. Given this weight of evidence, we can also count the places where soul is mentioned as the last receiver of an affection through the body in perception as presupposing that the soul is interior: *DA* I.4.408b15-18, *Sens.* 1.436b6-8, and *Somn.* 1.454a7-11. This all makes clear that the soul is localized for Aristotle, even though all life activities are in virtue of soul, and so soul can also be thought of as supervenient over all activity of the animal body.

[41] *Sens.* 1.436a7-b8.

[42] The only evidence contrariwise is in *de Insomniis* where he speaks of the information being carried in the blood like eddies. But this is only suggestive of a change in kind. It is not clear that qualities of the eddie, such as speed of revolution, shape, etc. are supposed to stand for sensible qualities. It may be that the eddies contain *sumphuton pneuma* which carry the quality itself mysteriously, and that if the eddy gets disturbed, the image or sound or odor bit within gets broken up; not that the speed, shape, etc. *qua* the information-bearing properties get altered. See *Insom.* 3.461a4-30.

[43] I might add that not only was it congenial to Aristotle's physical theory; it was also an accepted view that the sense organs were affected qualitativley in the same way as other bodies. Gregory Vlastos, in passing, alludes to this accepted view in "The Physical Theory of Anaxagoras" in *Studies in Presocratic Philosophy*, vol. 2 (London: Routledge & Kegan Paul, 1970), p. 329. He refers to *Sacred Disease* 16 as an example of it in ancient medicine.

[44] I mean picture in a broad sense. It applies to all sense modalities, not just visual. Also it is only like a picture in some way. It is not Aristotle's view that the perceiver is looking at a picture within during perception. The perception itself is picture-like, a view on the world. Imagination and memory are more like looking at a picture, but even here there is not a picture within that is looked up in a storehouse of pictures; rather, there is an appearance that is created from a potential picture (the storage state, whatever that is).

[45] *DA* I.4.408b15-18, *Sens.* 1.436b6-8, and *Somn.* 1.454a7-11.

[46] Alexander of Aphrodisias provides other reasons to think the medium is in some way colored. Light (or the illuminated transparent), he says, has a yellow sheen when in contact with gold, and purple in contact with violets, and he gives other examples (see his *de Anima*, 42,11-19). But nevertheless, the manner in which light is colored is not the same as the object being colored, or else contrary colors could not be seen through the same medium by different observers (see his *de Anima* 62,5ff.). The medium does not act as the matter of the colors by literally becoming a black or white object.

[47] Alexander makes a similar suggestion (in his *de Anima* 61,30-62,5), that the sense organs do not take on the physical properties of sensible objects in the way of providing matter, or a substrate, for the presence of a quality. But the reason he offers this is to explain how two contrary sensible qualities in one genus can be perceived at once. This

problem he goes on to resolve by allowing that different parts of both outer and inner organs, could be affected differently, but still there is a single incorporeal faculty whereby the several different contents are unified in one perception. With that solution, there is no problem with having contrary qualities in the eye-jelly. The problem remains for a medium shared by different observers. Even if the eye-jelly could have images in it, seeing would be impossible if images came to exist everywhere in the air. And so, the unbounded medium must be colored only in a special sense. See previous note.

[48] The discussion of *GA* V.2.781a14-b29 is relevant to this question, but provides nothing decisive. We learn that it is the receptive quality of the medium-like material in the outer organ that enables accurate perception of all the differences among a genus of sensibles, but it is the shape of the body part around this receiving part which can enhance the distance an animal can perceive. A protruding collector (such as the external fleshy ear part) prevents the *kinêseis* in the medium from being scattered about, thus enabling *kinêseis* from farther away reaching the organ intact. But it is the still air in the ear and the transparent eye-jelly which perceive all distinctions. It remains open whether the color and sound are literally reproduced in the organ or merely the *kinêseis* are accurately recorded and passed on with the greatest possible preservation of distinctions.

[49] Philoponus, *in De Anima*, 413,4-12; 416,30-4; Aquinas, *ST* 1, Q78, A3; *Commentary on De Anima*, sects. 418, 493.

[50] Philoponus, *in De Anima*, 437,9-11; 438,6-15; Aquinas, *Commentary on De Anima*, sect. 553; *ST* 1, Q78, A3.

[51] He does speak once of touch being more corporeal than the other senses (*PA* II.1.647a20-21), but this is no doubt because the organ is made of earth, whereas the receptive material for other sense organs is water or air. See note 23.

[52] Especially for sound. The condition Aristotle gives for causing echoes seems precisely the condition that exists in the ear canal. The motion in the air meets with a smooth continuous surface which causes the air to form a unified front of vibration (*DA* II.8.419b25-420a2). When the air is prevented from breaking up helter-skelter (as it can do in unbounded ambient air) then there is sound, and the ear canal clearly is thought to do just that (420a2-9). Aristotle does compare echoes to light reflection (419b27-33). Perhaps the unbounded state permits helter-skelter dispersion of all the visual "pictures" in transfer, and that dispersion results in what we call white light and the apparent colorlessness of the medium. And then a crystal ball or the spherical eye-jelly brings out the pictures hidden in the unbounded transparent. It may be that all media for sensibles have the capacity to not only borrow an objects quality, but also make it its own under certain conditions. On this interpretation, it is properly a "picture" of the object only when the receiving organ makes the borrowed quality its own.

[53] Common-sense intuition supports this. We do not say the transparent medium in between eye and object is colored. And the only example Aristotle gives of an external medium becoming a sensible object is for smell, this too following our natural intuitions. He does hint that sound might be an example, but this too follows our natural way of speaking about bird songs, or the sounds of the harbor, being in the air.

[54] If this runnerup interpretation is the correct one, then Myles Burnyeat is right in his controversy with Richard Sorabji in one respect. At a seminar at Oriel College, Oxford, May 1991, he characterized the difference between his view and Sorabji's by asking what

a third person would see, if he could get a view of another person's eye-jelly while that person looks at, say, a red rose. Sorabji says he would see red in the eye-jelly. Burnyeat says he would see nothing, or, if his viewpoint was directly behind the pupil, he would see what the other person sees, the red rose out there, but no color in the eye-jelly. Burnyeat may be right, but this in no way gets the further conclusions Burnyeat proposes: that there is no physical changes in the organs on Aristotle's view, and that the only kind of assimilation or receiving of form is the content of awareness. See M. F. Burnyeat, "Is an Aristotelian philosophy of mind still credible?" in *Essays on Aristotle's De Anima*, eds A. Rorty and M. Nussbaum (Oxford, Clarendon Press, 1992), pp. 18-23. Even if there is no color in the eye-jelly on Aristotle's view, there still are physical changes in the eye-jelly which would count as a physical picture and as physical assimilation to the object. Burnyeat's view as presented in the seminar has changed a little from the article. He allows that there is a quasi-change that takes place in the transparent part of the eye, just as there is a quasi-change in the transparency of the air, but this involves no change in the micro-structure of the transparent. It is not clear whether this could count as a physical change that could be considered as containing the "picture" in some sense.

[55] Aristotle speaks of the sense organs becoming like the object in these passages: *DA* II.5.417a17-20, 418a3-6, II.11.424a1-10; *Sens.* 2.438b16-439a5; *PA* II.1.647a4-10.

[56] Later in the commentary tradition, the difference between the physical picture and the cognitive picture is more explicitly recognized. Philoponus allows that a physical becoming like occurs in most of the sense organs to some degree or in some respects; nevertheless there must be a reception of the forms cognitively (*gnôstikôs*) in addition to the organ being affected materially (*hulikôs*) (*in De Anima*, 432,32-433,4; 437,9-11; 438,6-15). Aquinas follows Philoponus in his distinction between a sensible quality existing naturally and materially and existing intentionally and spiritually (*Commentary on De Anima*, sect. 553). For both commentators, it is the individual organ that is affected materially and the perceptual faculty that receives form cognitively.

[57] For instance, *PA* II.1.647a8 (outer organs) and 647a27-29 (heart).

[58] In the case of perception, that is why a medium is essential: the object acts upon the medium which is in contact with it and each portion of the medium acts on the next, until finally the medium touching the sense organ acts on the receptive material in the organ (*Phys.* VII.2.245a5-8). Aristotle says the same in *de Anima* when he says that in one sense all the organs perceive by contact, not just touch, but by contact with the medium which bears the quality to it (*DA* III.13.435a15-19). See also *DA* III.7.431a17-20, III.12.434b27-435a10.

[59] No doubt this principle applies to other kinds of *kinêseis* as well; the mover must itself be moving. But it is only spelled out for qualitative alteration in this chapter. Although Aristotle does not here speak of actuality and potentiality, it is clear that this is the same principle as is stated later in *de Anima* II.5: the potentiality of the patient to possess a quality is changed to an actuality because of the actual presence of the quality in the agent.

[60] *DA* I.4.408b15-18; *Sens.* 1.436b6-8; and *Somn.* 1.454a7-11.

[61] To wit, R. D. Hicks: "The solution . . . is to the effect that the sense faculty has only a potential existence, and like everything that exists potentially, is called into

actuality by something else which already has actual existence; in this case, the external object." *Aristotle's De Anima*, p. 350 (note to 417a2).

[62] The two verbs used interchangeably for change with respect to sensible qualities are *paskhein* (to be affected) and *alloiountai* (to be altered). The term *alloiôsis* is the noun for the latter; *pathos* would be the noun for *paskhein*, but *pathos* generally means an attribute, so Aristotle usually uses *paskhein* to speak of affections. Affections or alterations are one category of changes and the term that applies to all changes, locomotion, change in quantity, and quality change, is *kinêsis*. All three terms appear in the first few lines of this chapter (*DA* II.5.417a32-35).

[63] We learn there that almost everybody thought that like is affected by unlike, so one may wonder why Aristotle brought up the minority view here. It must be because even those who explained affection by the unlike considered cognition to be achieved by like perceiving like. Aristotle criticises the inconsistency of these philosophers, especially Empedocles (*DA* I.5.410a23-26). It must be this common view about cognition which Aristotle has in mind here. To hold that like perceives like is to hold that like affects like since there is a physical interaction between object and perceiver. See below where I discuss Aristotle's criticism of Empedocles.

[64] *Aristotle's De Generatione et Corruptione*, trans. C. J. F. Williams (Oxford: Clarendon Press, 1982), p. 24.

[65] He does, however, try to accomodate the other view by saying that there is an element of truth in it. Things that are of totally different sorts cannot affect one another, e.g. whiteness cannot affect a line. So patient and agent must be like in genus but unlike in species (*GC* I.7.323b24-324a7).

[66] A similar argument about perception is presented against Empedocles at *DA* I.5.410b1-2. Aristotle presents a similar puzzle in *GC* I.7, but about affection in general: if like affects like then everything would act upon itself continuously (323b21-24).

[67] Which objects would be perceived in such a hypothetical situation is difficult to say. The organ being like the elements would be in a state of perceiving some elements. But since there would need not be any external objects, it is as good to say that it is the internal elements as to say some elements somewhere else, since the only ones around would be the internal ones. I think this is only a manner of speaking, and that is why Aristotle rephrases the puzzle. It is not really the internal elements that would be objects of perception but the sense organ would be in a state of *phantasia*, perceiving such elements as if there were such objects present before the perceiver. Just as with a *phantasma* there is nothing present but what the mind produces, and so, in a sense, what is perceived is in the mind only, so in this hypothetical case there would be no elements present but the internal ones, and so, in a sense, they would be the only thing that could be called the object of perception.

[68] It should be noted, in fairness to Empedocles, that Aristotle is assuming that likeness of the physical organ is sufficient to bring about perception. Empedocles saw it only as a necessary condition. The object also had to send emanations of the elements to the organ and these are received into the pores of the right size, which are found only in the same element. Fire particles fit only through pores in fire, etc. The sense organ evidently calculates the ratios of different size particles coming through the different size

pores and that ratio corresponds to a certain object. See J. I. Beare, *Greek Theories of Elementary Cognition* (Oxford: Clarendon Press, 1906), pp. 14-24.

[69] cf. *PA* II.1.647a4-10, where the homogenous composition of the individual organs (in their receiving part) is what makes them potentially like the object, and *Sens.* 2.438b16-439a5, where several of the organs are attributed one element as the receiving part to give them what is potentially like the object, but not actually. It is only the outer organs to which this applies.

[70] The distinctions apply also to capacities that might not be called faculties of an organism, e.g. the skill of housebuilding; see *DA* II.5.417b9.

[71] The force of the point may be greater when we see in the Greek word for alteration, *alloiôsis*, the sense of becoming alien, or other (*allos*). Then the contrast is more direct with becoming more fully a thing's nature.

[72] Aristotle has just previously described the state of understanding as an alteration brought about by learning which involves many changes from an opposite state. Presumably, this means changing from ignorance to understanding with respect to this bit of knowledge one day and that bit the next day and so on (*DA* II.5.417a30-b2).

[73] The problem becomes even worse if we take the discussion to be appropriate to all kinds of faculties, as I would like to take it. The faculty of digestion is actualized when the animal eats, and there is no sense in which the one being enhanced in the activity is becoming like the food. It is just the opposite: the food becomes assimilated to flesh. It may work for the capacity of plant and animal material to become food, but this capacity seems to fall under the broader category of physical change, and not as the actualization of an essential faculty. Plant and animal matter is only accidentally food; its capacity to be food is not a faculty of the living plant or animal.

[74] I have conjectured in seminar discussions that the thing in actuality might be the faculty itself in the second state. This can be accomplished by reading the *hupo* phrases differently. The non-red of the fence can be said to be destroyed by the red paint in the paint brush, but it can also be said to be destroyed by the final state of the fence being red. This state is the contrary that destroys being not-red. Similarly the student can be enhanced by the teacher's action or by the state of knowledge in himself that comes to be. If we take the focus to be on the states of the thing affected before and after, then the two *hupo* phrases draw the contrast perfectly. In accidental change the final state is merely the opposite of the original state; the first state is replaced (destroyed) by an opposite state. This is the broadest notion of potentiality which was spelled out in the first part of the chapter, in relation to the agent, as unlike becoming like. However, when an organism's faculty is actualized, the state of potentiality is replaced by an enhanced state of that faculty. The likeness that characterizes this change of state is the likeness of these two states, not of an agent to the patient. Alike in what sense? Well, we say that a man hears or sees not only when he is perceiving but also when he is sleeping (*DA* II.5.417a10-14). There must be something in common between them and that is the faculty itself: in one case it is a capacity, in the other a fulfilment, or perfection, of that capacity. Because the faculty is a part of the nature of the organism, the organism is ordered toward the perfection of that faculty. This cannot be said of any accidental change, where the kind of potentiality involved is just the potentially to be what it is not. A potentiality that is a faculty is grounded in the essential nature or substantial form of the organism. Because of this we can say the sleeping man hears, and that must be how

such a potentiality is like the actuality. In contrast, the fence before it is painted red is in no way a red thing. Ingenius as this suggestion may be, I am not convinced it is right because of the example that follows about the teacher and student (*DA* II.5.417b12-14). Here a *hupo* phrase is used in just the same way as in the explanation of *sôtêria* type changes and it clearly refers to an external agent.

[75] David Charles has pointed out to me that the discussion in *GC* I.7 applies the principle of becoming like to a very broad range of changes. An example that is relevant is that of medical skill bringing about health in a patient (324a35ff.). Aristotle does not spell out how the patient becomes like medical skill, but presumably it is that medical skill possesses the principles of good health and hence can make the unhealthy healthy. This example is not too different from the teacher-student case, where knowledge in the teacher brings about knowledge in the student.

[76] This view is expressed by Cass Weller in his Ph.D. dissertation, "Two studies in ancient accounts of sense perception: Plato and Aristotle," University of Pittsburgh, 1983.

[77] Another place where the notion of likening and assimilation is applied to mental entities is in *de Interpretatione* 16a4-9. Words stand for affections in the soul and these affection of the soul are likenesses of the objects. Intelligible objects are certainly included among the things about which we have words and likenesses in the soul. So it is not just physical likenesses Aristotle has in mind.

[78] Thomas Slakey, "Aristotle on sense perception," *Philosophical Review* 70 (1961), pp. 470-484; L. A. Kosman, "Perceiving that we perceive: *On the Soul* III.2," *Philosophical Review* 84 (1975), p. 518.

[79] Christopher Shields, "The first functionalist," in *Historical Foundations of Cognitive Science*, ed. J.-C. Smith (Dordrecht and Boston: Kluwer Academic Publishers, 1990), pp. 19-33; Martha C. Nussbaum and Hilary Putnam, "Changing Aristotle's Mind," in *Essays on Aristotle's De Anima*, eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 27-56.

[80] *Partibus Animalium*: becoming like in outer organs, II.1.647a4-10; heart as primary perceiver, II.1.647a27-29, II.10.656a28-b7, 656b24, III.3.665a10-13. *de Sensu*: becoming like in outer organs: 2.438b16-439a5, heart as primary perceiver, 2.438b8-16, 7.449a8-20. At *de Iuventate* 3.469a10ff., the heart is called the common and chief sense organ and then a reference is made to the above passages (*PA* II.10.656a28-b7 and *Sens.* 2.438b19-439a5) where it is explained why the individual sense organs are where they are. Part of the reason has to do with the requirement that the receiving part be potentially like the object, but not actually. So indirectly, *de Iuventate*, a work that is very explicit about the heart as source of all soul activities (also at 4.469a24ff.), also endorses the role of becoming like in the outer organs.

[81] Except as the organ of touch. But here I speak of the heart as central unifying organ, and place of cognition.

[82] Other reasons will emerge as we discuss *phantasia* in the next chapter.

[83] All the other occurrences that I have referred to which have to do with perception are in the context of physical assimilation in the outer organs. *DA* II.5.417a17-20,

II.11.424a1-10; *Sens.* 2.438b16-439a5; *PA* II.1.647a4-10. Furthermore, the discussion in *GC* I.7 is primarily about physical alteration, and *Physics* VII.2, as well.

Chapter 4

Phantasia

It is now clear that Aristotle's physiology of perception is much like ours in this respect: there are two tiers of alteration in the animal's perceptual organs, one in a specialized organ that registers the presence of a proper sensible, the other in a central organ, which receives all sensory information and by which conscious perceptual experience takes place.[1] The first level of alteration is a physical assimilation of the individual sense organ to the sensible quality in the object. For most of the senses, this physical assimilation can be understood in the most literal sense. Perhaps for sight and hearing, we need to understand the physical assimilation as a physical state that merely contains the information, similar to the way the transparent medium contains visual information without appearing colored itself. On the other hand, I have presented a good case for there being, on Aristotle's view, refracted images in the eye-jelly and sounds echoing in the ear canal. In explaining this first alteration as a becoming like, Aristotle fits it into his general principle of physics that a patient of change becomes like the agent in the relevant respect. Aristotle fits the second level of alteration to this principle as well, but only by a more abstract application of it. At this level, the sensible object makes the perceiver like itself by making the perceiver aware of the quality that is acting on the perceiver, not by making the central organ physically like it. Here, the actualization of the perceptual faculty and the perceiver becoming like are one and the same event. The difference is only in explanation: to speak of it as the actualization of a faculty is to refer to the role of the event for the natural life of the living substance; to speak of it as a becoming like the object is to fit the event into a general theory of causation in Aristotle's physics. Seeing or hearing something is both the performance of a natural function of animals, which serves their survival and well-being, and at the same

time it is an instance of physical causation, where the animal is the patient of an affection caused by an external object.

In this chapter, I will look more closely at the second level alteration, which takes place at the heart, in order to understand the different kinds of perceptual states and sensory-like states in relation to the two-tier physiology. Aristotle is explicit about the second stage only when he speaks of sensory experiences outside of perception, especially dreams, but also perceptual illusion, imagination, and memory. In such contexts, the perceptual faculty, *aisthêsis*, functions as the appearance producing faculty, *phantasia*. During dreams and episodes of imagination or memory, there are appearances not presently caused by an external object; during perceptual illusion, although an external object presently causes the appearance, the appearance does not correspond to what is really there. In contrast to all these states of *phantasia*, during veridical perception what appears both is presently caused by and corresponds to what is. In all cases of sensory presentation, both veridical and false appearances, the appearance comes about with the second level alteration, which is a sort of imprinting of the heart. The impression of a seal in wax is analogous at two points: (1) the physical alteration of the wax is analogous to the heart being physically changed in some way, (2) the sign in the wax signifying the sender is analogous to the significance of the perceptual state, that something appears in a certain way.

I will argue that Aristotle uses the wax and signet ring analogy to represent this second stage, both the physical and the cognitive aspects of states of the primary sense organ, and that he means this both when he speaks of the coming to be of *phantasmata* and when he speaks of perceiving. In the first part, I will use Aristotle's explanation of dreams to elaborate the two-tier theory. Then, in part II, I will turn to *de Anima* III.3 and provide an interpretation of Aristotle's theory of *phantasia* in light of the physiology. In part III, I will examine Aristotle's use of the wax and ring analogy in *de Memoria* to

explain *phantasmata* and I will draw the conclusion that Aristotle uses the analogy to represent the second level perceptual alteration. Finally, in part IV, I will complete my analysis of Aristotle on perceptual states with a discussion of the *aisthêma*, its place in the physiology and its relation to the *phantasma*.

I

In Aristotle's explanation of dreams, he indicates more clearly his view of the physiological processes from outer organs to the heart. The puzzle in explaining dreams is that we undergo sensory experience that is just like perceiving, but there is no external object presently causing the experience.[2] Sometimes mental images have their immediate cause solely in the primary sense organ, as is the case with memory and recollection and imagination.[3] But Aristotle thinks something else must happen in a dream. The reason, I presume, is that mental images need not lead us to think we see or hear, but dreams and perceptions do. The difference in perceiving is that the stimulation of the primary sense organ is caused immediately by *kinêseis*, changes, in the outer organs. So, it is at least reasonable that dreams also are caused by such.[4] What evidence does Aristotle have for this? He needs some evidence that the outer organs can stimulate the heart after the object of perception is no longer present. After-images provide this evidence. They strongly suggest that parts of the eye have been put in a state of stimulation by the object and remain in that state even when the direction of gaze has changed or the eyelids have been closed (*Insom.* 2.459b1-20). Another example of a stimulation that lingers is an over intense stimulation that causes the organ temporarily to fail to function: a loud noise that deafens, an odor that burns the nostrils (*Insom.* 2.459b20-23). These are cases of very strong after-images, which, because of their intensity, overload the entire receptive capacity of the organ temporarily.

Aristotle does not provide any good evidence that the sense organs do in fact retain such states for several hours. He merely shows that it could be possible. His discussion of mirrors, perfumes and wines provides other examples where a sensible affection, even with a small presence of the agent, lingers a long time (*Insom.* 2.459b23-460a32), and after-images provide evidence that some lingering does in fact occur in the sense organs. He explains this lingering by comparing it to what happens when projectiles move through liquid or air. According to Aristotle's theory of projectile motion, the media through which projectiles move have the capacity to impart motion even after they themselves have been moved by something else, but are no longer being moved.[5] Aristotle conjectures that something similar happens with all qualitative alteration as well, as we know it does in the case of something becoming hot. The source of heat makes adjacent things hot, and these pass on warmth to things adjacent to them, or to deeper parts of themselves, even after the original source of heat has been removed. Gradually the things heated return to the original state.[6] The changes in all the individual sense organs are qualitative alterations: becoming sounding, becoming colored, becoming odiferous, etc.[7] So, Aristotle conjectures that these changes can linger in the sense organs just as heat does, by penetrating into more remote parts of the organ after being present in the part of the organ that most immediately responds to the stimulation by the object.[8] And after the original cause of change is removed, these states can cause subsequent change, namely the stimulation of the primary sense organ so that an appearance occurs. Hence, during an after-image, although the organ may be responding to new information as well, the previous change of state continues to be a cause of stimulation.[9]

If we grant that a change of state penetrates deeply in the receptive material and this is the cause of after-images, it still is not clear that the same explanation can be applied to dreams. The alteration that has penetrated deep must stay on for hours. If it

does, why don't we notice it? Aristotle's explanation is that it becomes faint enough so that the strong stimulations of perceptual experience overpower the faint remnants of previous perception just as a greater light obscures a lesser one.

> During the day, while the senses and mind are active, they [the remnant *kinêseis*] are extruded from consciousness or obscured, just as a smaller fire by a greater, or little pains or pleasures by greater ones, but these ceasing, even the little ones come to the fore. At night, because of the inactivity of the particular senses and their inability to be activated, which occurs due to the reflux of heat from the exterior to interior [of the body], they are borne in to the sourcepoint of perception (*arkhên tês aisthêsôn*) and become apparent, now that the disturbance (of waking perception) has subsided. (*Insom.* 3.460b32-461a8)

At night, stimulation from external objects ceases and then the faint remnants from earlier changes (*kinêseis*) have an effect. In the state of sleep, they stand out against such a quiet background as much as perceptual stimulation does while awake, and so these faint remnant *kinêseis* can stimulate the primary sense organ just as the stronger alteration of the organ during waking perception stimulates. In this way, Aristotle suggests, dreams are caused by lingering alterations in the sense organs.

This is not yet enough to explain the sequence of images in a dream. Given the story so far, one might think that all the remnant *kinêseis* would be stimulating the heart at once. So it isn't simply that the remnant *kinêseis* now stand out because the background is quiet. They also must be in a latent state and aroused one by one, to an active state, i.e. a state that stimulates the primary sense organ. Aristotle describes this latency with another comparison.

> For when one is asleep, as most of the blood sinks inwards to the *arkhê* [the heart], the internal changes of state (*kinêseis*) [brought about by previous perception], of which some are latent, some active, travel with it inwards. They are so related that, in the motion [of the blood], one change (*kinêsis*) comes to the fore, and when it is spent, another takes its place. They are related to one another like ceramic frogs, which rise in the water as the salt dissolves. Similarly, the internal changes remain in a latent state, but then become active when the impediment to so doing is relaxed. Then, as they are freed, they begin to move in the little blood remaining in the sense organs, and bear resemblances, like those in cloud-shapes, which in their rapid changes compare now to men, and in a moment to centaurs. Each of these

> internal *kinêseis*, as has been said, is a remnant of an actual *aisthêma* [the original perceptual state]. The actual *aisthêma* is no longer present, but this remains within. (*Insom.* 3.461b11-23)

Aristotle does not tell us what keeps the left-behind changes of the sense organ in a latent state. His examples of projectile motion and heat transfer do not provide an analogy for this impediment. Perhaps the impediment is simply the scarcity of blood in the outer sense organs. Blood is the vehicle of communication between the outer organs and the heart. Perhaps, as the little blood left randomly moves in the organs, it chances upon first this remnant *kinêsis* and then that one, and once the blood receives the stimulation, it is passed on to the *arkhê* of perception.

This physiological story, along with Aristotle's theory of digestion, allows him to explain why during part of the night we do not dream, and why the dreams are sometimes weird, other times more like waking life (*Insom.* 3.461a8-25). The stimulation gets passed on in the blood in a way like eddies in a river. If there is other disturbance in the blood, then the patterns get broken up. The digestion of food creates heat which stirs up the blood (as the food is vaporized).[10] This breaks up the eddy-like patterns so that none reach the heart and no dreams occur. If the patterns are not altogether broken up, then the dreams may be confused and weird. As digestion is completed, the blood becomes still and more pure, the stimulation reaches the heart intact and the dreams are more normal. And the dreamer thinks he is perceiving because the information the primary sense organ is receiving comes from the outer sense organs intact just as in wakeful perception. (*Insom.* 3.461a8-31)

There still is need to explain why dreams are as connected as they are, if they are produced by a random presentation of bits of the previous day's sensory stimulations. Perhaps the activation of the left-behind *kinêseis* in the sense organs does not occur so randomly, but the current content of the dream determines what remnants are selected next for activation according to laws of association.[11] Aristotle does allow that our

mental state affects how we interpret sensory data. Given only a slight resemblance, the coward will see what he fears and the lover what he loves, and men in fever see wild animals in the marks on the wall (*Insom.* 2.460b3-16). In dreams, too, only slight resemblance is required for interpretation (*Insom.* 3.461b7-11). Aristotle's explanation of dreams certainly is only an unfinished sketch. The importance of it for my investigation is the insight it gives about Aristotle's understanding of the communication between outer sense organs and primary sense organs.

The first thing to note is that this account attests to the interpretation developed in the last chapter, that there is real physical alteration in the outer sense organs. The example of a heat source heating adjacent objects and these passing the heat on is offered precisely because perception is a change in qualitative state. It is because there is a qualitative change of state in the sense organ's material that an explanation is at hand for the lingering affection that takes place in after-images, an explanation that Aristotle extends for dreams. The second thing to note is that a particular state can exist in an outer organ and not be the present cause of a dream experience. Things appear to the animal only if the information in the altered state of the outer sense organ is passed on to the primary sense organ and have a noticeable effect there. It is no different for waking perception. Indeed, Aristotle begins his analysis of dreams by suggesting the conclusion that gets filled out in more detail through the treatise: that in dreaming, although we do not really see or hear, the individual sense organs nevertheless are affected, and "make an impression on the [primary] perceptual faculty as when awake, but not exactly in the same way" (*Insom.* 1.459a1-5). The difference Aristotle will explain more fully: in perception the object is present and presently causing strong original alterations in the individual sense organs, whereas in dreams, it is faint remnant alterations that become effective due to the background quiet of sleep. In either case, it is only when the primary sense organ is stimulated that there is an appearance to the animal. Hence, we see clearly

the two tiers of Aristotle's physiology of perception: first, there is qualitative change in some material of the organ that is continuous with the medium; second, this altered state, which is one kind of *kinêsis*, produces another *kinêsis* in the blood and ultimately in the primary sense organ. At this point, something appears; that is, there is a *phantasma*, the content of which includes the proper sensibles that affected the outer organs, but more besides. The "more besides" might be called interpretation of a collection of sensible forms, but I do not mean to imply that the primary sense organ is a sort of homunculus reading signs in the outer organs. As we will see later, it is according to the habituation of the animal, determined by its desires and needs, that when certain complexes of sensible forms are impressed upon the central organ, the animal is appeared to in a certain way.

Aristotle gives us a few clues about the interpretive functioning of the primary sense faculty. His treatise on dreams is not only about dreams but about all cases where the primary perceptual faculty gets impressed upon and presents something not really there as presented. The reason we see an object as something it is not is because the impression is similar to what would take place if the object presented were really there as presented. These cases of false appearance include perceptual illusion in a healthy state, and deception by emotion or illness, as well as dreams. In the cases of emotion or illness, the similarity of the impression may not be so close because the disturbed internal condition makes it so that even very slight resemblances bring about a certain kind of presentation (*Insom.* 2.460b3-11). Dreaming requires only slight resemblances, as well, because the faculty of judgment is restrained (*Insom.* 3.461b5-11). So for these states, it is a combination of the primary sense organ being stimulated in a way similar to a different perceptual experience and the perceiver being in a suggestible state. The cases of healthy perceptual illusion are the best examples of the primary organ being stimulated in a way most similar to a different perceptual experience. If we examine these

examples, we can get a better idea about the normal functioning of the primary sense faculty and its interpretative role.

Aristotle's favorite example is that of the sun appearing a foot across. It is certainly true that the sun appears much smaller than it really is, and this continues to be so, regardless of the scientific understanding one has (*Insom.* 1.458b28-9). This kind of appearance and all other false appearances treated in *de Insomniis* Aristotle attributes to the same faculty, the appearance-producing part of the soul, *to phantastikon tês psukhês* (*Insom.* 1.458b25-31). This is the same thing as the part that perceives, *to aisthêtikon*, but different in being (*Insom.* 1.459a14-17); that is, the account of it is different because it is a different function than that accomplished by the perceptual faculty. The reason they count as the same faculty we can presume is that (1) the same organ supports the faculty and (2) the same contents, namely particular sensible objects, figure in the cognitive states for both faculties, and (3) they have the same cause, sensible particulars, whether remotely or immediately. That is why no states of *phantasia* occur without perception having taken place or taking place simultaneously (*Insom.* 1.458b30-1). Aristotle gives three examples of *phantasia* during an act of perception: (1) the sun appears a foot across, (2) an object such as a pencil between crossed fingers feels like two (called Aristotle's experiment),[12] and (3) the land appears to be moving to one traveling in a boat. (*Insom.* 2.460b18-27) The explanation he gives is this:

> The reason for this deception is that things may appear not only when the sensible object stimulates, but also when the sense is stimulated of itself. (*Insom.* 2.460b23-7)

By the sense being stimulated of itself, Aristotle must mean that there is something in the affection of the individual sense organ that does not correspond to the true properties of the object. The object alone, then, cannot be the cause: the land itself cannot cause a moving image on the retina because it is not moving; similarly, the pencil is not two, and

the sun is not small. The sense organ has received additional stimulation in one way or another and that is what counts in this context as self-stimulation of the sense.

We can offer provisionally as a first characterization of *phantasia* that it is the faculty which presents perceptual content that is not caused directly by an object. In dreams, this is all of the content; in perceptual illusion, it is only part. Later, we will see how *phantasia* must be the producer of not only false appearances, but also true appearances with respect to the content of a perception that is not perceptual in the strictest sense. Strictly speaking, perceptual content is that produced by the cause of sensory stimulation, the proper sensibles. The common sensibles, to some extent, also count as perceptual content in the strict sense, insofar as shape or motion of the object directly cause certain features of the sensory stimulation, e.g. the shape and motion of the red image in the eyeball.[13] But unlike the proper sensibles, what appears may not be the true shape or motion of the object; and to judge correctly about these may require more information than is given by the present perception. Last are the incidental sensibles, which are not perceptual content in the strict sense.[14] Socrates perceives the son of Cleon and that it is the son of Cleon, but it is not *qua* the son of Cleon that the object affects Socrates' sense organs. Perceptual content not provided by a direct causal connection to the object, whether this is false appearance of common sensibles or any appearance of an incidental sensible, as we will see, is attributed to the faculty of *phantasia*. Even though all these appearances are in some sense caused by an object, what the object directly causes is a presentation of proper sensibles, which is (nearly) always true. Perceptual judgment that goes beyond this is not directly caused by the object, but will be explained by *phantasia*. And all acts of *phantasia* could be regarded as examples of the perceptual faculty being stimulated of itself; that is, the faculty provides interpretation beyond what is imprinted by the direct causal action of the senible object.

II

Aristotle refers the reader of *de Insomniis* (1.459a15) to his discussion in *de Anima* about *phantasia* and it will be helpful to turn briefly to that discussion. Aristotle's suggested starting point is that the faculty of *phantasia* is that by which any appearance (*phantasma*) arises (*DA* III.3.428a1-2). From this it follows, presumably because an appearance presents things as being in a certain way, that it will be one of the faculties by which we discriminate (*krinein*) or get things right or wrong (*alêtheuomen ê pseudometha*). And these are perception (*aisthêsis*), opinion or belief (*doxa*), understanding (*epistêmê*), and thinking (*nous*).[15] We need not conclude from this that *aisthêsis* and *phantasia* are judging faculties in the same way that the higher faculties are; nevertheless, they do all share the feature of presenting something as being in a certain way, and this can be right or wrong. Aristotle rules out identifying *phantasia* with any of these, but he goes on to show that it belongs in some way to the perceptual faculty. An act of *phantasia* is an affection that occurs only in perceivers and not without an act of perception (either previously or presently). Also, this affection is an intentional state of which the content, or elements of content, are objects of perception. (*DA* III.3.428b10-17) Given this as an acceptable description of *phantasia*, Aristotle questions what such an affection might be. He hypothesizes that it will be a secondary state that is caused by the state produced during perception, an example of an altered thing changing something else in turn (a *kinêsis* causing a second *kinêsis*) (*DA* III.3.428b10-11).[16] That would explain why the affection which is a state of *phantasia* occurs only in perceivers and only with perception. Such a second affection would also be like the first perceptual state. The reason, presumably, is the general Aristotelian principle that all alteration consists of an agent making a patient like itself. This would explain why the contents of *phantasia* are sensible things only.

Another accepted feature of states of *phantasia* mentioned earlier in the chapter is that they are often false (*DA* III.3.428a11-12). The hypothesized second *kinêsis* can explain this as well. Because it is a likeness of the first perceptual *kinêsis*, and that first state is something that gets things right or wrong, this second state must also get things right or wrong. Aristotle explains that the affection or *kinêsis* which is the first perceptual state will be nearly always true with respect to the proper sensibles, but not so with incidental and common sensibles.[17] The result is that, with respect to the common sensibles and incidental sensibles, the second *kinêsis*, being like the first, could be false not only when the object is not present (as in dreams), but even when it is still present and causing a perception (as in misperceiving the size of the sun or Theaetetus as Theodorus). So the hypothesized second *kinêsis* would explain how states of *phantasia* can be true or false.

That the second *kinêsis* can be true or false is evidently linked to another feature it would possess. To be true or false must imply that it presents things as being in a certain way to the animal, and that is why the animal both experiences many things and acts in response (*DA* III.3.428b16). This too is an accepted feature of *phantasia* which is explained if a state of *phantasia* is a second *kinêsis* arising from perception. This same feature of *phantasia* Aristotle had in mind when he earlier stated that animals live in virtue of *phantasia* alone, not having the ability to calculate (*DA* I.3.415a10-11). There is, however, a puzzle because of the seemingly incompatible statement in *de Anima* III.3. In first characterizing *phantasia* as distinct from perception, Aristotle says that states of *phantasia* are mostly false, in contrast to perceptions, which are always true (*DA* III.3.428a11-12).[18] If that is so, and animals have only *phantasia* for getting about, it is a wonder they are so successful. Furthermore, the hypothesized second *kinêsis* only shows how states of *phantasia* could be false, not why they should be mostly false. Perhaps

Aristotle had only certain kinds of *phantasia* in mind when he made the statement that they are mostly false. I will return to this puzzle later.

It is important to note that the second *kinêsis* Aristotle considers to be present both during perception and afterwards.

> The [second] change (*kinêsis*) that is brought about by actual perception will differ for the three kinds of perception. The first [i.e. perception of the proper sensibles] is true during the perception, the others might be false whether perception is present or absent, and especially when the sensible object is far away. (*DA* III.3.428b25-30)

Prior to this point in the discussion, we might have thought that Aristotle is speaking of a perception and then a state subsequent to the perception. The paradigm example would be the perception of a red rose and then a later calling to mind the same image. But we must keep in mind that Aristotle includes as states of *phantasia* appearances during perception. That is why his explanation of how a second *kinêsis* can be false indicates that the second *kinêsis* is not something outside of perception, but occurs during perception. Because, for Aristotle, states of *phantasia* include not only those that are present outside of perception, including imagining, remembering, and dreaming, but also those that are present during perception, such as the appearance of the sun, and because he is giving one general explanation for all states of *phantasia*, namely a second *kinêsis* arising in perception, we can conclude that the *kinêsis* is a second level alteration that is part of an act of perception, but is also retained after the perception causing it has passed.[19]

This brings to mind the two-tiered structure of the perceptual organs, which, as we have seen, Aristotle does refer to in *de Anima*,[20] but makes more explicit in other works. The first *kinêsis* is the alteration in an individual sense organ; the second *kinêsis* is the alteration in the central receiving organ. That is a second *kinêsis* that occurs during perception and is the likely candidate for what Aristotle has in mind in *de Anima* III.3. The hypothesized second *kinêsis* is not just a hypothesis. In the more strictly

philosophical context of *de Anima* III.3, Aristotle shows that the best explanation for the accepted features of *phantasia* is such a second *kinêsis*; in this way he establishes a theoretical basis for the second *kinêsis*. In the more physiological works, such as *de Insomniis*, he is explicit about what and where this second *kinêsis* is, namely, the stimulation of the primary perceptual organ during perception. The dialectical probings in *de Anima* III.3 are similar to those of III.2, in that there are considered facts about our cognitive abilities that lead us to postulate a central unifying organ that plays a role in all sensory presentation. In III.2, it was to explain our perceiving two sensibles in one object; in III.3, it is to explain sensible appearances and their retention as mental images. So, again, we see that *de Anima* is providing the theoretical grounding for the physiology that is explicit in other works. The discussion in III.3 suits the dialectical and more abstract approach of *de Anima*. The features of a second *kinêsis* in perception would provide the basis for explaining the accepted features of *phantasia*. Only in the *Parva Naturalia* do we get the scientific details about the two levels of *kinêseis*, but the two-tier theory is definitely operative implicitly in *de Anima*.

The conclusion in *de Anima* III.3 is that every state of *phantasia* is a second *kinêsis* of perception. It is not clear whether Aristotle also holds that each and every one of these second states is a state of *phantasia*. Since there always is a second level *kinêsis* in perception, the issue is whether *phantasia* is involved in all perception. One interpretation of *phantasia* is that it is the interpretive function of perception by which the animal becomes aware of the object as a certain kind of thing. Nussbaum suggests that it is because *aisthêsis* is for Aristotle mostly passive that the faculty of *phantasia* is required to explain the animal's interpretation of its environment. If perceiving is simply becoming like the object by a sort of impression on the sense organ, this is not enough to cause an animal to pursue or avoid. It must see an object as food or as an enemy. That is why Aristotle considers acts of *phantasia* essential for all animal movement in *de Motu*

Animalium and the end of *de Anima* (433b27-30).[21] Perhaps the second *kinêsis* coming upon perception is the interpretive movement, accounting for all "perceiving as".

If all "perceiving as" requires *phantasia*, then it will be very difficult to explain why most *phantasiai*, i.e. acts of *phantasia*, are false (*DA* III.3.428a12). The success of the animal depends on having a large percentage of true *phantasiai*. An opposing view holds that *phantasia* is meant to account for non-paradigmatic sensory experience and all sensory-like experience outside of perception.[22] This would include all that is discussed in *de Insomniis*, dreams and perceptual illusions, and also the kind of appearances we conjure on our own power, such as imagining and remembering. All of these kinds of acts of *phantasia* can be described in the following way: cases of sensory presentation in which what appears is not really present as it appears.[23] Paradigmatic sensory experience occurs when objects are presented perceptually as they are. Aristotle's actual use of the verb *phainesthai* and the associated noun *phantasma*, especially throughout the *Parva Naturalia*, as well as in *de Anima* III.3, suggests this interpretation. It is easy to understand why most *phantasiai* are false on this interpretation. The common feature is that they present what is not really present; so, outside of the willed appearances used in imagining, remembering, and thinking, in which cases the sensory object's not being really present as it appears makes it false only in a non-relevant sense, all *phantasmata* will be deceptive. The difficulty with this view is Aristotle's use of *phantasia* in explaining the movement of animals and his statement that animals live by *phantasia* alone (*DA* I.3.415a11). They certainly cannot survive on false appearances.

On this second interpretation, not all the second stage alterations in perception will count as states of *phantasia*. During paradigmatic perception, i.e. normal conditions for the proper operation of the sense, such as good lighting and objects near enough, there will be no false appearance, hence no *phantasia*; but still there will be a *kinêsis* at the primary sense organ. This second *kinêsis* will be true with respect to all three kinds

of perceptual content. This *kinêsis* would be part of the perception; indeed, it would be most properly the perception in that nothing is present to the animal, nothing noticed, without the primary sense organ being affected. On this view (that *phantasia* is non-paradigmatic sensory experience) all true perception will involve *phantasia* not at all.

A radical version of the first interpretation (that *phantasia* is the interpretive movement, perceiving something as F) would count all alterations of the primary sense organ as states of *phantasia*. On such a view, seeing something as blue, and hearing something as a high tone, and smelling something as pungent, would all count as interpretation of the sensory data, something more than passive perception. But these are not the kind of "perceiving as" that is relevant to animal movement. The purpose of including *phantasia* within paradigmatic perceptual experience is to account for content that is richer than the proper sensibles, especially the incidental sensibles: perceiving things as food or enemies or mates or offspring. I do not see any motivation for thinking that an interpretive faculty is necessary to perceive the proper sensibles.[24] Aristotle never gives as an example of *phantasia* the presentation of a proper sensible during a perception.[25] If we follow a less radical version of taking *phantasia* as interpretation, the result will be that there is no place for *phantasia* in perception of the proper sensibles. And so, regardless of which interpretation of *phantasia* we follow, at least perception of the proper sensibles will not involve *phantasia*. On the one interpretation this is so because there is no need for interpretation of the proper sensibles; on the other interpretation, it is because they are always true (and hence, paradigmatic cases of perception). I conclude, then, that Aristotle's conclusion about *phantasia* is that all states of *phantasia* are second level perceptual *kinêseis*, but not vice versa.

Thus, perception of the proper sensibles involves two levels of *kinêseis* that are strictly perceptual, belonging to the *aisthêtikon qua* the *aisthêtikon*, not *qua* the *phantastikon*. Since the proper sensibles are the sensible forms under consideration in *de*

Anima II.12, it remains quite plausible that the receiving of sensible forms includes the second level *kinêsis*. But with respect to the incidental sensibles, and the common sensibles as well in certain respects, there is good reason to count the second level *kinêseis* in true perceptions as states of *phantasia*, or else Aristotle's use of *phantasia* for explaining animal movement makes no sense. Whether or not *phantasia* is involved depends on whether the content of the animal's perception goes beyond what can be said to be contained in the physical impressions on the sense organs. If it goes beyond, then we need to appeal to memory and past experience to explain it. Perhaps we can reconcile the two interpretations of *phantasia* by looking to another feature of states of *phantasia*, their retention.

Aristotle holds that all second level *kinêseis* can be retained in the perceiver.[26] The obvious purpose of this is to explain imagining and remembering. We can call to mind an image of things previously perceived and these images may contain or represent all three kinds of perceptual content. All retained *kinêseis*, whether corresponding to proper, common, or incidental sensibles, are states of *phantasia*, simply because they are retained after actual perceiving has ceased; and when called to mind as an image, the object of perception is not present as the cause.

The retention of sensory information plays a very important role in Aristotle's philosophy of mind. More than just the basis for the capacity to call to mind an image, it is a necessary condition for possessing all higher cognitive states or skills. The basic cognitive faculty is sense perception; all animals have this. The lowest animals can do nothing but act upon the perception they presently undergo. They have no connected experience. But most animals can retain past sensory information in some sort of memory. Repeated memories of the same thing Aristotle says give rise to experience, which he describes as an order in the memories, a unity in the plurality of impressions. (*An. Post.* II.19.99b35-100a9) I suggest that all perception of incidental sensibles

requires the retention of past impressions. For the recognition of individuals, memory will be required (e.g. a dog's recognition of its master); for the perception of something as a kind of thing, some amount of experience will be needed (e.g. a lion perceiving the deer as food).[27] Memory and experience are necessary for correct judgment about common sensibles in many cases; but it is not clear whether Aristotle thinks the judgment is part of perception or belongs to a higher faculty. Sometimes the basis of correct judgment of common sensibles may be simply other perceptual information presently taken in (the authority of visual information in Aristotle's experiment) (*Insom.* 2.460b20-22), sometimes perceptual experience (seeing the cup rim as round, even though it appears as an ellipse), sometimes thought and beliefs (the true size of the sun) (*Insom.* 2.460b18-20). In the last case, it is certain that Aristotle does not allow that the perceptual faculty is the judge.[28] About the first case, Aristotle says that the *arkhê* (of perception, I presume) affirms what an individual sense reports unless there is more authoritative information contradicting it (*Insom.* 3.461b3-5); but whether in that case it is still the *arkhê* that judges, it is not clear. Since many animals have excellent judgment about the movement, shape, and size of prey, it seems Aristotle would need to allow that some judgments that override appearances of the common sensibles are made by the perceptual faculty. Often, it will be retained sensory information and experience that make possible correct perceptual judgment. At the same time, it will be expectations developed by perceptual experience that will be the cause of false appearances.

Since all retained information belongs to the faculty of *phantasia*, it turns out that *phantasia* will play an interpretive role in perception even if one adopts the view that *phantasia* is the faculty of non-paradigmatic sensory experience and sensory-like experience outside of perception. The majority of such states, and the most obvious in human experience, are the ones involving retention of sensory information. But since it is retained perceptual information that explains much of the interpretation in perception,

including the false interpretations in non-paradigmatic perception, we will be led to broaden the notion of *phantasia* to include all interpretation in perception. Thus, it is in virtue of the capacity to retain sensory information that all of the features of *phantasia* can be explained. That is what makes possible sensory-like experience outside of perception (such as imagining), the misinterpretation of perceptual appearances (especially in the case of common sensibles), and the interpretation that makes up incidental perception.

We could understand Aristotle's presentation of *phantasia* in the following way. The kinds of experience to which it would be most natural for a Greek speaker to apply the term *phantasia* would be both sensory-like experiences outside of perception and non-paradigmatic perceptual experiences. That fits the common use of the verb *phainesthai* (to appear) and the cognate noun *phantasma* (an appearance), and that is where Aristotle begins in characterizing *phantasia* (*DA* III.3.428a1-2). But it is also necessary to account for things appearing in certain ways such that an animal can desire to move. Aristotle's investigation into these many kinds of appearing produces the conclusion that retained sensory images, which are the result of a second *kinêsis* in perception, can provide an explanation for all appearances, the content of which goes beyond the presentation of the proper sensibles (and perhaps simple concomitant common sensibles).[29]

My first characterization of *phantasia* as the faculty that presents perceptual content not caused directly by an object still holds correct, but now we understand that it is *qua* the storehouse of perceptual information that it provides information not given by the object; and this capacity to provide additional content not only explains false appearances, but all perceptual content that does not correspond to what is strictly the cause of sensory stimulation.[30]

The false perceptions Aristotle gives as examples of acts of *phantasia* can be explained in terms of the retentive capacity of that faculty. The pencil between crossed fingers is felt as two objects because of the expectations raised by our past experience of things touching what are normally non-adjacent sides of fingers. The sun appears smaller than it really is because our ordinary experience is only of balls of lesser dimensions and distances, and the sun's appearance is similar to how these appear. The lover seeing his beloved and the coward what he fears, in slight resemblances, depend on past impressions influencing the present perception. The dreamer is appeared to in a certain way because the haphazard stimulations of the left-behind alterations in the sense organs contain some similarity to affections in previous perceptual experience. The faculty of *phantasia* is the perceptual faculty *qua* storehouse of sensory information. That is the fundamental feature Aristotle is pointing to when he describes a state of *phantasia* in *de Anima* III.3 as a second level alteration brought about by perception and retained after the perception has gone.

III

A very similar picture of *phantasia* is presented in *de Memoria*. Memory is a kind of appearance, or image production, in that it makes use of a *phantasma* or mental image, whether a sensible thing or an object of thought is what is being remembered. It will be a special use of a *phantasma* in two ways: (1) the *phantasma* must be taken as representing something else, and (2) there must be a representation of time past along with the *phantasma*. But first Aristotle discusses a *phantasma* in general before analyzing the special use of it in memory. It is an affection (*pathos*) that comes to exist in the soul and in the part of the body possessing the soul, i.e. the primary sense organ, on account of perception, and it is a kind of picture (*Mem.* 1.450a27-30). This is quite

parallel to *de Anima* III.3 where a state of *phantasia* arises from perception, is a second level alteration, i.e. an alteration of the primary sense organ, and is like the perception.

Next, Aristotle uses a familiar analogy to explain the picture-like character of a *phantasma*:

> For the change (*kinêsis*) that occurs [during perception] stamps in a sign (*ensêmainetai*), like a sort of impression (*tupos*) of the perceptual state (*aisthêma*), just as we do when making an impression with a signet ring. (*Mem.* 1.450a30-32)[31]

The *kinêsis* mentioned here would seem to be the same as the first level alteration mentioned in *de Anima* III.3. The stamp impression is the second level alteration which gets retained as a state of *phantasia*. The place of this retention is the primary sense organ and soul. It is a state of the soul because it is a cognitive state. Since it is something retained continuously from the perception, and we do not continuously have our memories appearing as images before the mind's eye, the cognitive state which is a state of *phantasia* must not be limited to an appearing image but also the state which is the capacity to bring to mind a certain image. Or it can be something more complex: a collection of retained images coalesce into a unified experience which provides then the disposition which is a cognitive skill such as the ability to recognize individuals or kinds of things. All perception of the incidental sensibles may be explained in this way. These states of *phantasia* are states of the primary sense organ because the physical realization of either such a cognitive capacity or an actual appearance is in that organ. Hence, Aristotle goes on to explain poor and quick memories by analogies that indicate different physical conditions of the primary sense organ (*Mem.* 1.450b1-11).

The analogy to wax impressions Aristotle has borrowed from Plato's *Theaetetus*, nearly verbatim. Memory is compared to a block of wax in the soul:

> We make impressions upon this of everything we wish to remember among the things we have seen or heard or thought of ourselves; we hold the wax under our perceptions and thoughts and take a stamp from them, in the way in which we take the imprints of signet rings. Whatever is impressed upon

> the wax we remember and know so long as the image remains on the wax. (*Theaetetus* 191D)[32]

Plato uses the analogy to explain false judgments of a certain kind, those where perception is involved, such as mistaking a person for another when seeing someone a distance away (*Theaetetus* 193C).[33] We make judgments about what we presently see by lining up the present impression with the record of past impressions; we attempt to get the present one "fitted into the trace of itself, that recognition may take place" (*Theaetetus* 193C). When we fit it to the wrong trace we judge falsely. Plato also refers to different conditions of the wax, its consistency and purity, to explain good and poor memories, and why some people are more prone to false judgment than others. Aristotle in *de Memoria* borrows the analogy to explain the retention of perceptual impressions which provide the basis for memory and other states or functions of *phantasia.*

Although this analogy is not used elsewhere in discussions of *phantasia*, the evidence suggests that Aristotle has the same sort of picture in mind in his discussion in *de Anima* III.3 and in *de Insomniis*. It is the *kinêsis* occurring during perception that does the imprinting. In *de Anima* III.3 there is a first *kinêsis* that causes a second *kinêsis*, and the second is the sensible appearance which can be retained as a state of *phantasia.* Because of such a retained state, we can call to mind what we earlier perceived, or recognize an individual thing previously perceived. Because of unified collections of these retained states, one can perceive things that are not immediately available to any perceiver: one can recognize individuals, or recognize something as food or as dangerous. In *de Insomniis* Aristotle speaks of each of the senses striking against (*prosballei*) the primary sense faculty in somewhat similar ways during perception and dreams (*Insom.* 1.459a3-5). This is why the result, the appearing of things, happens in both. During the day the force of the stimulation by external objects is sufficient to cause the striking, but at night, the weak left-behind alterations require the quiet of sleep and the aid of the inward flow of blood in order to make an impact that is noticed, i.e. an

impact that causes an appearance at the *arkhê* of perception. The consistent picture presented in all three works is of a physical alteration in an individual sense organ making an impact on the primary sense faculty so that something is signified for the animal. External objects appear to the animal and this appearance can then be retained as part of its accumulation of perceptual experience.

The wax impression analogy for both Plato and Aristotle stands for the last step in perceptual affection when the soul becomes cognizant of something. Their ideas of what the soul is, however, are different. For Aristotle, perceptive or animal soul, is inseparable from the body and is especially associated with the primary sense organ, but this does not prevent him from describing perception as a change brought about in the soul through bodily changes.[34]

For Plato, all interpretation of sensory data is attributed to a rational judging faculty. Perception is only the bodily interaction between perceiver and external cause, relative to this perceiver and this object; it is only by the judging faculty that the perceiver gets at what truly is.[35] Aristotle enriches the notion of perception to include quasi-judgment. It is a faculty that gets at being to some extent; and hence it can get it right or wrong. In his use of the analogy to wax impressions, we can see how Aristotle has changed it so that the retention of perceptual impressions belongs to the perceptual faculty, rather than being merely a storehouse for the judging rational soul. In this way, they will provide the basis for perceptual quasi-judgments that are available to animals as well as humans. Because of the store of impressions in the primary sense faculty, Socrates can recognize the son of Cleon, and the dog Fido can recognize his master, and both can perceive things as belonging to a kind, such as food or danger. On Aristotle's view, perception on its own, without an outside rational judging faculty, perceives sensible objects as objective things, as mother, as enemy, as food. Furthermore, Aristotle establishes the proper sensibles as objective properties of things, so even the lowest level

of perception, that of the proper sensibles, gets at being.[36] This perception is infallible, or nearly so, not because it reports infallibly what appears privately to the perceiver, what *seems* to be for me, but because the world and the sense organs are such that the sense organs register accurately the presence of certain objective qualities. For the proper sensibles, what seems is what is.

Beyond the proper sensibles, perception can make mistakes, and Aristotle's account of false appearances is, on the surface, somewhat similar to Plato's account of mis-judging, in that past impressions and a present impression are in some way compared. Socrates speaks of lining up the perception with the traces of past impressions; this lining up, on Plato's view, must be something the rational judging faculty does. For Aristotle, the impression made upon the primary sense faculty during a false appearance is like an impression made in different, more paradigmatic or normal circumstances. The important difference in Aristotle's account of *phantasia* is that the significance attached to complexes of sensory impressions is part of what is retained in the perceptual faculty, and is produced by the perceptual faculty. Because of the significance, or interpretation, that gets packed into the contents of *phantasia*, subsequent sensory impressions, because of similarity, evoke the same significance. The collections of past impressions, being ordered into what he calls experience, provide expectations for the perceptual faculty. A present impression is interpreted quite automatically according to the significance attached to similar interpreted impressions previously retained. This interpretation is not provided by a distinct rational faculty, but by the perceptual faculty itself (considered broadly as including *phantasia*). In the example of the land appearing to move to the sailor, it is our general experience when we are standing still on steady ground that we judge other things passing by in view as moving. If the ship's deck is steady, then it can appear that the land is moving. In the example of the pencil feeling like two objects instead of one, ordinary experience leads us to expect such impressions

from touch to be caused by two objects. These two appearances are produced by an individual sense-faculty and are not ultimately misleading because they get corrected by further information. Often it is perceptual information that is used to make correction: seeing the one pencil, feeling the motion of the boat or seeing the boat cut through the water. At other times it is beliefs acquired from scientific understanding; there is no perceptual perspective we can get on the sun in order to reveal its true size.

In all these cases, the false appearance always occurs, because of the automatic interpretation built into the perceptual faculty through *phantasia*, but we judge it to be different in fact on the basis of information, sensory or otherwise, outside of the sensory information that elicits the false appearance

> For, in general, the *arkhê* [of perception] affirms what comes from each sense, unless comething more authoritative contradicts it. The appearance [in these non-paradigmatic circumstances] will always be present; but what appears is not always thought to be real, except when that which judges (*epikrinon*) is restrained or not moving with its proper motion. (*Insom.* 3.461b3-7)[37]

To speak in the somewhat crude terms of the wax metaphor, what takes place is that the sense of sight or touch makes an impression on the primary sense faculty which evokes interpretation according to the association of this impression with the interpretation-laden impressions stored in *phantasia* from past normal and paradigmatic perception. The individual sense thus produces an appearance like the paradigmatic experience. But the perceptual faculty as a whole might very well judge differently about what it perceives if other concurring impressions suggest things are different from the appearance caused by one sense faculty. This corroborates the picture of the perceptual faculty and its organic structure as I have presented it in chapters 2 and 3. An individual sense faculty consists of the primary sense organ functioning in a certain mode; that is, it receives information through a certain specialized receptor and thereby produces a view on the world, e.g. a visual or tactual appearing. In terms of the analogy, it is the primary sense organ being

impressed upon by the alteration in a certain individual sense organ, the result being an appearance of things being in a certain way for the animal. The view presented in one sensory mode or more may present things falsely for the reasons described, but often the perceptual faculty as a whole can get things right because, as a unified faculty, it makes perceptual judgment on the basis of all that is presented. Sometimes it cannot get things right, such as in sleep when it is restrained,[38] or in illness or emotion when it is moved by forces not proper to itself.[39]

If I am right that the wax analogy as presented in *de Memoria* is the operative picture for Aristotle in both *de Anima* III.3 and *de Insomniis*, then it is most plausible that the wax analogy in *de Anima* II.12 is part of the same picture. The receiver of the impressing action we would expect to be the primary sense organ. The individual sense faculties are characterized as receiving a sensible form, which I take to be one of the proper sensibles, via the individual organs, up to the primary sense organ and soul, like a sign on wax. The seal sign indicates that the impression signifies something for the animal; that is to say, the animal is appeared to in a certain way. In this context, only the proper sensibles are under consideration. They only are what can be said to be impressed or imprinted, because they necessarily produce the appearance of colors, sounds, etc. in every animal, and they are the cause of perception.[40] The wax analogy is perfectly suited for representing both the receiving and the retaining of the sensible forms. The seal ring makes the impression and then leaves a relief that represents the ring. In *de Anima* II.12 the focus is on the receiving. In *de Memoria* it is on what remains after the perception, an impression or relief (*tupos*) of the previous perceptual state (*aisthêma*). Aristotle's discussions of *phantasia* and different kinds of quasi-sensory states that are attributed to *phantasia* indicate that the analogy to the wax impression is consistently intended to represent what happens in perception at the second tier of alteration, the second *kinêsis* at the primary sense organ.

There is a difficulty with using the notion of imprinting for explaining *phantasia*. During perception, it is the proper sensibles and concomitant common sensibles (such as shape and motion) that get imprinted, yet the content of the perception will normally be enriched by incidental sensibles.[41] It is these primarily that we call to mind in remembering or imagining. But these are described in *de Memoria* as the traces left behind by the impressions made in perception. If the incidental content is not imprinted in perception, then how does it get into the retained states, if they are traces of imprints? The plausible thing to say is that the imprint is only part of the story for a state of *phantasia*, just as for a perception. Interpretation is added to the imprint during perception, and this interpretation stays with it in memory. When I see the red rose, what is imprinted is only a red shape; that is the sensible form received and what makes up a part of the content of a *phantasma* when I recall the red rose.[42] But my retention of the sensible form is linked with an interpretive tag that says it is a rose. A serious problem is where this richer content comes from. I have suggested that it would be previous impressions that determined the interpretation of a present impression, but that assumes that previous impressions are already laden with interpretation. It seems that interpetation at some point has to have pulled itself up by its own bootstraps. Aristotle's answer is that memories get united into an experience, but on what basis it is not clear, except that the soul is such that it has the capacity to do this (*An. Post.* II.19.100a5-15).[43]

We can conclude that the imprint made in perception is of the proper sensibles and concomitant common sensibles, such as shape, number, and motion. By imprint, I do not mean a literal physical impression on the primary sense organ. It is a physical change in that organ, as is a wax impression, but the signification of the wax imprint is analogous to the animal being presented to by redness and shape. As the seal print signifies a sender, so the perceptual state of the primary sense organ presents a view on the world. These cognitive imprints are retained by means of some physical state of the

primary sense organ, and by some power, are imbued with richer content because unity emerges out of the plurality of impressions. This unity in past impressions then has interpretive influence on newly occurring imprints, imbuing them with richer content than is actually imprinted by an individual sense organ. The proper sensibles, then, once imprinted, are the basic components of *phantasia*, but much more significance becomes woven in with the retained imprints through memory and experience. Thus, the total signification of a perceptual imprinting, what appears to an animal, is a function of much more than the actual cause of the imprinting, the proper sensibles. The retention of all imprinting and the building up of the significatory dimension of sensory experience is the function of the faculty of *phantasia.*

IV

There is one more thing with respect to perceptual imprints for which clarification is desirable; that is the exact meaning of two terms associated with them, *phantasma* and *aisthêma.* In *de Memoria*, the *pathos*, or affection, that Aristotle is explaining by the ring analogy is a *phantasma.* In that explanation, he says that a trace or relief of the *aisthêma* is left behind by the *kinêsis* of perception (*Mem.* 1.450a30-32). In *de Anima*, Aristotle says that a *phantasma* is just like an *aisthêma* except without the matter (*DA* III.8.432a9-10). We know that an alteration in an outer sense organ produces a physical change in the primary sense organ, and this second *kinêsis* is retained as a state of *phantasia.* We know, too, that a *phantasma* is an appearance, hence an object of cognition, albeit an internal object or object whose cause is in the cognizer, not an external object. A mental image is the most straightforward example of such an object; but we must also include the false appearances during perception. We also have inferred that *phantasia* provides interpretation in true perception, but I know of only one text where true perceptions are called *phantasmata*: in the *Protrepticus*, Aristotle says the *phantasmata* in dreams are all

false but in waking life many *phantasmata* are true (*Protrep.* 101.1-5).[44] On the basis of what we have determined previously, true *phantasmata* would be the content of perception with respect to incidental sensibles, that it is a man, that it is food, etc.[45] Since the primary sense organ, *qua* storehouse of sensory information, is the source of the content of *phantasmata*, we can say that all *phantasmata* are states of the primary sense organ, but also states of the soul, since they are cognitive states.[46] The location of *phantasmata* is also established to be the primary sense organ in *de Anima* III.3, since that is where the second *kinêsis* of perception takes place. It is not clear whether we can call this second change retained after perception a *phantasma*, when it is no longer an appearing object but only a capacity to remember or bring to mind an image of something previously perceived. I am inclined to think so for two reasons. First, the comparison to a wax imprint suggests that Aristotle is thinking of *phantasmata* as pictures in the mind, regardless whether in a state of storage or actually contemplated. Second, this is corroborated by the first occurrence of the term after the comparison. In explaining why some have poor memories, Aristotle says about the very quick of mind that the receptive material is too fluid and so the *phantasmata* do not remain in the soul (*Mem.* 1.450b11) and he means that the capacity to put before the mind's eye what previously appeared either is not produced or dissipates quickly. So, *phantasmata* are something present not only during an actual appearing. They are contents stored in the perceptual faculty as much as they are contents of cognitive acts. As contents stored, they must be capacities for recall, recognition, etc.

But what about an *aisthêma*? Is it a state of the primary sense organ also, or of an individual sense organ? Or is it the perceptual state as a whole, both outer and inner organ, everything necessary so that the perceiver perceives a certain strictly perceptual content? Is it the content of a perception alone, or the content with the physical state of some organ or organs as the material cause? This is very difficult to determine from

Aristotle's use of the term. Aristotle rarely speaks of it in the context of perception. No doubt, this is because there is no internal object of perception; perception is of external objects. The only time that an *aisthêma* becomes an object is in the case of after-images (*Insom.* 2.460b1-3). And even though his discussion of after-images is meant to support the thesis that affections linger in the outer sense organs, and after-images do suggest this, still it is not clear that the *aisthêma* is just the affection in the outer organ. We do not literally see things in the eyeball; instead, we have an appearance that suggests that the eyeball is presently causing it, and I suggest this was as obvious to Aristotle as to myself when I closely observe the phenomena. In order for the perceiver to be given this appearance, the lingering affection in the eyeball must stimulate the primary sense organ; but it is not the affection that appears. So, what is here called an *aisthêma* may be just a special case of *phantasma*, one where the primary sense organ is stimulated by a lingering strong affection in the eyes. Because an after-image seems to be a lingering of the perception itself (the sight seen continues to be presented), we can understand why this *phantasma* might be called the *aisthêma* rather than a *phantasma*. Exactly the perceptual state that occurs during a perception continues on, and what appeared during the perception due to the immediate impact of the object on a sense organ continues to appear because of the strong affection in the sense organ. Originally the sight was caused by an *aisthêton*, but now only the subjective side of the perception continues, and this is the *aisthêma*; it now is the sight or appearance on its own.

Outside of the case of after-images, there is no reason to consider an *aisthêma* to be an object of perception; but it may nevertheless be said to be the internal state which possesses the strictly perceptual content of perception. Aristotle says that during perception the *aisthêma* is that in virtue of which the controlling and judging sensory faculty affirms that such-and-such is there (*Insom.* 3.461b24-26). That would be true whether the *aisthêma* were the affection in an outer organ, or the composite imprint of

proper and common sensibles on the primary sense organ, or the strictly perceptual content itself with the one or both of the above organic alterations as material cause. And whichever it is, there is no reason to consider it an object of cognition, except perhaps in the special case of after-images where the lingering perceptual state continues to present an appearance on its own. Only in this case is there an internal object as with a *phantasma*. But even when there is an internal object presented, the object presented is not literally any internal affection, whether of the primary sense organ or an individual sense organ; one does not "see" with the mind's eye a picture in the primary sense organ or in the eye.

It is not possible to get clarification from other occurrences of the term in *de Insomniis*. Two times the more long-term lingering affections which cause dreams are called left-behinds of the *aisthêmata*. But they are states left behind equally from the entire perceptual state as they are from the original affection in the outer organs. In the one text, Aristotle associates these remnant *kinêseis* that arise from *aisthêmata* with the *phantasmata* which are the dream images (*Insom.* 3.461a18-19).[47] Here he has in mind the last *kinêsis* at the heart, which is a more remote residuary movement from the original *aisthêma*. In the other text (*Insom.* 3.461b18-24), he speaks of the remnant *kinêsis* as something left-behind from the actual *aisthêma* of perception,[48] and it seems to be in an outer organ because the little blood remaining in the sense organs frees it from whatever impediment keeps it in a latent state so that it can stimulate the heart.[49] Regardless whether the *kinêsis* is in the outer organ or at the heart, it is a left-behind of an *aisthêma*, and this would be true whether the *aisthêma* is the affection in an outer organ or the entire original perceptual state whose completion is an imprint on the heart.

Not much help can be found elsewhere, but there is some evidence that the *aisthêma* should be the complete perceptual state and its content, not just the affection in an outer organ. We know that a dream image (*enupnion*) is a *phantasma* that occurs

during sleep and is caused by residual stimuli in the sense organs (*Insom.* 3.462a29-31) and we know that *phantasmata* are states of the soul and its organ, i.e. the heart (*Mem.* 1.450a27-30), and also that appearances, whether in sleep or in waking perception, take place only when the *arkhê* of perception is stimulated (*Insom.* 3.461a5-7 and 461a30-b2)). Therefore, dream images are states of the heart. But then, in *de Somno et Vigilia*, Aristotle says that people do things as if awake while they are asleep and this is because they have *phantasmata* and a kind of perception, for a dream image is a kind of *aisthêma* (*Somn.* 2.456a24-26). We can infer from this that an *aisthêma* is a state of the heart. But also it is a content or appearance, as is a *phantasma*. Aristotle never does call dream images a kind of *aisthêma* in *de Insomniis*, but we can understand what he means. They are like *aisthêmata* because, just as in perception, the heart is presently being stimulated by states of the outer organs, albeit residual states rather than fresh impressions. It seems then that part of what it is to be an *aisthêma* is to be a complete affection of the perceptual organs, i.e. both a stimulation in an outer organ and the stimulation and appearance it produces at the heart. The two occurrences of the term in *de Anima* suggest also that it is the completed affection, because it is said to play the same role in perception as a *phantasma* does outside perception, that of presenting something to the cognizer (*DA* III.7.431a15). The difference is that a *phantasma* is without the matter (*DA* III.8.432a9-10); this probably means that the object is not present.[50] Aristotle probably has in mind the obvious difference between, say, a perceived rose and a mental image of the rose. The mental image is nothing but form in the mind, while the perception presents a full-bodied rose. In the *Posterior Analytics* II.19, Aristotle says that in some animals there is retention of the *aisthêma*, and this is the basis of *phantasia* and memory. The part of a perception that is retained is the imprint at the heart; so we might think that in this context an *aisthêma* must include this imprint. In the *Metaphysics* the term occurs twice (1010b32 and 1063b4), both times in tandem with *aisthêton*, and signifies broadly

the internal perceptual state and cognitive experience brought about by the external sensible object; in both discussions, the terms *aisthêma* and *aisthêton* are used to contrast the subjective and objective poles of perception. So here too the *aisthêma* must be everything a *phantasma* is in other circumstances: first, certainly an appearance or presentation, in other words, a content; but second, because all cognitive states outside of *nous* are physical states as well, a state of the primary sense organ.

Another reason to think that an *aisthêma* is the contentful presentation realized in the physical state is the term itself. We would expect it to be the internal state that presents an object in an act of the cognizer. The two pairs *aisthêma/aithêton* and *noêma/noêton* should stand in the same relation. An *aisthêsis* and a *noêsis* are acts of the faculties, a perceiving and a thinking. Considered in terms of the content therein, these acts contain an *aisthêma* and a *noêma*, which are the internal contents of a perceptual state or a thought that present to the cognizer an object, either a sensible one (*aisthêton*) or an intelligible one (*noêton*). It may not be completely wrong to call the *aisthêma* and *noêma* internal representational structures, but it is probably misleading. There is no veil of perception for Aristotle; representation is not an immediate object of cognition that stands between the cognizer and the object. More likely, his view is that we have a direct intuition of the object and this intuition has a subjective and objective pole. Aristotle analyzes it in terms of actualization of form. An objective form, whether sensible or intelligible, is in its highest state of actuality, *qua* sensible or *qua* intelligible, when it is contemplated by a cognizer. Aristotle maintains that this state of actuality takes place in the cognizer. During cognition, the actualization of the form and the actualization of the cognizer are both the one act of perceiving or thinking; that is, the activity of an object of cognition and the activity of the cognitive faculty, whether perceiving or thinking, are one and the same event. (*DA* III.2.425b26-426a11, 4.430a3-5) Considered from the objective pole, it is the activity of the object, the *aisthêton* or the *noêton* presenting itself;

considered from the subjective pole, it is the internal presentation which is the content of the act of cognition, and this, I think, is the *aisthêma* or the *noêma*. We can say that an *aisthêma* or a *noêma* is the sensible or intelligible form in its highest state of actuality, as a presenting in a cognizer.[51]

The important difference between an *aisthêma* and a *noêma* is that the first is realized in physical states of the perceptual organs, but the second is independent of any physical organ, since the faculty of thought has no organ. Aristotle says that we must use *phantasmata* in order to think an intelligible object, and these are realized in physical states of the primary sense organ, but the *phantasmata* are not the *noêton* itself (*DA* III.8.432a7-14). The physical state stands as the material cause for a perceptual content, an *aisthêma* or *phantasma*, in the way that the boiling of the blood around the heart stands as the material cause of anger (*DA* I.1.403a15-b16). Aristotle's discussion of dreams makes it clear that he is quite happy to use the term *aisthêmata* when speaking of physical changes they bring about subsequently, and so we can infer that he thinks of *aisthêmata* as physical states that cause subsequent physical states, even though they are at the same time cognitive contents. But if it is granted that there is no appearing or presentation until the primary sense organ is affected, then we must count as part of the material cause of an *aisthêma* the physical state of the primary sense organ. Furthermore, the presentation is called a perception only while an outer organ is affected by an external object, and the internal state an *aisthêma* only during perception or in an after-image when the affection in the outer organ is still actively causing a presentation. So, it is reasonable to conclude that the material cause or explanation of an *aisthêma* is the complete change of physical state, both in outer organ and primary sense organ, that occurs during a perception. At the same time, an *aisthêma* will be the cognitive content (part of it)[52] present in the act of perception. For this reason, I think "perceptual state" is a satisfactory translation of the term *aisthêma*, because it allows that an *aisthêma* is both

a physical state of sense organs and a cognitive state of the soul. To compare to Aristotle's example of anger at *de Anima* I.1.403a29ff: the content of perception is the formal explanation, just as the desire for retaliation is for anger; the physical state of the sense organs is like the boiling of blood, and the term *aisthêma* can be used to refer to the perceptual content alone or the content and the organic states altogether. For both examples, there is a physical process underlying a mental state, for one the process of blood boiling, for the other the process of the heart being altered some way so that perceptual content is presented.[53]

Now, let us return to the *de Memoria* passage with the term *aisthêma.* One might think that my reading of this passage requires me to take the *aisthêma* to be the affection in an outer organ. Aristotle says, "The *kinêsis* occurring [during perception] impresses a sort of relief of the *aisthêma*, like those who seal with a signet ring." (*Mem.* 1.450a30-32) I take this *kinêsis* to be the second *kinêsis* of perception, the one in which the primary sense organ and soul is imprinted. If the *aisthêma* were the red in the eye-jelly, say, or if the red in the eye-jelly were considered the complete material cause of an *aisthêma*, then it would be perfectly natural to consider the impress at the primary sense organ to be an imprint of the *aisthêma.* The content captured by the outer organ becomes part of a cognitive state when it is imprinted at the *arkhê* of perception. Or another way to read it would be to understand the imprinting action to be one that occurs after perception. The first interpretation is the only one compatible with my view that the imprinting takes place during perception. But, then, it may seem to force me to understand the *aisthêma* to be the red in the eye-jelly. And since I have identified the form received with the *aisthêma* or *noêma*, that would mean that the sensible form received is the red in the eye-jelly. On the other hand, if I keep to the view that the *aisthêma* is the complete perceptual state, it would seem that I will be forced to take the *de Memoria* passage to be about an imprinting that is subsequent to perception and hence has no bearing on the

imprinting discussed in *de Anima* II.12. It would be a state of the primary sense organ, brought about at the end of a perception, whereby it impresses upon itself into a state of storage the information in the perceptual state.

The difficulty I see with this second position is that Aristotle gives no indication that he thinks there is an additional imprinting action at the end of each perceptual state. In *de Anima* III.3 it is made clear that the second *kinêsis* with which *phantasia* is associated is a *kinêsis* always taking place during perception; otherwise it would not be said to be true or false while the perception is occurring (*DA* III.3.428b25-30). Let us suppose that it is an additional imprinting always taking place simultaneous with the imprinting that is the perception. An analogy would be a word processing program that continually saved to permanent storage each current state of the computer's working memory; the states of the working memory would correspond to perceptual states and the states of the storage disk would correspond to *phantasia* as the storehouse of sensory contents. If that were Aristotle's view, then the way Aristotle attributes truth and falsehood to the second imprinting seems odd. Since the stored item is distinct from the perceptual state, and its purpose is for later use, there would be no reason to speak of its being true while the object is present, but false when no longer present. It is because Aristotle's model is a very different means of storing information, namely sealing wax, that the discussion in *de Anima* III.3 makes sense. Wax both receives and then retains an impression, and no second imprinting is needed for retention, unlike a computer where a distinct action is required to put something into permanent storage. An impression, i.e. appearance, of a simple sensory content, such as "There--a patch of red", is true if what it presents is truly externally present, otherwise false. This makes all cases of image recall false in some sense. But that is because the measure of truth and falsehood Aristotle is using is one that applies primarily to perception, not to stored representations. This is because he is intentionally working out a theory of *phantasia* that will explain

phenomena such as the sun appearing a foot across as well as image recall. So it must be that the second *kinêsis* in *de Anima* III.3 and the imprinting in *de Memoria* is a perceptual imprinting, not a subsequent imprinting additional to the imprinting that constitutes the perceptual state.

How, then, can this imprinting, which I have identified with the *aisthêma*, be described as an impression or relief (*tupos*) *of* the *aisthêma*? I think the answer may be found in the two ways of looking at the wax impression of a seal. We can focus on the making of the impression or on the retaining of the impression. In *de Memoria*, the focus is on the retention. What is left behind after the ring is removed is a relief impression. If we were concerned about the original cause, we would say it is an impression of the object, i.e. the ring. But in discussing perception, for which it is an analogy, we are also interested in the state of being imprinted in its own right, for that is the act of perception. With respect to this internal state, it is also true to say that the relief left afterwards is an impression of the state that was present during perception. And that is what I take Aristotle to mean when he says the *kinêsis* (i.e. the stimulation of the primary sense organ by the outer organs) imprints a *tupos* of the *aisthêma*. It leaves behind a state that contains the same content as the perceptual state produced during the imprinting. If we can call the imprint an *aisthêma* only during the perception, it will be something else afterwards. And what is left afterwards will be a sort of relief image of what was there during the perception. The primary sense organ retains the content of a perceptual state after the perception in the way that sealing wax retains the content impressed in it after the ring is removed.

It is a part of the analogy that it can be considered both while the impressing occurs and afterwards; that is why it suits Aristotle to use the analogy for explaining both perception and retained states of *phantasia*. In both explanations he is speaking of the same impressing action, the one during perception that both causes a perception and a

permanent state of the primary sense organ and perceptual faculty, just as the sealing ring both imprints the wax with a sign, and, given the nature of wax, is the cause of a permanent state of the wax that retains that sign. If we are interested in the perception, the imprinting caused by the object is the *aisthêma*, the perceptual content and perceptual state; if we are interested in the retained state, it is true that the imprinting that takes place during perception causes a relief image to remain, which contains the same content as the content of the perception. It is the latter he is referring to in *de Memoria* when he says that the (second) *kinêsis* (which is the imprinting of the primary sense organ) leaves an impression of the perceptual state in the primary sense organ.[54] Aristotle has the same retention in mind when he speaks of the staying (*monê*) of the *aisthêma* at *Posterior Analytics* II.19.99b36-37. Speaking more accurately, he would call the retained impression a *phantasma* and restrict the term *aisthêma* to the state and the content present during perception, but in this text he is making the point that the content of *perception* is what is retained.

We can conclude that an *aisthêma* is the perceptual content and the physical process of making a change in the primary sense organ during a perception (both of which Aristotle counts as part of perceptual imprinting), while a *phantasma* is the same content after the perception, having already been imprinted. Included in the process of imprinting, because it is essential to a perceptual state, is the affection in an individual sense organ. Thus, the physical states that constitute an *aisthêma*, as its material cause, must include both the alteration at the primary sense organ and the affections in outer organs that are the immediate cause of the imprinting.

I think it is reasonable to understand the content of an *aisthêma* to include only strictly perceptual content, that which is there in virtue of the properties of an object that cause the affection in an individual sense organ; but Aristotle never says this. These contents are the sensible forms received.[55] Any further content in a perception that goes

beyond the content of the *aisthêma* is accounted for by *phantasia*, and I suppose could be called a *phantasma*. Outside of perception, all sensory contents are *phantasmata* because they then belong to *phantasia* as the storehouse of sensory information. I have drawn a connection between *phantasia qua* storehouse and *phantasia qua* perceptual interpretation in part II above, relying on the discussion in *Posterior Analytics* II.19. It is only when the sensory contents are retained that an animal can have memories, and then collections of memories that have order. It is in virtue of the order in its memories that an animal brings the interpretation it does to a perceptual situation. The model of information-bearing that Aristotle uses to understand and explain both the receiving and the retaining of the strictly perceptual contents is the impression of a signet ring on wax, a model for which one imprinting action accomplishes both the reception and the retention of a form. However, perceiving incidental sensibles and making judgments about certain aspects of the common sensibles could not be accounted for by an imprinting mechanism. Even though Aristotle draws parallels between *aisthêmata* and *phantasmata*, and considers both to be analogous to the impression in the wax, the similarity holds only with respect to the sensible forms, i.e. the proper sensibles. They are only part of the signification of perceptual states.

I have accepted the view that *de Anima* and the *Parva Naturalia* are consistent, written close together in time, and express a unified theory of perception and physiology of perception.[56] If one takes an *aisthêma* to be a mental content, not to be equated with any physiological state, but standing to such as form to matter, then one is forced to my interpretation of the *aisthêma*.[57] Since the changes in the primary sense organ are necessary to have the perceptual state, the material cause of a certain perceptual content must include the primary sense organ. It would be possible for me to hold the view that the *aisthêma* is only the physical affection in an individual sense organ.[58] Then it would

be only part of the material cause of a perception, and not a cognitive content. However, this would make it very different from the *noêma* and the *phantasma*, which clearly are both cognitive contents and states of the soul. That is why I consider it an unhappy interpretation, even though it might make more easy a natural reading of *de Memoria* 1.450a30-32, according to which a state of an outer organ would leave an impression of itself on the primary sense organ.

There are, however, two possible views that could limit the *aisthêma* to an affection in an individual sense organ and still count it as a content. One way is to hold that perception for Aristotle is nothing but a physical registering in a sense organ of the presence of an external agent by becoming physically like it. By this registering, the animal responds to its environment in the way that we describe as being aware of its surroundings. The reason that this is awareness and not simply a physical alteration is because the alteration takes place in the context of a living sentient organism.[59] There still remains a big difference between perception and intellection, but at least the *aisthêma* can count as the content of perception. The red in the eye-jelly is the content of perception, because that is the necessary and sufficient condition for being aware of red things, given that it is in the context of a living animal.[60] However, this last proviso, which is needed if we are to account for Aristotle's claims about the role of the primary sense organ, weakens the interpretation. If the stimulation of the primary sense organ is necessary for the reddening of the eye-jelly to count as seeing red, then the actualization of sight is not in the eye alone, and there is little motivation to interpret Aristotle as limiting perception proper to a physical registering in the individual sense organs. Hence, there is no reason to think the *aisthêma* is only this physical registering.

The other possible view is to take the *aisthêma* to be a physical icon that is the immediate object of perception and make Aristotle into a physicalist Hume.[61] The primary sense organ perceives immediately little physical images in the individual sense

organs, and interprets them so as to present objects in space. This view easily accomodates the role of the primary sense organ as the *arkhê* of perception. My general worry about such an interpretation is that it goes against the direct realist tenor of Aristotle's epistemology. It is assumed by Aristotle that external objects are the objects of perception, and that is why he so rarely mentions *aisthêmata*. They come into the picture only when for some reason he cannot avoid speaking of the content of perception from the subjective side, such as in the case of after-images where an external object is no longer present as the cause of an appearance. He also must speak of the *aisthêma* when he is comparing or relating perception to *phantasia*, for which there is an internal object of perception.

Another objection can be raised against such a view precisely because *aisthêmata* are supposed to be like *phantasmata*, except for the absence of an external object. We know that any physical basis for *phantasmata* is in the primary sense organ. Would *phantasmata* have to be physical icons in the heart which also become immediate objects of cognition? How does the primary sense organ "see" the physical pictures in itself? Not to speak of the difficulties of having the primary sense organ contain literal pictures of all the sensibles even though it cannot be soundless and odorless air, transparent jelly, and a mean of the tangibles all at once. The sensible qualities, it seems, must exist in the primary sense organ as mental contents, quite different from the physical icons that would be the *aisthêmata* on this view. It also would be more difficult to understand a *phantasma* to be the retention of an *aisthêma*. It is more reasonable to think that the likeness of *aisthêmata* to *phantasmata* is in their both being a presenting or appearing of something. They are similar as mental contents, and also both are a physical change in some undetermined manner in the primary sense organ. Both are a cognitive sign and a physical state, a state of the soul and a state of the organ in which it resides. They are not

two distinct physical icons, one in an outer organ, the other in the primary sense organ. I will return to this issue in a discussion of *de Anima* III.2 in the next chapter.

I have shown that Aristotle's discussions of *phantasia* in both *de Anima* and the *Parva Naturalia* provide strong independent evidence that we should understand *de Anima* II.12.424a25, *aisthêtêrion de prôton en hôi hê toiautê dunamis*, to say straightforwardly that the reception of a sensible form that has just been compared to the impression of a seal ring is an imprinting of the primary sense organ such that something is signified for the animal, i.e. something appears for it. Hence, it cannot mean the red in the eye-jelly or the fragrance in the nostrils. The sensible form received will be the presenting of the red and the fragrance at the second level of perceptual *kinêsis*. Here they will be elements of the rose appearing to the perceiver. The animal with *phantasia* is able to retain the perceptual appearances. The most straightforward example is being able to call to mind the very same perceptual experience after the perception. The seal sign in wax mentioned in both *de Anima* II.12 and *de Memoria* I stands for a cognitive state, either an actual appearing, as in perception or a later imagining, or the capacity to imagine what was perceived. The analogy is appropriate in two ways. Just as the wax is altered when it receives an impression, so too is the primary sense organ impressed upon physically in some way. Just as the wax impression signifies a sender, the state of the primary sense organ carries significance. In this, it is a state of the soul, either a certain appearance or a capacity to produce a certain appearance.

Notes to Chapter 4

[1] This corresponds to our own view of brain and sense organs. Something external affects receptors in the sense organs and, via the nervous system, this is all received at some place in the brain whereby we undergo conscious experience.

[2] Sometimes dreams are stimulated by things in the sleeper's environment. If the object in a dream is really present in the environment, such as the light of a lamp, Aristotle does not count this image as a dream image, but a case of quasi-perceiving (*Insom.* 3.462a15-31). Aristotle considers dreams piecemeal. The bits, such as the visual appearance of a lamp or the aural appearance of a phone ringing, which are caused presently by such actual objects, although part of what we would call the dream, are for Aristotle contents of perceptions, albeit confused and faint. Similarly, any images used in thinking during what we call a dream, Aristotle does not count as dream images, but as part of thinking. Only the appearance of sensible objects during sleep which are not presently caused by such an object count as dream images for Aristotle.

[3] *Mem.* 1.450a9-31. Memory belongs to the organ to which *phantasia* belongs, and *phantasia* belongs to the primary sense organ, the part of the body that contains the soul. The impulse for these acts comes from the soul (*DA* I.4.408b15-18) rather than from something external.

[4] At *Insom.* 3.461a25-b1, Aristotle says that it is the stimulation coming from a certain outer organ that makes it seem we are seeing or hearing, both in waking and in dreaming.

[5] This is contrary to Aristotle's general principle that the mover (or changer) must be in contact with the thing moved (or changed) so long as motion takes place in the thing moved. This special feature of media for projectiles seems to make each successive portion of a medium momentarily an unmoved mover, the power to be so passed on from the previous mover. The power to move after being moved is successively weakened, until the last portion of the medium is only moved and not given the power to be a mover; hence the projectile comes to a standstill (such as a stick propelled through water). See *Phys.* VIII.10.266b27-267a20.

[6] David Gallop, *Aristotle on Sleep and Dreams* (Oxford: Clarendon Press, 1991), ad loc., *Insom.* 2.459b3. I agree with Gallop that this return to the original state is what Aristotle means by *heôs tês arkhês*. Just as the projectile moves until the impulse power of the medium becomes nil, so too the heat is passed on from one part to another until the difference in temperature between one part and the rest is nil. That is a state like the beginning state, before a source of heat was introduced, in that temperature is uniform, like the stillness of the water before the stick is pushed and after it comes to a standstill.

[7] See *Phys.* VII.2.244b6-14.

[8] Aristotle says that the affection in perception persists in the sense organs, both in deep and at the surface (*kai en bathei kai epipolês*). This is commonly understood to mean both in the outer organ, which is at the surface of the body, and at the primary sense organ, which is interior. However, the entire discussion is about how a change of state in the outer sense organs can be retained so that it can cause subsequent change after the original cause of the change of state is absent. The example immediately following is

of a *kinêsis* in the eyes persisting after we have looked at the sun. So, I take *en bathei* to mean deeper in the eye-jelly or corresponding receptive materials of the other outer organs.

[9] We might be puzzled why Aristotle thought eye-jelly could retain states of being affected by color any longer than air. Aristotle's reason may be that provided by Alexander in his *de Anima* 44,6-9, that water is more dense and hence can retain the effect, in the way putty can retain an impression while water cannot.

[10] See *Somn.* 3.456b17ff. about the cause of sleep. Sleep is brought on because of the vaporization of food that expands out in the blood and then as the blood recedes back to the heart, it brings heat inward, leaving the outer parts cold. The vaporization makes the blood highly disturbed, but as the process comes to completion, the blood becomes pure and more still. Then robust dreams occur (dreams like reality). Finally, when the blood is completely purified, the heat concentrated in the center of the body begins to overcome the chill in the outer parts and waking occurs (*Somn.* 3.458a10-12). There must be a relation between the vaporization (*anathumiasis*) of food and the pneumatization (*pneumatôsis*) of the blood. The latter takes place continually and is the cause of the pulse (see *de Respiratione* 20.480a2-15). The blood is expanded because the liquid nutriment in it is heated (480a2-4), but later this is attributed to vaporization (*anathumiasis*) (480a10). The result of digestion must be the making of the liquid nutriment that feeds the continual pneumatizing process. Digestion is a large vaporization that sends out nutriment that still contains corporeal particles (*Somn.* 3.457b20). The purification of the blood is the gradual absorption of what can be changed into liquid nutriment and elimination of the corporeal (*Somn.* 3.458a10-12). When Aristotle speaks of certain emotional or pathological states also causing disturbed dreams, he speaks of these states as being spirituous (*pneumatôdê*). I would guess that these states cause an excess of vaporization as well (probably due to too much heat--fever is one of these spiritous conditions) above the normal and regular vaporization causing pulsation. This normal small level of continuous vaporization we must conclude has no ill effect on dreams and must be occurring even after the blood is completely purified.

[11] See *Mem.* 2.451b10ff. for a discussion of laws of association and acts of recollection. One *kinêsis* follows another by laws of association.

[12] Ross, *Parva Naturalia*, ad loc. 460b20, p. 273.

[13] That is why Aristotle counts them as perceptible *kath' hauta* along with the proper sensibles at *DA* II.6.418a8-11.

[14] This third kind of perception Aristotle says is *kata sumbebêkos* rather than *kath' hauta.*

[15] See *MA* 6.700b19-21. Thought (*nous*), *aisthêsis*, and *phantasia* are all *kritika*; that is, they make distinctions.

[16] I am following Michael Wedin in understanding that the form of argument is that a secondary perceptual state would have all the features that are attributed to states of *phantasia*, and thus positing such a perceptual state is the best explanation of *phantasia.* See Michael Wedin, *Mind and Imagination in Aristotle* (New Haven and London: Yale University Press, 1988), pp. 25-9.

[17] Aristotle says that error is most likely to occur with respect to the common sensibles. How much we error about common sensibles depends on how specific the content of a common sensible is taken to be. The common sensibles affect the sense organ just as directly as the proper sensibles, in that a shape in color will be registered as surely as the color in the eye-jelly. But unlike color, which (nearly) infallibly gets recorded, on Aristotle's view, just as it is in the object, the shape in the eye-jelly depends on the vantage point. A circular shape may appear as an oval. A moving object may be misjudged with respect to direction or size; but the judgment that there is a moving object is relatively free from the possibility of error, and that there is motion relative to the viewer is even more so.

[18] Aristotle must have in mind perception in the strictest sense, i.e. of the proper sensibles, which are what cause perception.

[19] Alexander of Aphrodisias seems to be in agreement with me that the second *kinêsis* of perception is what becomes a state of *phantasia*. The sensible objects cause a change in the primary sense organ, which are something like an impression or picture, and this left-behind is what stimulates *phantasia* in an act of imagination (see his *de Anima* 69,20-27). But Alexander seems to count the second *kinêsis* as part of *phantasia* only after perception (69,11-17). This ignores Aristotle's interest in explaining false appearances during perception.

[20] Most explicitly mentioned at *DA* III.7.431a17-20, but also implicit in the point analogy at the end of *de Anima* III.2.

[21] Martha Nussbaum, *Aristotle's De Motu Animalium* (Princeton: Princeton University Press), pp. 257-9.

[22] Malcolm Schofield, "Aristotle on the Imagination," in *Articles on Aristotle*, vol. 4, p. 106. A similar interpretation is offered by Deborah Modrak, "Phantasia Reconsidered," *Archiv für Geschichte der Philosophie* 68 (1986), p. 48. She says *phantasia* is "awareness of sensory content under conditions that are not conducive to veridical perception". However, this description is not appropriate for acts of imagination and memory. So, I prefer Schofield's non-paradigmatic sensory experience.

[23] The only example that may seem not to fit this classification is the type of example Aristotle presents at *DA* III.3.428a12-15. When we do not perceive distinctly, because the object is far off or it is dark, etc., we might say, "It appears to be a man." This kind of appearance might be thought to be truthful if it is indeed a man. However, we say that "it appears to be a man" because the appearance is fuzzy or indistinct. Insofar as it is so, the appearance is not truthful, for the man, if it is one, is not fuzzy and indistinct. So here, too, the appearance presents what is not really present in the object.

[24] Neither does Nussbaum. She allows that perception of the sensible qualities counts as pure perception without *phantasia*. See *Aristotle's De Motu Animalium* (Princeton: Princeton University Press), pp. 258-9.

[25] The only time a proper sensible figures as the content of a non-paradigmatic perceptual state is outside of perception proper, in an after-image (*Insom.* 2.459b5-18) or as part of the content of dreams or imaginings.

[26] This is implied at *DA* III.3.428b25-30, and stated at 429a4-8.

[27] It seems plausible that the simple animals about which Aristotle denies they have *phantasia* would not perceive incidental sensibles. The response they have to food could be understood as a built-in reaction to certain proper and common sensibles, feel/taste and shape, say. I presume the only animals Aristotle denies have *phantasia* are those with only the sense of touch; only these do not need to, and cannot, perceive their food at a distance and then pursue their food. Aristotle is uncertain about what to say about very simple animals. Sometimes he says all animal movement (including, I presume, ingesting through a mouth) requires *phantasia* and desire. If so, then all animals will perceive their food as food. (*DA* III.10.433b27-30) Allowing that most or all animals perceive incidental sensibles and suggesting that some of this perception requires what Aristotle calls experience in no way contradicts Aristotle's statement that animals have only a little share in experience. (*Metaph.* I.1.980b25-27) The range of incidentals an animal perceives may be very limited, only those necessary for its survival or the survival of the species. Humans perceive all kinds and of a sophisticated sort, such as the doctor's recognition of symptoms of a disease. (*Metaph.* I.1.981a7-12)

[28] This is made clear in *DA* III.3.428b2-4. We have a *hupolêpsis*, a judgment of the thinking faculty, about the sun's size. There is no way to get the right perceptual perspective on the sun's size.

[29] That the sun appears round is as much a part of the impression in the eye as its appearing yellow. It is only more precise judgments about the size and shape that go beyond the impression, that it is a disc, or a ball, or that it is a foot across.

[30] That will be the proper sensibles and also the common sensibles in a secondary way. See previous note.

[31] I follow Wedin in translating *aisthêma* as 'perceptual state'. See Michael Wedin, *Mind and Imagination in Aristotle* (New Haven and London: Yale University Press, 1988) pp. 35-39. It is least committal about what an *aisthêma* is, beyond its being a bodily state during perception caused by the *aisthêton*, the object perceived. Later, I will discuss the *aisthêma* and defend this as the best translation.

[32] trans. by Levett in Myles Burnyeat, *The Thaeatetus of Plato* (Hackett: Indianapolis, 1990).

[33] The analogy is first offered as a way of explaining all false judgment, but it soon becomes apparent (at 196A) that some false judgments do not involve perception and so cannot be explained in this way.

[34] *DA* I.4.408b15-18; *Somn.* 1.454a7-11.

[35] This is correct if we take the Heraclitean theory of perception presented at *Theaetetus* 156 to be Plato's own view. It seems to underly what Socrates says later in the dialogue, where the Heracliteans are no longer under discussion, that what perception provides on its own as an object is just the experiences which reach the soul through the body. But calculation is required to get to what things are, their being. (*Theaetetus* 186C)

[36] Whether Aristotle is successful at objectifying proper sensibles is another question. The presentation in *Theaetetus* 156 is not much different from Aristotle's theory of patient and agent in perception. This should naturally lead to a view like Locke's, that the proper sensibles are really secondary qualities. Aristotle gets around this by distinguishing first and second actualities for a proper sensible and counting the first actuality as truly color or sound, etc. But it is doubtful whether this is a successful move. Why should it be assumed that a second actuality is anything like its first actuality. See T. H. Irwin's criticism of Aristotle on this in *Aristotle's First Principles* (Oxford: Clarendon Press, 1988), pp. 313-4.

[37] When the information used to judge differently than an appearance is non-sensory, it is clear that the faculty by which we have beliefs is distinct from that which produces false appearances. This is the basis of Aristotle's proof that *phantasia* cannot be defined as a combination of belief and perception (*DA* III.3.428a24-b9). That is Plato's definition as found in the *Sophist* 264A. Aristotle's position, then, is that some interpretation (perhaps a great deal) regarding what we perceive is already done by the perceptual faculty on account of its accumulated experience (and no doubt, also, on account of its built-in design for meeting the needs of the particular kind of animal). And thus, Aristotle can deny that animals have beliefs and rationality, but yet explain their capacities for perceptual discrimination.

[38] At *Somn.* 2.455b2-13, Aristotle describes how sleep is caused by incapacitation of the primary sense organ. It cannot be total incapacitation, or dreaming would not occur. There can be no appearance without the primary sense organ responding, and any appearance involves a quasi-judgment that such-and-such is the case. So, we should expect that in a treatise on dreams, the state of sleep will be called a restraint on the primary sense organ's judging powers, not a complete incapacity.

[39] I take the examples at *Insom.* 2.460b3-16 to be examples of the perceptual faculty being moved in ways not proper to itself.

[40] That the color red appears the same to any animal, Aristotle never doubts. The differences he does allow are differences in keeness of a particular sense, such as smell (*DA* II.9.421a7-22). The sensible forms make up only part of what is signified in any act of perception. Because of the contribution of *phantasia*, i.e. the interpretive contribution based on past sensory experience, more appears than is the cause of the impression.

[41] And also by more precise judgment about common sensibles (what size or shape, how fast).

[42] That sensible forms are contained in *phantasmata* is suggested at *DA* III.8.432a3-9. The intelligible forms are in the sensible forms, since only sensible things have independent existence. For this reason we must use *phantasmata* when we think, presumably because the sensible forms of independent things are in the *phantasmata.*

[43] In chapter 5, I discuss this in relation to active *nous* and the analogy to light. Aristotle compares *phantasia* to light as well (*DA* III.3.429a2-4), and I think it is to capture that it is a power that is able to make things present to an animal that are not present just because of the affection of the proper sensibles.

[44] The context of the discussion has to do with choosing a life of study over a life of pleasure because study brings truth. Because of the value of truth, waking life is to be preferred to the dreams of sleep, even if every possible pleasure were available in one's dreams.

[45] In the context of the *Protrepticus* Aristotle may have in mind perception in general, since all three kinds of sensibles occur in dream images. The main point of the passage is that in waking life things appear as they truly are.

[46] Hence, Aristotle speaks of the affection of the soul and of the part of the body that is the place of the soul (*Mem.* 1.450a28-29).

[47] I read the *kai* to be epexegetical in *ta phantasmata kai hai hupoloipoi kinêseis hai sumbainousai apo tôn aisthêmatôn* (see also *Insom.* 3.462a29-31 where a *phantasma* is said to arise from the *kinêsis* of *aisthêmata*). Perhaps it is because of the first possibility, that there is total obscuring of the images so that nothing appears, that Aristotle makes the clarification. It would be odd to say that a *phantasma*, i.e. an appearance, does not appear. But whether or not there is an appearance, there are *kinêseis* at the heart that have been caused remotely by daytime *aisthêmata*. Clearly he is speaking about the *kinêseis* at the heart or near the heart, because it is the disturbance in the blood, both in the veins and in the heart chambers, that obscures the images. I take the metaphor of reflections in a liquid (461a14-17) to be an analogy for the appearances that occur at the primary sense organ. There is some evidence in *Parts of Animals* (III.4.666a10-b1) that Aristotle considers the blood of the inner chamber of the heart to be the common sensorium.

[48] The internal *kinêseis* are said to be, each of them, a *hupoleimma tou en têi energeiai aisthêmatos* (*Insom.* 3.461b21-22). I take the *hai enousai kinêseis* of line 12 to be the subject through line 22.

[49] Also at *Insom.* 3.461a26-30, it seems that the *kinêsis* referred to might be in the outer organ, because it comes from each organ, arising from the *aisthêmata*. Even though *kinêsis* is singular, it has the force of the plural because one comes from each sense organ. These correspond to the plural *ta enupnia* they produce. A correct translation might be: "Because the change (*kinêsis*) brought about in each sense organ from [previous] perceptual states (*aisthêmata*) is preserved [during its transmission to the heart], this makes the dream images robust and something appears and the dreamer thinks he sees . . . and hears . . ."

[50] See Richard Sorabji, *Aristotle on Memory* (Providence: Brown University Press, 1972), p. 82, for the idea that "without the matter" here means "not in the presence of the external thing".

[51] See Jonathan Lear, *Aristotle: the Desire to Understand*, (Cambridge University Press, 1988), pp. 106-109 and 128-131. I am following closely Lear's exposition of the levels of actuality for forms. I have only made the addition that the form actualized in the cognizer, which actualization is an act of the cognitive faculty, is also the *aisthêma* or *noêma*. These terms signify the form considered as internal contents.

[52] I say that the *aisthêma* is only part of the content of a perception because I think it reasonable that it is only the strictly perceptual content, that which is had solely in virtue

of the object's physical interaction with the receptive material in an individual sense organ. Further interpretation I have argued is provided by *phantasia*. I also think it reasonable to equate sensible forms with the proper sensibles. The common sensibles make an impact directly on the sense organs because they are properties that are concomitant with proper sensibles. The red thing has shape, and so the form of redness in the cognizer will have shape. I do not think there is a sensible form for incidental sensibles, but only a collection of sensible forms that are properties of an individual and are perceived as belonging to an individual. We do perceive that an object is one, but not because a sensible form of its unity actualizes the perceptual faculty. Aristotle speaks of sensible forms only in contexts where the proper sensibles are under discussion.

[53] Getting angry does not fit into one of the two standard cognitive faculties, perception and intellection. It will have to fall under the appetitive faculty, but this must be counted as cognitive since it has objects, and these are presented to it by *phantasia*, which belongs to the perceptual faculty, or by reason using *phantasia*. See *DA* III.9-10.

[54] I still do not think that I have provided a reading of *hê gar ginomenê kinêsis ensêmainetai hoion tupon tina tou aisthêmatos* that is perfectly natural. If anything is *ensêmainetai* (imprinted) during perception, it will be the *aisthêma* itself, considered as content. In virtue of doing this, the *kinêsis* during perception also leaves something behind, which is the same content. Because it is the same content, it can be said to be a relief image of the *aisthêma*, but it remains difficult to say that the *kinêsis* of perception, which takes place during perception, makes an impression of the *aisthêma*. I would be happier if the verb were not *ensêmainetai* but *hupoleipei* (leaves behind). But perhaps we can suggest a different meaning for *ensêmainetai*. It also means to indicate or signify; or perhaps, to leave a sign. The *kinêsis* of perception leaves a sign that is a relief image (what is left-behind after the impression) of the sign present during perception.

[55] See note 52 above. At *Metaph.* IX.10.1051b17-32, Aristotle speaks of the simple objects of cognition. These are the components of propositions or composites. These latter are true if what is combined or separated (positive or negative predication) matches the facts, and it is of the composite that true or false applies. But with the simples, one either thinks them or does not; you cannot be in error in grasping a simple because the simple is not grasped at all unless its nature is grasped. The example given of a simple is an essence. It seems, then, that all universals would be simples, and these become the components of propositions. I think it is plausible to understand sensible forms to be the simples for perception. That is why there is no error about them. Aristotle compares the proper sensibles to essences at *DA* II.6.430b27-31. Because there is error about the common sensibles, it is reasonable to suppose that perceptual judgment about them is in some sense a predication, the subject of predication being a proper sensible.

[56] I have supported this view in ch. 2, but in no way have I provided a complete defense of it. I am satisfied with Kahn's treatment of the issue in "Sensation and Consciousness in Aristotle's Psychology," *Archiv für Geschicte der Philosophie* 48, pp. 43-81.

[57] One could hold the view that the *aisthêma* is content and the material side of it is solely the affection in an outer organ. This would be consistent with my own view that the content of an *aisthêma* is only strictly perceptual content, i.e. the proper sensibles, which affect physically the outer organs. But the implication of this would be that the actualization of seeing takes place in the eye itself, and that contradicts the evidence that

for Aristotle the eye is a specialized receptor for the primary sense organ, which is the chief and single organ for the perceptual faculty (*Somn.* 2.455a20-22).

[58] Michael Wedin suggests this interpretation in *Mind and Imagination in Aristotle* (New Haven and London: Yale University Press, 1988), pp. 35-6. However, his support seems to rely on understanding the *kinêseis* that arise from *aisthêmata* and cause dreams to be exactly the same kind of thing as the *aisthêmata*. But this cannot be inferred just from the fact that the *kinêseis* are left behind from *aisthêmata*. The *kinêseis* may be the product of only the material cause of *aisthêmata*.

[59] This is Kosman's view elaborated in "Perceiving that we perceive: *On the Soul III,2*," *Philosophical Review* 84 (1975), pp. 499-519. Kosman takes the discussion in III.2 to provide the answer to the question in II.12, what makes smelling something more than being affected in the way that the air is affected by odor. The answer is that it is a change in a sense organ which is a part of a complex whole organism with the power of sentience, and this is what makes it awareness and not just a physical change in an individual sense organ. See pp. 516-17.

[60] Kosman claims that Aristotle is a materialist of the likes of a mind-body identity theorist. See "Perceiving that we perceive: *On the Soul III,2*," *Philosophical Review* 84 (1975), p. 516.

[61] This interpretation of the *aisthêma* is developed by Stephen Everson, "Aristotle on Perceptual Cognition," (Ph.D. dissertation, King's College London, 1991). He takes the *aisthêma* to be a physical icon in the individual sense organ that is the immediate object of perception, like a Humean impression but physical. The *aisthêma*, on this view, will be a physical object that the primary sense organ is aware of. Everson hints at this interpretation in "The objective appearance of Pyrrhonism" in *Psychology* (Companions to Ancient Thought: 2), ed. S. Everson (Cambridge: Cambridge University Press, 1991), pp. 130-131. Here he says about Aristotle's theory of perception that "what the subject is aware of are the material changes brought about by the perceived object [in an individual sense organ]."

Chapter 5

Intellect, phantasia, and perception

In this chapter I will first examine what it is for the intellect to possess an intelligible form (part I). I will draw parallels between it and the perceptual faculty. Aristotle claims for both faculties that it becomes identical with its respective forms. This doctrine is put to use at the end of *de Anima* III.4 to explain how the mind can be an object to itself and that discussion is the subject of part II. Aristotle's discussion of how we perceive our perceiving in III.2 has important parallels to what he says about the mind thinking itself in III.4. Forms taken into the cognizer play a similar role for each faculty. In part III, I will argue that this discussion in III.2 rules out the possibility that a sensible form received is a physical image in an outer organ. Instead, it must be a cognitive state of the primary sense organ. Finally in part IV, I will examine further the relation between the closely related ideas of a faculty becoming identical with an object, becoming identical with a form, receiving a form, and becoming like an object.

I

Aristotle begins his discussion of thinking with a comparison drawn between thinking and perceiving.

> If thinking is just like perceiving, then either it would be some kind of being affected by the intelligible object or something else sort of like this. It must be, then, impassive, but able to receive the form and it must be potentially such, but not this, and likewise, just as the thing able to perceive stands to the sensible objects, so too the mind stands to the intelligible objects. (*DA* III.4.429a13-18)

Although Aristotle speaks as if perception and intellection are very alike, it is difficult to set up a single model for both because of a significant difference between the two stated in *de Anima* II.5.

> And actual perception is spoken of in the same way as exercising understanding, but it differs in that the things causing perception are external, the visible object and the audible object and the rest of the sensible objects.

> The reason is that actual perception is of particulars, while understanding is of universals; and these are in the soul in a way. And this is why thinking is up to us, but perceiving is not. (*DA* II.5.417b19-25)

A particular sensible object is an external agent acting upon the sense organs and producing a perception. The intelligible object is a universal and is not outside the mind but in it. So the simple model of one thing acting on another and causing cognition does not fit very well for intellection, at least not for the learned man who exercises his knowledge. For him, the intelligible object is already within himself; his mind has already received the form. So how can it be that subsequent thinkings about the same thing are a receiving of intelligible form?

The comparison of thinking to perceiving as presented at the beginning of III.4 seems to work best for learning. In learning about frogs or triangles I receive froghood or triangularity into my mind as a concept for the first time. But this suggests that the intelligible objects are outside the mind before learning just as much as the perceptible objects are external to the cognizer. In a sense, this must be true, in that the intelligible objects are said to be in sensible forms and that is why perception is necessary for learning and understanding to come about (*DA* III.8.432a7-9); but once one has understanding of a concept, then a universal is said to be in the soul and this, or something related to it, will become the object of a thought in any exercise of this understanding. But even an act of learning, in so far as it is also an act of thinking, must also be a case where the universal is already in the soul; it is just the first time the universal is present. Also, Aristotle says that the intelligible object is only potentially present in things with matter (*DA* III.4.430a6-7). This indicates that something further needs to take place before there can properly be an object for the understanding, and this presumably is a coming to be of a form without matter in the cognizer. An essence or other non-sensible property in a physical thing is enmattered, but in the mind it resides as an actually intelligible form. It seems then that there is no object available as an object

of the intellect until learning has already occurred and yet only learning is a case of receiving an intelligible form.[1] Perception is much simpler in that an actually perceptible object is first present and causes an act of perception, and every act of perception is a receiving of sensible form. So the analogy to perception seems only a rough suggestion used for a beginning point.

If the analogy were taken to apply only to concept acquisition, then there would be an easy way to understand what it means to say that the mind has no actual existence until it thinks (*DA* III.4.429a22-4). This would mean that the mind is only a potentiality until some learning has taken place, in which case it will then have something in it and be not just potentiality. But that is not what Aristotle means when he says the mind has no actual existence until it thinks. The discussion clearly is meant to include any act of thinking, not just learning, because Aristotle explains that what he means by mind (*nous*) is that part of the soul by which we think and judge. The reason we can think anything at any time is because the mind, even the learned or educated mind, is potentially its object but not actually; in this way it is always ready to become actually any object in an act of thinking. But this principle, that the object is actually present only in thinking, will hold true for both learning and the exercise of knowledge already had. There must be a distinction in levels of potentiality if the educated mind is to be different from the ignorant one when neither is thinking. Aristotle states that the mind that has become its objects by learning (a mind that has received forms) is even then a potentiality but not in the same way as before learning (*DA* III.4.429b5-9). The potentiality that is necessary before any act of thinking is not the same as the open potentiality of the ignorant mind. The learned mind can have in it many intelligible forms but they must reside there in a state of potentiality. This state is what Aristotle has in mind when he says that the soul is the place of forms, but in potentiality, not in actuality. It is the coming to be of these intelligible forms in the intellect, the universals in the soul, which we must examine more

closely. These in some sense are analogous to sensible objects as Aristotle compares the two cognitive faculties at *de Anima* II.5.417b21-27 and III.4.429a15-18.

In order to understand better these universals in the soul, we must look to *de Anima* III.5 and another analogy. While the passive intellect becomes all things, the active intellect produces all things, and the way it does this is like the way light makes potential colors into actual colors (430a14-17). The things being produced, and which the passive intellect becomes, are the universals in the soul.

First, we must understand Aristotle's peculiar theory of light and color. Transparency (or the transparent, as Aristotle calls it) is a property of different kinds of bodies (air, water, and some solid bodies, etc.) which are visible, but not on account of a color of their own (*DA* II.7.418b4-9). Light is an active condition of the transparent, which is caused by the presence of a fiery element (*DA* II.7.418b9-17 and *Sens.* 3.439a18-21). Color is a property on the surface of bodies that, of its nature, moves or causes change in the transparent when it is in the active condition called light (*DA* II.7.418a31-b3).

This theory of light and color leaves much room for interpretation of the analogy in III.5. Is the intellectual light something internal to a cognizer as part of an individual mind? Or is it the divine mind itself? And are the potentially intelligible forms to be found in the world or in the cognizer. Are the actually intelligible forms in the world or in a mind? For color, the actually visible form and the potentially visible form are the very same property of an object but in different conditions. Is this so for the potentially and actually intelligible form?

Let's state some fixed points we can start from. (1) Things with matter are intelligible objects (*noêta*) only potentially (*DA* III.4.430a6-7). (2) The objects of knowledge are universals and these are in the soul in some fashion (II.5.417b19-25). (3) The objects of thought are in sensible forms and that is why we must use *phantasmata*

whenever we think (III.8.432a3-9).[2] I infer from the third statement that the objects of thought are first of all in the cognizer by being in some way contained in the sensible forms that make up *phantasmata*. That is why perception is a necessary condition for learning and understanding (III.8.432a7-8). The sensible forms are our only means of access to intelligible forms. However, the objects of thought cannot be actually intelligible in *phantasmata* because then animals would have actually intelligible objects in them. If we equate universals with actually intelligible objects, which is suggested by the second statement, then the intelligible forms in the *phantasmata* are not universals but potentially contribute to the coming to be of a universal if they are in the perceptual faculty of a rational animal. It seems right to conclude that an object of knowledge is in both the cognizer and the world in a state of potentiality;[3] that is, both provide the material from which a universal can be abstracted, the world more remotely because perception and *phantasmata* are the necessary means of access to the world. In the world, an essence determines the structure of a material thing, its functions and activities. It makes the matter actually a certain kind of thing. Because of these determinations, there will be order in the way this thing appears to perceivers. The essence is what is potentially intelligible to the right kind of cognizer. The orders, relations, etc. in appearances, which are retained internally in *phantasmata*, are the vehicle by which essence, or the intelligible structure of the world, can become intelligible. So both essences in the world and order in appearances are potentially intelligible. Of course, not just any order will do. The perceptual faculty on its own recognizes certain order and arrangement for perceiving common and incidental sensibles. But there is a deeper order that corresponds to the intelligibility of things that can become manifest when *nous* is present. When this deeper order is illuminated, only then is an actually intelligible object present in the cognizer. This is intelligible form or the universal that exists in the soul in some fashion. So we can say that a form exists in two ways, one as essence in matter,

another as actually intelligible form in a mind. They are different in that the first is concretized in particulars, the second is without matter, i.e. all particular determinations of the essence are absent.[4] We can conclude that an actually intelligible form, or universal, is only in a mind.

Given that what needs to be illuminated for thinking to take place is *phantasmata* in the perceptual faculty, and given that the actually intellible object that results is in the soul, we can safely conclude that the intellectual light must be a part of an individual mind. This does not rule out that it might also be the divine mind. The divine mind, its pure intellectual activity, might be a necessary condition for all thinking, and might be the light in each individual mind.[5] I will leave this open. But what we can tie down is that the intellectual light is a condition internal to the cognizer that makes thinking possible. Because of it, the intelligible order in the world contained in a hidden way in the order of appearances can become an object of thought. It actualizes the intelligibility of the world for an individual mind. For rational animals, this occurs through a long process of learning whereby pieces of it are gotten bit by bit, the universals corresponding to essences, and gradually woven into understanding of the whole.

Now, a universal is present not just when a mind is thinking. Becoming educated means retaining knowledge. In *de Anima* II.5, where it is said that universals exist in the soul in some way, not in external things, the comparison being made is between perceivers at first actuality and knowers at first actuality. At birth, Aristotle says, perceivers are in the same state of readiness to perceive as a scholar is ready to ponder what he has learned. The difference is that for the scholar the objects are universals, not particulars, and they are in the soul, not external things. (*DA* II.5.417b16-23) So the objects of knowledge here referred to are the understandings the educated man already has. In *de Anima* III.4, we learn that it is correct to think of the intellective soul as the place of forms. They are not there in the same way as when they are an object of actual

thinking, but they are there in potentiality (429a27-29). This doesn't mean simply that they are not there but can be there. That is the case for the ignorant person. The mind of the learned person, Aristotle says, has become identical with the things he has learned. When this has happened, then he can think about those things whenever he wishes. Presumably, this is because he has the appropriate universals in his soul. There still is potentiality, but not like the potentiality that was there before he learned. (*DA* III.4.429b5-9)

Does the intellectual light cause the acquisition of concepts in learning or the exercise of one's acquired concepts? This is not clear. Perhaps it is not a sufficient cause of either but a condition for thinking in general. It makes possible cognitive contents that are not available at a lower level of cognition. The light metaphor may be a suggestive place holder for whatever is needed to explain such contents. There is reason to think that active *nous* is not meant to explain the coming to be of individual acts. This *nous* is uninterruptedly in activity, so there would still need to be an explanation of why sometimes it is shining and sometimes not on the contents of what one has learned. For the same reason, it is unsuited for explaining concept acquisition, since we do that bit by bit. Aristotle compares active *nous* to art (*tekhnê*). The art of building explains why there are builders and buildings, but it does not explain why this building is here or why this builder built at this time.[6] In the same way, active *nous* is a condition for there to be thinking and objects of thoughts, as also light is a condition for there to be seeing and actually visible colors. The explanation of why a particular act of thinking takes place, be it learning or exercising knowledge, would have to come from factors outside the intellect, such as desires and other psychological conditions of the entire organism. The explanation of thinking provided by active *nous* must be in response to the question, what must be in order for thinking to be possible, not what causes any particular act of thinking.[7]

An interesting parallel can be found between *nous* and *phantasia*. Insofar as the contents of perception and imagination go beyond the proper sensibles, we should expect there to be an explanation of this step as well. It remains a mystery how, if sensory imprinting of the proper sensibles is the only source of information, an animal perceives the things it does. In the last chapter, we looked at Aristotle's discussion in *Posterior Analytics* II.19 about the progression from perception to memory to experience and finally to a universal residing in the soul. We were left wondering why a collection of impressions of proper sensibles repeated and stored in memory should ever coalesce into the capacity to perceive or imagine incidental sensibles, such as mother or food. There seems to be needed another metaphorical light to hold the place for such an explanation. In his discussion of *phantasia*, Aristotle does conjure another light metaphor. *Phantasia* is so named, he says, because it is like sight, in that it makes objects present, and we cannot see without light (*phaos*); hence the term *phantasia* is derived from *phaos* (*DA* III.3.429a2-4). Regardless of the value of the etymology, we cannot help but think of the analogy to light in *de Anima* III.5. In both cases, a power that makes it possible to have certain kinds of cognitive objects presented, objects not immediately available in perception as the proper sensibles are, is compared to light. Just as the intelligible object is only potentially intelligible in sensible things, so the incidental objects of perception are only potentially perceptible. The needs and desires of the animal will determine what it perceives, whereas the requirements of an objective science will determine what can be known intellectually. A "phantastic" light will hold the place of the explanation for incidental perception, which is interpretation brought to bare on the strictly perceptual contents of perception.[8] Aristotle says little about this, perhaps because he does not think it is problematic. The fact is, animals can do many things, and since they do not have reason, they must do it with the perceptual faculty. So, Aristotle grants to the perceptual faculty all the richness of perceptual content that *phantasia* can provide, thus giving

animals all they need for success. Even if the step to rich perceptual contents is not explained, it is interesting that Aristotle appeals to light as a metaphor just as he does for the contents of the intellect, indicating that here too there is need for further explanation. Both a phantastic light and an intellectual light make it possible for things to be manifest that otherwise would not be, just as visible light makes it possible for colors to be manifest to perceivers.

In the case of light and colors, the potentially visible and the actually visible are the same property of the surfaces of bodies. And light effects the actualization by making the transparent in a condition so that the natural power of color to move the transparent can operate. What are we to say about the potentially and actually intelligible? It is more complicated. The light is internal to a cognitive faculty, while the world is external. There may be a remote sense in which we can say that the presence of intellectual light allows the world in its intelligiblity to do something. But because perception and *phantasmata* are a necessary step in between, it seems that the best thing to say is that the physical universe, insofar as it can be said to do anything to cognizers, appears to perceivers. The intellectual light, being an internal condition, allows something in the appearances to become manifest in a mind. However, it is because of form in matter that the appearances are the way they are, and so, indirectly, form in the world is put in a condition to cause thinking, and hence becomes actually intelligible. At the same time, there must be something in the mind that is the actually intelligible, because the objects of thought are in the soul. They are forms without matter rather than forms with matter. The concept of a triangle or of the number two, or even of froghood are intellectual objects, abstractions of some sort, not external things. I think this is one of the intuitions behind Aristotle's saying that universals are in the soul, whereas perceptible objects are external and particular. So, I think it best to say that the actually

intelligible object is something in the mind. As was said above, there is a way in which the potentially intelligible is both in things and in *phantasia.*

We can still ask about the potentially and actually intellible object in a cognizer, whether they are the very same thing but in a different condition; that is, is it a property of *phantasmata* that is both? If the answer is yes, then the passive intellect would have to be *phantasia.* I think we are prevented from this conclusion because of Aristotle's sharp distinctions drawn between the intellectual and perceptual faculties.[9] One is for particulars, the other for universals. And when Aristotle says that universals are in the soul, he means the noetic part of the soul. This is made clear in *de Anima* III.8, if we identify the intelligible object (*noêton*) or knowable object (*epistêton*) with a universal (431b26-27). It is also clear in II.5 in the distinction between thinking and knowledge on the one hand and perceiving on the other (417b16-25). So we must conclude that the passive intellect that becomes all things is different from *phantasia.* It must be the intellect as repository of all that one learns. This will have to be the place for the actually intelligible object. And so, even internal to the cognizer, the potentially intelligible and the actually intelligible are not the same item, unlike color; one is in the perceptual faculty, the other in the intellectual faculty.

An implication of this is that there is no actually intelligible item that, in virtue of its actuality, is able to be the primary agent in affecting a mind that is learning something for the first time, in the way that a perceptible object because of a state of actuality can affect perceivers. The pure unspecified actuality of active *nous* perhaps can count as the state of actuality that can change a potential state of a mind into an actual state. Or, perhaps a teacher, who has the actual intelligibles in her, provides the actuality that causes learning in a pupil.[10] Or, perhaps we can allow that the actual order of the world in its essences can be the original actuality that affects a potentiality in the mind, *provided* the presence of active *nous*, and *provided* that *phantasmata* have been received

through perception, and *provided* that something motivates the learner to study. There is nothing in the analogy to light that would give us reason to think active *nous* contains the actually intelligible objects itself. It is just pure actuality like the divine mind.[11] We must allow that the analogy to perception at the beginning of *de Anima* III.4 goes only so far (429a15-16). Once learning something has taken place, then the universal in the soul will fulfill the function of being an actually intelligible object, again *provided* that there is motivation to engage in thinking that universal (and of course *provided* there is active *nous*, without which the universal would not be there in the first place).

Even though a universal in the soul is something in the passive intellect, it is not there like an object of thought. The mental eye of consciousness does not look upon it when it contemplates what it knows. It has to use *phantasmata* whenever it thinks, as vehicles for representing an intelligible object. So the actually intelligible object in the passive intellect must be considered as a capacity to use *phantasmata* so as to present an object of thought in an act of thinking. Only in thinking are there literally objects of thought. That is why Aristotle says the mind is actually nothing until it thinks (*DA* III.4.429a24, b30-31). The educated mind before thinking what it knows is potential in the sense of having a set of capacities. It has universals in it in some sense, but not in the way a universal is an object of thought when *phantasmata* are actively presented as a means of representing a noetic object. That explains Aristotle's qualification of the claim that universals are in the soul (*DA* II.5.417b23) and his saying that the soul is the place of intelligible forms but in a state of potentiality (III.4.429a27-29).

Now we can see that the parallels between *nous* and *phantasia* go farther. Both faculties not only make new things manifest, but they also store things as specific capacities for calling certain things to mind subsequently or recognizing things during perception. The *phantasmata* that are such capacities contain the sensible forms received through perception. The intellect contains intelligible forms which make up its

understanding.[12] We can conclude that there are three ways a form (sensible or intelligible) can exist, in things as an essence or a sensible quality, in a cognizer as the content of an act of cognition, and finally in the cognizer as a capacity to have such a content in a later act of cognition, be it perceiving or imagining, or thinking.[13]

About these forms, both sensible and intelligible, Aristotle makes a summation:

> Now summing up the things said about soul, let us say again that soul is in a way all things. For things are either sensible or intelligible, and understanding (*epistêmê*) is in a way the things understandable (*epistêta*), while perception (*aisthêsis*) is things perceptible (*aisthêta*). We must ascertain in what sense this is so. . . . The perceiving part (*aisthêtikon*) of the soul and the understanding part (*epistêmonikon*) are these things, the one the understandable object (*epistêton*), the other the sensible object (*aisthêton*). It must be either the things themselves or the forms. But it certainly cannot be the things themselves; for the stone is not in the soul, but the form. (*DA* II.8.431b20-29)

Although *receiving* form is not mentioned, there can be little doubt that this becoming the form is the same as the receiving form mentioned at the beginning of III.4 where the part of the soul that thinks is said to be receptive of form and potentially such, similar to what happens in perceiving (*DA* 429a13-18). For the perceiving part of the soul, the becoming and being identical with the form mentioned here must be none other than the reception of form spoken of in II.12. Because it is the soul in the above passage, and because the two soul faculties are treated the same, and because it is the sense faculty in II.12, which is a part of the soul, this passage in III.8 is very strong support for a cognitive interpretation of receiving sensible form. When *phantasia* is considered as filling out the domain of the perceptual faculty, the parallel between the two faculties is striking. Both faculties receive forms, intelligible forms by learning, sensible forms by perception, and both faculties retain forms as capacities (or parts of capacities) for certain subsequent acts of cognition.

Aristotle switches between speaking of receiving form and becoming identical with form or object. There may be some rationale behind the switches. Notice that the

intellect is never said to be a receiver except when the analogy to perception is introduced at the beginning of the discussion about the intellect (*DA* III.4.429a15-16). Otherwise, the intellect always becomes identical with its object or form. The only place the perceptual faculty is said to become identical with form is at the end of the main discussion of the intellect at III.8, the passage quoted just above. It is more appropriate to speak of receiving for perception because a perceptible object is the primary agent in perception. It makes the perceptual faculty to have something it did not have previously, namely the perceptual presentation of the object. Aristotle calls this a receiving of form. Because the object of perception is external to the perceiver, there cannot be identity of the perceiver and the perceptible object. (Aristotle does say there is identity in a special context--to that I will return later.) But there may be some sense to saying that the perceptual faculty becomes identical with the received form, since the form is in the faculty. For the intellect, it seems improper, in one sense, to speak of receiving form. There is no object that stands as primary agent in virtue of its actuality so as to cause a mind to know it. Given several conditions, especially the presence of active *nous*, an intelligible object can simply come to be in the mind. This can be called receiving only in a tenuous way. It is true there is an intelligible order in the world which the universals in the mind are about, but they are not received from the world because the world does not act on a mind, except quite indirectly. Because concepts and abstractions are mental objects, it makes sense to say the mind is identical to these object when thinking in a way that makes no sense for perception. And, conversely, when Aristotle does say that the perceptual faculty becomes identical with sensible form, we cannot understand this to mean that an internal cognitive item is the object of cognition; the object of perception is outside the cognizer.

Because intelligible forms are in the mind, it makes sense to say that the mind is identical with them even when they are not objects of actual thinking, but only capacities

for such thinking. The educated mind literally is its understandings. This is suggested in the following passage:

> But when the intellect has thus become everything in the sense in which one who is actually a scholar [*ho epistêmôn . . . ho kat' energeian*, an actual knower, i.e. one who has knowledge] is said to be so (which happens as soon as he can exercise his power of himself), even then it is still in one sense a capacity; not, however, a capacity in the same sense as before it learned or discovered. And, moreover, at this stage intellect is capable of thinking itself. (*DA* III.4.429b5-9)

For two reasons I take this to mean that the scholar not engaged in exercising his knowledge (one who actually knows, in the sense of first actuality--see *DA* II.5.417a21-b2)[14] has become the objects of knowledge: the description of him as being able to exercise on his own applies to that level of actuality; and what follows about being in a state of potentiality does as well. If we understand Aristotle to be interested mostly in the state of understanding, irrespective of whether the understander is using his understanding, then this makes even more sense. And taking active *nous* as something like an art would corroborate this emphasis. Active *nous* is the condition for there being understanders and understanding. It will follow from that that there will be acts of thinking, both initial learnings and subsequent use of knowledge learned, but that may not be the main focus of Aristotle's discussion about intellect. If this is right, then I am inclined to read other passages where identity of knower and object of knowledge is mentioned to be about the understander in general, not specifically the one exercising his understanding.[15]

One of these texts is interesting because Aristotle mentions also the identity of thinking and object thought.

> The mind itself is intelligible just like the intelligible objects. For things without matter, the thing thinking and the thing being thought are the same; for theoretical understanding (*theôrêtikê epistêmê*) and what is understood (*epistêton*) are the same. (*DA* III.4.430a2-5)

One might think that the thing thinking and the thing being thought are the same for the same reason that the thing perceiving is the same as the thing being perceived and in general the reason why the thing acting is the same as the thing suffering as spelled out in *Physics* III.3. That is because, as Aristotle puts it in *de Anima* III.2, the activity of the agent is in the patient (426a9-11). Put differently, the active fact, an object causing perception, is the same fact as the passive fact, perception being caused by an object; this event has to take place in the patient because it is the patient only that truly undergoes change. However, this most probably is not the reason operating in the above quotation; there would be no need for the qualification about things without matter. The claim is meant to be peculiar to a certain kind of cognitive object and I take these to be universals, which exist only in the mind. This is supported by the line that follows. The explanation for the identity of thinker and object is that (theoretical) understanding and its object are the same. The objects of this understanding are universals (= forms without matter = intelligible forms) and these exist only in minds, being nothing but the concepts and abstractions that make up understanding.[16] So there is reason to think that there is some kind of identity already at the level of understanding, even though this is a state of potentiality. When this state is actualized in thinking, the identity will certainly remain. That is why Aristotle gives support for the latter identity by appealing to the identity that already exists in the state of potentiality.[17]

This argument about the identity of mind and object is meant to explain why the mind can think itself and to that issue I will return in part II. In part III, I will look at Aristotle's explanation of how we perceive perceiving. There he appeals to the identity of perceiver and thing perceived along the lines of *Physics* III.3. But in the passage above, with regard to the intellect, his claim about the identity of thinker and thing being thought is not based on the principle from the *Physics*. Further support for this interpretation comes independently from things established previously. There is no agent

object that causes an affection in a mind in the way a perceptible object is an agent. The principle in the *Physics* applies only to agent-patient interactions. So, the reason given for identity of thinker and object of thought is that there already is identity in the understander. That is a claim that cannot be made in any way for the one able to perceive and the object of perception. I will discuss these distinct strategies for supporting claims about identity of faculty and object at greater length in part IV.

What has been said about the understander could also be said about the faculty of *phantasia*, at least with regard to its use in producing mental images in imagination. It too has retained forms which make up capacities directed toward making present internal objects. For both faculties, it is because they have these retained forms, with which the faculty is identical, that they can operate at will.[18] The main difference between *phantasia* and the intellect is that the states of *phantasia* which are these cognitive capacities are also physical states of the primary sense organs, whereas the states of understanding have no organic foundation. This is fitting. Sensible forms are received through a physical process and retained in a physical state because sensible objects are physical things that interact physically with organs; they are also cognitive states of the perceptive soul that come to be on account of the physical interaction. But the intelligibility of the world is not impressed on a thinker through physical interaction. The world's appearances come to be in a cognizer through such an interaction, but understanding simply emerges in the soul given that the appearances are there and active *nous* is present. Active *nous* explains the possibility for understanding, and when understanding exists, the noetic soul is identical with the objects of understanding. There is no patient-agent interaction, no receiving of a form, at least not in the straightforward sense where an agent object causes directly a change in a patient. The change from ignorance to understanding is not one that takes place in the realm of physics.[19]

So, once again, we see that it is most significant that there is no agent object acting on the intellect like a perceptible object acts as an agent. If there was such an agent object outside the cognizer in the world, it would either have to physically interact with the rational animal or it must be an intelligible reality that acts directly on the intellect. It cannot physically interact; only sensible qualities cannot do that. The other option is Platonism, in which case perception will play a different role, one of "reminding" the intellect of something within. Aristotle is serious that the intelligible forms are in *phantasmata*, and that perception is the only way we can gain access to intelligible forms; but at the same time he holds that understanding is a completely different kind of cognitive state from perceiving and imagining, because these have particulars for their objects while understanding is of the universal. So an agent object cannot be in the *phantasmata* either. They can be only a necessary condition for the jump to understanding, and cannnot contain an object that acts upon the intellect in virtue of its actual intelligibility. Hence, it is necessary that the actuality that is a condition for understanding to take place must be a part of the intellect itself; and it is in virtue of this condition, active *nous*, that objects of understanding, i.e. knowledge, come to exist in passive *nous* as learning takes place. What further to make of active *nous* is open to speculation; but we can be sure it is an attempt to provide an alternative to Platonism.

Despite the gulf between perceiving/imagining and understanding, they nevertheless share important features as cognitive faculties. They both come to possess forms in them and these forms become capacities.[20] For sensible forms, it is more appropriate to speak of receiving the form because sensible objects directly cause the forms to come to be in the cognizer. This reception is a necessary condition for understanding to take place. For intelligible forms, there is not properly reception, but the understander does become its objects through learning; in other words, the understanding as capacity just is the knowledge it has, the intelligible forms in it in a

state of potentiality. When understanding is exercised in acts of thought, then again it is identical with its object, this time at a higher level of actuality, actual thinking and thing thought.

More light will be shed on the notion of a form existing in a cognitive faculty, both in potentiality and actuality, if we examine Aristotle's discussion of the mind thinking itself and the perceptual faculty perceiving perceiving.

II

Aristotle discusses independently how it is that we are aware of the activity of each of our two cognitive faculties. This awareness must be accounted for within the given Aristotelian framework according to which a faculty is activated with respect to a proper object. If we are to be aware of the mind, or of perceiving, these faculties must be objects to themselves in some way, the one an intelligible object, the other a sensible object. The two discussions are somewhat parallel. Because what is said about thinking as an object of thinking is actually more clear, I will begin with it. It will provide us with a guide for understanding how we perceive perceiving. The fact that the perceptual faculty receives sensible forms without matter is appealed to as a possible solution for how we perceive perceiving; thus, this discussion is important for understanding what it is to receive sensible forms without the matter.

The mind's nature raises a question about how it can be acted upon. It has no organs that can be impinged upon; it has no characteristics that make it like anything else, such as transparency is shared by sight, the medium, and the object of sight. This is a problem about how there can be any thought whatsoever. And with this question, Aristotle asks how it is that the mind itself can be an object of thought. (*DA* III.4.429b22-26) The questions are related in that if we find what is common to both intelligible objects and mind, that will account for the mind being an object as well. One solution

would be that mind is in all things (Anaxagoras' view). Mind would then be the object in all intellection, whether it is the thinking mind or the mind in things which is thought, and the commonality of thinker and object is obvious. Another solution is that mind possesses something which all intelligible objects possess. Aristotle's solution will be a way of accepting both of these solutions but only after rejecting them in their present form. He does not tell us why he rejects them, but it is easy to conjecture. The first must be rejected because it implies that all things think, which is not true. The second must be rejected in two ways. First, the quality shared cannot be itself the object of the intellect because there must be an unlikeness between object and faculty for there to be a change (in this case, the special change which is the actualization of a faculty). The commonality between mind and object could only be at a genus level, some property that provides the capacity for bearing the forms that are in the agent and that come to be in the faculty affected.[21] However, the mind thinks all things and if it possessed any property whatsoever, it would be hindered from having that property an an object of thought. So a genus level shared property (like the property of being transparent shared by the eye, the medium, and the object)[22] is not available to explain the mind's being affected.

Now back to Aristotle's text. The only kind of commonality that can apply to mind is that of the likeness of a potentiality to an actuality, a rather odd kind of likeness. The capacity to be affected is not grounded in any actual characteristic, because it must be a potentiality open to all objects of thought. The mind is nothing actual until it thinks, even for the learned mind, because it is still a potentiality.[23]

So far this does not give any clue why the mind should be an intelligible object itself; it only explains how it can be affected by intelligible objects. But then Aristotle says immediately, "The mind itself is intelligible just like the intelligible objects" (*DA* III.4.430a2-3). The reason offered is that the intellect that understands is identical with what is understood, and this is true because of the kind of object involved, things without

matter or universals. The claim that the intellect and things understood are identical was made earlier in the chapter (*DA* III.4.429b5-9).[24] After explaining that the one who actually understands (as opposed to the ignorant person) is identical with the things understood, Aristotle says that the state of understanding is still a potentiality (for exercising understanding), and necessarily concomitant with this potentiality is the capacity of the intellect to "think itself" (*DA* III.4.429b9).[25]

The explanation of how the mind is an object to itself is now very straightforward. It is in the context of the understander having become the things understood that it is explained how the mind is an actually intelligible object, a *noêton*. It is so because it becomes all other *noêta*. In attaining knowledge, which is to possess actually intelligible objects in the mind, the mind itself becomes these intelligible forms, which are without matter. Before learning, it is completely formless and so has nothing thinkable. But once it has become formed (or in-formed) by learning, then it has the capacity to think any of the forms it has become (*DA* III.4.429b6-9); and in becoming these forms, it also gains the capacity to think itself as well, simply because it is identical with those forms and when it thinks any of them it thinks itself. Of course, what it is to be the forms is something different at the two levels of actuality. At the first level, the mind is still potentiality, albeit a developed potentiality; and what it is to be a form at that level is to be a specific capacity, an understanding. Because the mind is identical with its understanding, a capacity to bring to mind any bit of what one understands is a capacity to bring to mind the mind itself. At the higher level of actuality, the mind thinking is the object being thought, and only then is the mind actually aware of itself.

We can now see that Aristotle's solution to how mind is an object to itself and how anything is an object of thought contains something of both the naive solutions suggested at the outset. Mind is in all of its objects in that it is all its objects. So in one sense, it is right to say that everything is intelligible in virtue of mind being in it. At the

same time, intelligible form is what is common to mind and other objects and makes them all intelligible. It is the distinction of levels of potentiality and actuality which make the solution quite subtle. Aristotle makes this clear as he draws the discussion to a conclusion:

> Each thing among the things having matter are potentially among the intelligible objects. Thus, mind is not in the former, but the intelligible object is in that [i.e. mind]. (*DA* III.4.430a6-9)

Although it is in virtue of intelligible forms that the world is intelligible, these exist only in the mind. Things of the sensible world are intelligible only potentially. *Qua* intelligible, the things will have mind in them, so to speak, when their intelligiblity becomes actualized in a mind as an intelligible form, or universal.[26] And that, too, is when the mind is formed and hence actually intelligible.[27]

Since the kind of thinking of itself which Aristotle attributes to the mind is something the mind does whenever it thinks anything, we can rule out certain candidates for what it is for the mind to think itself. It cannot be a particularly reflective self-conscious act, because that we do only sometimes. It also cannot be the scientific study of mind in general (I mean seeking the answer to the question, "What is mind?"); we do not engage in that whenever we think. It has to be my own mind that is the object, not mind in general as a subject of investigation. I do not think there is anything too mysterious about what Aristotle has in mind. If I concentrate on the properties of a triangle, it is perfectly clear to me while I do this that all that passes before my mind is in my own mind, not outside me, at least not outside in the way sensible objects are outside me. Triangularity is a concept in my mind, occupying mental space rather than physical space. In contemplating it, I must also be aware of the mind that contains it, or as Aristotle says, the mind that has become it in understanding it. It seems that thinking thinking is the sort of derivative awareness of my own mental activity which I have in being aware of the objects of my thoughts, simply because these objects are my

understandings. Aristotle calls it a *thinking* of mind because it is part of the activity of mind and mind is the faculty that thinks. But I think he means the mind's *awareness* of its own activity which it has willy nilly whenever it thinks. In being aware of a mental object, one cannot help but be aware, albeit secondarily, of the mind it is part of.

This is confirmed by a discussion in *Metaphysics* XII.9. The subject of discussion is the nobility of divine thought thinking itself. Aristotle has established that the divine mind, since it is the most excellent of things, must have only itself as its object. Having anything else would be a turn toward something less excellent. Next, Aristotle considers human intentional states:

> Yet it seems that understanding and perception and opinion and thought are always of something else, and of themselves only secondarily (*en parergôi*). (*Metaph.* XII.9.1074b35-36)

It is clear that this secondary awareness of itself is an ever present by-product of thinking anything. Aristotle then asks in virtue of what does goodness belong to thought. From the object or the thinking? These are distinct for human thought. He then reiterates what has been said in *de Anima* III.4, that the understanding (*epistêmê*) is identical with the object for things without matter. Aristotle does not make explicit what is to be the solution to the question raised about the goodness of human thought. Perhaps he is suggesting that human thinking is in a way like divine thinking in that human thinking also has itself as object in the act of thinking any object without matter. Regardless of what the conclusion is about the source of goodness for human thought, it is clear that having itself as an object of thought is something the intellect does, human or divine, all the time.

In the above passage, other human cognitive faculties beside the understanding of universals are said also to include awareness of themselves secondarily. In the case of understanding, this reflexive awareness is explained by appealing to the faculty's identity with a certain kind of object, forms without matter. This suggests that it may be more

difficult to explain awareness of the activity of a cognitive faculty when the object is truly something independent from the mind, as it is in perception. And in fact, we will see that Aristotle takes a different tack when he explains how we are aware of perceiving.

III

A similar discussion takes place with regard to perception in *de Anima* III.2. Aristotle wonders how it is that we perceive that we see and hear. That is, how is it that we are aware of the activities of the perceptual faculty? It could be either by a different (sixth) sense that we accomplish this or by the very same sense in activity. After disposing of the "different sense" solution, he raises a difficulty with the "same sense" solution. Because a sense faculty is defined by its object, and the object of, say, sight is color, if it is by sight that we are aware of seeing, then the internal activity which is seeing must possess color, or, as Aristotle puts it, the thing seeing color must itself be colored, in order for it to be an object to itself. This is so because a sense is defined by its kind of object, and if the object were not colored, it would have to be the object of some other sense. He first responds that this might not be necessary since seeing is not always of color (we discriminate light and darkness by sight), and so perceiving by sight can have more than one meaning. But after that, he tries to meet the requirement in a way that hints at his later discussion of thinking thinking.

> Then, again, the thing seeing is in a way colored; for each sense organ is receptive of the sensible without the matter. (*DA* III.2.425b22-24)

The perceptual faculty takes on form during perception, just as the mind does in learning, and this provides the basis for its being an object to itself.

In *de Anima* III.8, Aristotle speaks of both faculties becoming and being identical with their objects, but only with respect to form, sensible form for the one, intelligible form for the other. For objects without matter, such as triangularity or the essence of

frogs, the form without the matter, which is the universal in the soul, is the object itself. The geologist's understanding of an ignaceous rock, although applicable to the rock in his hand, is not of that rock *qua* the particular chunk of matter it is. The object of understanding is a rational explanation of what it is to be a certain kind of rock and this rational explanation exists only in minds. For perception, it is not so easy to say what it means to become the form since the particular rock in the hand is the object of perception. We can understand that the rock acts on the perceptual faculty only in virtue of its sensible forms and so, strictly speaking, the object of perception is its colors, texture, hardness, etc. But how is it that the soul becomes identical with the color in the object?

The answer to that is given in III.2, immediately after the text about perceiving perceiving. The activity of an agent is in the patient, and so the activity of the color of the stone is identical with the activity of the sense of sight. We know from *de Anima* II.12 that the sense faculty receives the sensible form without the matter. This received sensible form must be the affection brought about by the agent object in the perceiver and at the same time it must be the sense faculty in activity. The received form, then, is an internal state of the perceiver which is both the second actuality of the perceiver and the second actuality of the sensible form in the object.

There is a reason for the discussion of identity following immediately upon the discussion of perceiving perceiving. It has been proposed as a possible solution to how a sixth sense can be avoided that the perceptual faculty possesses color in some way. The retention of sensible forms attested to in acts of *phantasia* is a consequence of receiving sensible forms during perception. An objection might be raised at this point: it may be true that acts of imagination indicate that there are colors in the perceptual faculty, but during perception there is no sense in which colors seen are internal; they are in the external object. Aristotle explains that the color's activity is in the perceiver and this is

the highest state of actuality for the color in the object.[28] So the manner in which the perceptual faculty in activity is identical with sensible form is not that it is identical with the form as it exists in the object, which is form at first actuality, the actually perceptible. It is identical with form received into itself, which Aristotle identifies as an activity of the form in the object. This activity that takes place in the perceiver, which is at once the activity of the perceiver and the activity of the sensible object, is the form as content of a perception.

Still, this is quite different from the way an intelligible form is in the mind. For the intellect, the internal form is the object of thought. The sensible form received in the perceiver during perception is not the object, but that by which the external object is presented to the perceiver. It is not obvious, then, why such a presenting of a color should count as making the perceiver colored in some way. I think this is why Aristotle appeals to acts of imagination to further explain what he means.

> Then, again, the thing seeing is in a way colored; for each sense organ is receptive of the sensible without the matter. For this reason, once the sense object is absent, the perceptions remain in the sense organs as images (*phantasiai*). (*DA* III.2.425b22-25)[29]

It is only because the color, shape, and fragrance of the rose has been taken in during perception that I am able to imagine the red rose and its fragrance later. Producing a mental image is more obviously a case of having sensible forms within and much more like thinking than perceiving; but if we assume that something similar takes place during perception, even though an internal image is not then the object, we can understand how the sensible forms in acts of imagination came to be there, where they are now internal objects. Hence, the perceiver during perception has color in it, in somewhat like the way it has color in it when imagining a red rose, but not exactly the same. What it amounts to is that there is color in the perceiver as the content of the cognitive act.

Aristotle's explanation of how we perceive that we perceive is that the sensible form perceived in the object is also taken into the perceiver as the content of the perception. The sensible form being received is identical with the perceiving. We can think of the form received as the presenting of the object's sensible quality to a perceiver. Because the presenting just is the act of perceiving, awareness of the act is implicit in the presenting. This is parallel to the way in which mind is an object to itself in activity: both faculties are identical with the form that is the object of the perception or thought. Hence, in cognition of an object, one is cognizing the activity itself, although derivatively.[30] The main difference between intellection and perception is, as has been explained, that the objects of the intellect exist in the mind but the objects of perception exist outside the mind. To explain how the sensible form can be said to be in the perceiver, Aristotle appeals to a doctrine about affection expressed in *Physics* III.3, that the action of an agent takes place in the patient and that the activity of agent and patient are one event. In perception, this state of the patient is the state of second actuality for both the sensible form and the perceptual faculty; and considered as the second actuality of the sensible form, it is the sensible form as the content of a perception, i.e. the sensible form received into the perceiver.

I have taken it as most significant that Aristotle gives acts of *phantasia* as the direct consequence of the perceptual faculty receiving sensible forms, and thus an illustration of what he means by sensible forms received internally. An imagined red rose is a combination of received sensible forms, perhaps visual, odiferous, and tactile, presented to the cognizer; so the original reception in perception must be the presenting of these forms to the perceiver. That Aristotle appeals to states of *phantasia* in *de Anima* III.2 to indicate what it is for a sensible form to reside in the perceptual faculty is precisely what we should expect if sensible form in the faculty is to do work similar to intelligible form in the mind. Once we learn something, then the form in the mind is

what gives us the capacity to think about it again on our own; it is the state of understanding. The retention of sensible form should provide us with the capacity to make use of the information at a later time, whether by playing a role in perceptual judgment (and mis-judgment), in imagination and memory (producing appearances in the mind), or in thinking. In *de Anima* III.8, Aristotle associates *phantasmata* with sensible forms internalized when he says that the intelligible forms exist in the sensible forms and hence perception and *phantasmata* are necessary for thinking. There is no question that these *phantasmata*, which contain the sensible forms retained from the *aisthêmata* (perceptual states), are both cognitive contents and states of the primary sense organ. When Aristotle mentions acts of imagination in III.2 to be a consequence of having received sensible forms in perception, it is most reasonable to conclude that the same forms received in perception, the previous *aisthêmata*, will also be cognitive contents and states of the primary sense organ.

Although my reading of the term *phantasiai* in this passage to mean all *phantasmata*, and most obviously the mental images of ordinary imagination, is most plausible, it is not an uncontested reading. For those who maintain that the sensible form received in perception is, say, the red in the eye-jelly, the *phantasiai* mentioned here can be after-images, whose cause is a retention of an affection in the outer organ.[31] After-images indeed must be a form of *phantasiai*, but they are only one kind, and certainly an atypical kind, the only kind, along with perhaps dreams, for which Aristotle *might* think something in the outer organ is the object of the experience.[32] The only support that Aristotle might mean just this limited class of *phantasiai* in III.2 would be a prior determination that received sensible form is the red in the eye-jelly. But that is what is at issue, and there is nothing in the context of this discussion in III.2 that makes it plausible, except for the fact that it provides a simple interpretation of why the thing seeing is colored. Too simple; why, then, does Aristotle qualify his claim that the thing seeing is

colored by saying it is "in a way colored" (*hôs kekhrômatistai*). There is no need to limit the reference of *phantasiai* to after-images, because the broader range of *phantasiai*, and most obviously imaginings, provide just as good an example of a retained sensible form; and furthermore, these are colored in a qualified sense, in that the color is an internal cognitive content, not a bit of something like eye-jelly literally colored.

There is a further reason to reject the limited application of the term *phantasiai*. In the one treatise that speaks of after-images at any length, *de Insomniis*, Aristotle never uses either *phantasiai* or *phantasmata* to refer to after-images. He refers to them as the affections that arise in the outer organ during visual perception and the lingering of this affection is similar to what happens in the ear or nose when too loud a noise or too strong an odor is perceived (DI 459b1-23). A little later he speaks of them as *aisthêmata* that linger on as perceptible objects (DI 460b1-3). My guess is that he does not call them *phantasmata* precisely because *phantasmata* belong to the primary sense organ whereas the differentiating characteristic of an after-image is that it is closely associated with a strong affection in the outer organ. Regardless of the truth of my conjecture, it would be strange for Aristotle to use the term *phantasiai* to mean exactly and only what he refrains from calling such elsewhere. In III.2 Aristotle is referring to the most obvious kind of *phantasmata*, the mental imagery in ordinary imagination and memory. These are what are explained by the retention of sensible forms in the sense organs, not after-images.

One might object to my interpretation by appealing to Aristotle's use of the plural, *aisthêtêriois*. The sensible forms are said to be received by the sense organs in the plural; therefore, reception of sensible form must take place in each individual sense organ. I reply that Aristotle could mean the entire sensory apparatus by the use of the plural. Such use is attested to in Book I of *de Anima* where Aristotle speaks of the soul effecting changes in the sense organs during acts of recollection (I.4.408b17-18), but we know from *de Memoria* that these changes are only in the primary sense organ (1.450a28-29).[33]

The sensible form received is ultimately a state of the primary sense organ, when the single mean is affected (*DA* III.7.431a19), but the outer organs do play an essential intermediary role in receiving sensible forms. So we can take Aristotle's use of the plural to accomodate the important part the outer organs play in the receiving process, and this is compatible with his thinking that the primary sense organ is the ultimate receiver. Only at the primary sense organ is there a cognitive state and only there is it retainable as a cognitive capacity. Only as something cognitive can it play a role similar to intelligible form in explaining the acquired capacities of *phantasia.*

Independent of my appeal to the parallels between intelligible form and sensible form retained as *phantasmata*, there is another way to argue that the reception of sensible form referred to in III.2 is not a reddening of the eye-jelly, and this depends solely on Aristotle's argument concerning how we perceive that we see. Let us suppose that the reddening in the eye-jelly is what counts as receiving the sensible form of redness and that this provides the sense in which the thing which sees red is itself colored. Either this reddening of the eye-jelly is the sum total of physiological events that constitute seeing red or it is not. If it is, then it would be correct to say that the eyeball is by itself the organ of sight and then Aristotle's "same sense" solution would mean that the eyeball has all the resources for providing awareness of the thing which sees. There is no trouble understanding how the thing seeing is colored, but there is no way to make sense of the eye being aware of its own color. What counts as awareness for the eye is its being affected by color, and this means it must first be colorless. How is its own color (during perception) going to affect itself so that it could be considered to be aware of itself? This is impossible because it is already affected by the color of the object, and hence no longer colorless; and, besides, it cannot get apart from its own color in order to stand in the right relation to be affected by it. There must be something else that stands in relation to the color in the eye-jelly and is affected in some way by it. The obvious choice is an inner

sense at the primary sense organ. But this inner sense cannot be a sense distinct from the sense of sight or it will be a form of the "other sense" solution Aristotle has rejected. So we must conclude that the reddening of the eye-jelly is not the sum total of affections that constitute seeing.

Now, suppose my opponent grants to me that seeing is the reddening of the eye-jelly in the context of a primary sense organ that also is affected in an act of seeing. It still could be that it is the red in the eye-jelly that counts as the way in which the thing seeing is colored. If this is so and the affection of the primary sense organ is an integral part of an act of seeing, then it must be that this inner sense organ is aware of the color in the eye-jelly in much the same way as we speak of our being aware of color in objects. It literally notices the color in the eyejelly. That is what is forced upon us if we take the real color in the eye-jelly to be that in virtue of which we are aware of seeing. This in itself presents no problem. But because real color is the object of both visual awareness of seeing and visual awareness of an external object, it must be maintained that both of these cases of color stand in the same relation to the thing seeing. This, however, is impossible. If the thing seeing is ultimately the primary sense organ and it sees the color in the eye-jelly as an immediate object of its awareness, then the color in the object cannot be an immediate object of visual awareness. Thus, regardless whether the reddening of the eye-jelly is the entire physiology of seeing red or stimulation of the primary sense organ is also necessary, it cannot be that the red in the eye-jelly is the sense in which the thing seeing is said to be colored (*DA* III.2.425b22-3). And thereforefore, red in the eye-jelly cannot be the sensible form received that explains the retention of the forms in the sense organs manifest in *phantasiai* (425b23-5).[34]

One could conceivably interpret Aristotle as holding a position something like that of Hume, but about physical entities rather than mental. The immediate objects of all awareness would be internal physical icons, color patches for sight, sound bits for

hearing, etc., all captured in the outer organs (or at the heart for touch and taste).[35] But this interpretation seems to do violence to the general tenor of Aristotle's approach. In general, it flies in the face of Aristotle's direct realism. In particular, it does not mesh with the text under discussion. If this were Aristotle's view, he would be concerned about different problems than the one with which he opens *de Anima* III.2. It would not be a mystery at all how we are aware of our perceivings. That would be the given; the problem would be how we are aware of external objects given that we are immediately aware of colors in the eye-jelly: the question would be "Why should these internal states be taken to stand for external objects?" But it is clear that Aristotle's presumption is the other way: perception is completely directed to the external object. Yet, the fact is that we have some kind of awareness of the activity of perceiving, so the question naturally arises, how is this possible? Aristotle's presumption follows our experience of the phenomena at face value. Any representational theory of perception that makes internal items the direct object of consciousness contradicts the face value of our experience and it must be explicitly argued for by explaining why the face value of the phenomena should be rejected.[36] Aristotle does nothing of this sort.

If external objects are the direct objects of perceptual awareness, then it must be that the affection of the eye-jelly is not a direct object of awareness. Instead, that affection together with the primary sense organ responding to that affection make up the physiological changes in virtue of which an external object is the direct object of my visual awareness. But if that is so, there is no sense in which anything internal to the sense organs stands as an object of awareness. Thus, the red in the eye-jelly cannot play any role in explaining our *awareness* of the thing seeing or of the activity of seeing; this is not to deny that it plays a role in explaining how object and organs interact. (Again, the phenomena taken at face value attest to this: we simply do not see anything in the eyeball while looking at something.) We must conclude that the state in virtue of which

the thing seeing is colored in a way that accounts for awareness of seeing is something other than any literal coloring in the eyeballs. We are forced then to see more importance in Aristotle's qualification that the thing seeing is *in a way* colored, not literally colored.

Once we are on that path, then the only candidate for the color in the perceiver is the cognitive content of the perceiving. The argument just given attempts to show, on the basis of Aristotle's short discussion of perceiving that we perceive in III.2, that a cognitive interpretation of receiving sensible form is the only one possible. In itself, this argument does not rule out that the eye on its own houses the faculty of sight and the state of the eye that is reception of form just is the awareness of color.[37] But that has been ruled out (1) by my interpretation of Aristotle's understanding of the unity of the perceptual apparatus which is consistent throughout the psychological works, (2) by my natural reading of *phantasiai* in the III.2 text to mean acts of imagination, and (3) by my argument that sensible form plays a role similar to that of intelligible form in explaining not only the acquisition of information in an act of the faculty, but also the retention of sensible information in a state of second potentiality (first actuality), and later use of the same information in an act (second actuality) of the faculty. The sensible form received must be the internal state which is the awareness of the color, but also the internal state that remains as a capacity to produce a mental appearance of that color in imagination. This must be a state of the primary sense organ. To this state of the primary sense organ, brought about in an act of perception and then retained at a lower level of actuality, Aristotle is referring when he uses the analogy about an impression on wax in both *de Anima* II.12.424a17-21 and *de Memoria* 1.450a27-450b11.

IV

I will close with a few remarks about the three related ideas, becoming like, becoming identical, and receiving form without the matter. All three are applied to

perception. It is significant that Aristotle never applies becoming like to the intellect. The closest he comes to this is at the very beginning of the discussion of the intellect where he uses perception as an analogy.

> This part of the soul, then, must be impassive, but receptive of the form and potentially such, but not identical with it. (*DA* III.4.429a15-16)

The phrase "potentially such" is ambiguous between the potential to become like and the potential to become identical with. All subsequent reference to the intellect's receptivity of form is couched in terms about becoming identical with, not becoming like. There is an easy explanation of this, given my interpretation of Aristotle's idea of an intelligible object. If intelligible objects are the universals that Aristotle says exist in the soul in some way and not in the external world like sensible objects, then it would not make sense to speak of becoming like an intelligible object, since it has no existence outside of the mind. I think Aristotle's point is the following. Universals, or concepts, e.g. triangularity or froghood, do not exist in themselves in the world. What exists in the world are forms or essences concretized in matter as particular triangles[38] or particular frogs. These particulars are objects of the intellect insofar as they fall under the concept, but it is only the concept itself that is without matter. It is the abstraction, which is indifferent to any particular instance, that Aristotle has in mind when he says that, for things without matter, the thinking and the thing thought are the same (*DA* III.4.430a3-4). This implies that for things with matter, there is not identity. And that would be when a particular frog or triangle is part of the content of a thought.[39]

A further implication of this must be that in perception it is impossible for there to be identity between object and cognizer, simply because the objects are particulars external to the mind. Thus, in *de Anima* II.5, Aristotle speaks of the perceiver becoming like the object of perception. The only time he speaks of the perceiver being identical with the object is in III.2, and the identity is that of agent and patient in virtue of the

agent's action being in the patient. This sort of identity is never appealed to in the discussion of the intellect.[40] Instead, the identity for intellect is that concepts make up the understanding and have no existence elsewhere. Aristotle finds in this identity an explanation of how we are cognitive of the mind itself. He also needed an explanation of how we are aware of perceiving. If identity could be found there, too, then the same explanation could be used. But not having the identity that exists for objects of thought, because objects of perception are external, Aristotle falls back on the *Physics* III.3 doctrine about identity of action and affection, since perceiving is a physical interaction of object and perceiver. Outside of the need to solve the puzzle about awareness of perceiving, Aristotle does not claim the perceiver and object are identical. There is one exception to this. In *de Anima* III.8, when speaking of both intellection and perception, Aristotle says that the faculties become identical with the forms of particular things, not with the things themselves (*DA* III.8.431b26-9). This is compatible with only becoming like the object in perception, because the form mentioned is the form received, i.e. the internal content of the perception, not the object.

This statement in III.8 also suggests a way in which the intellect becomes like, not identical. If we consider enmattered particulars as objects of the intellect, the intellect will become like these in form, but not identical with. At *de Interpretatione* 16a6-9, Aristotle speaks of the *pathêmata* of the soul, evidently including both intellect and perception, as being likenesses of the things to which they stand as mental contents. A general statement of this principle for the intellect would be that the contents of intellect mirror the intelligible structure *in the world.* Considered *qua* in the world, the mind is likened to it. But considered *qua* intelligible structure, the mind becomes identical with it. But even though it is thus similar to perception, there remains the important difference that the strictly intellectual content is abstracted from particulars, and in some sense the object of intellect exists only in a mind; whereas perceptual content is about this or that

particular thing, or this or that sensible form in a particular thing. Hence, although Aristotle says that the perceptual faculty becomes identical with sensible forms, the sensible form in the perceptual faculty is not the object of cognition in the way that the intelligible form in the mind is. We might conclude, then, that becoming like is more appropriate for perception, and becoming identical with is more appropriate for intellection, but when Aristotle is speaking of both together, in *de Anima* III.8 and *de Interpretatione*, either doctrine can be stretched. Insofar as particulars can be considered as objects of the intellect, and they must do so in judgments involving the application of a concept to a particular thing or event, the content of thought can be called likenesses to things; insofar as a sensible form is received into the soul, the perceiver can be said to be identical with that received form, just as the intellect is identical with forms in it, namely its understandings.

Becoming like is appropriate to perception for another reason. Perception is a physical process, with object as agent and sense organs as patient, and so there must be a physical becoming like according to Aristotle's physics. Intellection or understanding is not a physical process or state. Furthermore, the agent is not an external object, but an interior illumination, speaking metaphorically, which makes understanding in general possible.

The intellect is said to receive form only in *de Anima* III.4 where the analogy to perception is made: the intellect must be receptive of the form and potentially such as it (*DA* III.4.429a15-16). But there is a disanalogy in the analogy; it seems to apply to learning for the intellect, not to the exercise of learning, while it applies to the exercise of perception. Once one understands something, then his mind is identical with the form, even while not exercising that understanding. A subsequent exercise of understanding cannot be a case of receiving form. Instead, it is a case of bringing to complete actuality a form already possessed. And even in the case of learning, the reception of form is not

at all like that in perception. The physical world is only potentially intelligible and so cannot be the agent that causes a form to be received, no more than objects in the dark can cause colors to be received. It is understandable that Aristotle would not speak of it as a reception except as part of a stretched analogy to perception.

What is common to both intellection and perception is that there is a mental content present in the cognizer, and this is what is a form, or combination of forms, in the cognizer. For perception only, the content is acquired from external objects by a receiving process, which includes physical interaction and physical becoming like, but also finds its completion in a cognitive likeness in the soul.

There are at least two kinds of identity involved, identity with the object and identity of the patient being affected with the activity of the agent. The idea of identity with the object is meant to capture the notion of "having something in mind", however vague a notion that is. Whether thinking about triangularity or perceiving a red rose, the cognizer has something present to consciousness, and hence in it in some sense. What is in it can be called mental content. This content is about something, called the object. For some things, namely abstractions and concepts, there is a sense in which they exist only in minds, and that is what Aristotle means when he says that universals exist in the soul. These are the things without matter mentioned at *DA* III.4.430a3, and most of these are abstracted from matter only in thought, not in reality (*DA* III.7.431b15 and 8.432a3-6).[41] Perhaps one could argue that there is no distinction between content and object for these. This seems true only if we consider mind in general. The concept of triangularity, or froghood, might be said to have only mental existence, in other words, to be an abstraction. But when we consider separate minds thinking the same object, it becomes clear that these abstractions must be extra-mental realities in the sense that they are independent of any particular mind. The two minds each have an internal content that is in it, i.e. its own thought or knowledge, but the object is one and the same. Therefore,

intelligible objects cannot be identical with a particular mind anymore than the red rose or the red in the rose can be identical with the perceptual faculty. I think the identity of mind and object Aristotle claims to hold for abstractions or things without matter depends on considering mind in general. For objects of perception, the content as something in a perceptual faculty is quite distinct from the object outside the perceiver, and it is impossible to claim the same kind of identity as for abstractions and mind in general. The only identity is that of affection and activity of patient and agent.

I think that there are really three senses of identity for mind and object in play. The discussions about how a faculty is aware of its own activity depend on the idea of content as an internal state, which for Aristotle is a form or combination of forms *in* the cognizer. The faculty actualized becomes the forms. This form within is the subjective pole of an object being presented in cognition, and is also called a *noêma* or *aisthêma*. The objective pole of the presentation is the *noêton* and *aisthêton*, the objects of cognition; these too are forms, intelligible and sensible. It does seem correct to say that we are aware of our own mental activity just in having contents. Although the contents are about other things, they make up my mental activity,[42] and in having them I am secondarily aware of that activity. Because a content is about something, we can say that we have secondary awareness of our mental or perceptual activity in thinking about whatever, or perceiving whatever. But it is not right to say that either faculty becomes identical with its objects. Aristotle gets this result fallaciously in two different ways. For the intellect, he blurs the distinction between internal content and object.[43] This may be accomplished by thinking of mind in general and the kinds of objects that exist only as mental abstractions, i.e. things without matter. In this way, mind becomes the same as intelligible reality; and at the same time, internal content of an individual mind and its particular thoughts become irrelevant. But being aware of one's thinking and aware of one's perceiving has precisely to do with internal contents of particular thoughts and

perceptions. In the discussion of perception, Aristotle confuses things in a different way. Here there is no question that individual acts of perception are always the subject of discussion. And because the objects of perception are particular instances of qualities in physical things, it is not possible to claim that they exist only in perceivers in general in the way abstractions exist only in minds. Aristotle relies instead on the idea that the activity of an agent is in the patient. But this in no way makes the internal state of the patient, i.e. the form received, identical with the agent. They remain distinct as internal content and the object that the content is about. So, for both intellection and perception, but in different ways, Aristotle confuses content and object, the internal state whereby something is present to consciousness and what is present. And that is how he gets from identity of faculty and object to secondary awareness of the faculty's activity. But I suggest that identity is more than he needs to explain the secondary awareness. He only needs contentful internal states.[44] The identity claims are false for both perception and intellection if it is identity not with internal content but with what the content is about.

Perhaps the difficulty arises because Aristotle tries to explain both content and object in terms of one kind of thing, namely form. Form is what makes something to be a certain kind of thing, not what makes something to be about a certain kind of thing. Even though a portrait will contain the same forms as the person sitting for the portrait, it is not the forms in the picture themselves that make the picture to be about the person, but something an observer reads into the picture's forms. Similarly, there must be something additional to a form in the mind that makes it about an object. The best Aristotle can say is that the form in the mind is at a higher actualization than the form in the object, with respect to perceptibility or intelligibility. But this is only a place holder for that something more that makes an intentional state intentional. It also turns out to be misleading because it is one and the same form at the two levels of actuality. This is what suggests that the faculty in becoming the form at the highest level of actualization is

identical with the object. The form at the higher actualization, the form in the mind, is not identical with the form that is the object; it is about the form that is the object. Aristotle's distinctions of levels of actuality for a form or capacity are significant philosophical contributions for understanding natural substances and their behavior, but they do not seem to be the right tools, or certainly not sufficient on their own, for understanding mental contents and intentionality.

Perhaps Aristotle's claims about identity of faculty and object are an attempt to capture the aboutness of cognitive states, given that the notion of a form in the mind in itself cannot secure that it be about something extra-mental. But neither means of establishing identity with the object succeed in the right way: (1) for perception, although identity of the passive and active events is quite intelligible, this identity in no way establishes that the state of the patient is about the agent; (2) for intellection, the fact that abstractions have only mental reality does not establish that there is identity between a particular thought and the abstract mental object its content is about. Identity is not the right way to approach the issue of the intentionality of mental content. But the fact that Aristotle uses the identity claims to explain secondary awareness of mental activity indicates that he is trying to get at something about content, because it is in virtue of the fact that internal contents constitute our cognitive acts that object awareness is in some sense also awareness of the cognitive activity.

Notes to Chapter 5

[1] This is a version of the problem of knowledge in Plato's *Meno*. The issue in Aristotle is: what is the status of the object of thought while one is learning. So long as one has not learned, the universal is not in the soul, and there is no intellection of the intelligible object. How, then, can the intelligible object play any role in the process of learning. In the *Meno*, the problem is that if we do not know what we are seeking in the learning process, how will we know when we find it. For both Aristotle and Plato, the problem is to explain learning. Both solve it by suggesting a state of being present to the learner that is less than fully actual but nevertheless present. For Plato, this is the memory of Forms intellected before birth; for Aristotle, it is the presence of the intelligible object in some kind of potential state in the learner. What that state of potentiality is I hope to make clear as this chapter progresses.

[2] Also relevant is *DA* III.7.431b1.

[3] Charles Kahn, "The Role of *Nous* in the Cognition of First Principles in *Posterior Analytics* II 19," in *Aristotle on Science: the Posterior Analytics*, ed. Enrico Berti (Padova: Editrice Antenore, 1981), p. 406.

[4] A process of abstraction is suggested at *DA* III.8.432a3-6. Only the mathematicals are called abstractions, but a similar process must apply to the other properties Aristotle suggests can be isolated in thought from the proper sensibles contained in appearances. Mathematical abstraction is also discussed at *Mem.* 450a1-10. In both discussions, the point is made that *phantasmata* must be employed as a means of representation, but particular aspects of the image are ignored.

[5] See *EE* VII.14.1248a25-27.

[6] For this suggestion about the significance of the comparison to *tekhnê* in *DA* III.5, I am indebted to Michael Frede's remarks during David Charles' seminar discussions at Oriel College, Oxford, 1991-2. John Rist rejects such a view in "Notes on Aristotle *De anima* 3.5," in *Essays in Ancient Greek Philosophy*, vol. 1, eds John P. Anton and George L. Kustas (Albany: State University of New York Press, 1971), p. 506. The reason is apparently because active *nous* would not be individualized. But an art, like carpentry, is possessed by different individuals, and similarly active *nous* would be a part of an individual.

[7] I agree with Modrak that active *nous* is an enabling condition for thinking. See Deborah Modrak, "Aristotle on thinking," *Proceedings of the Boston Colloquia on Ancient Philosophy* 2 (1986), p. 233. Modrak focuses on acts of thinking, but I think concept acquisition is what is being explained primarily.

[8] It is possible that when Aristotle speaks of the likeness of *phantasia* to light, he only has in mind that imagination makes sensible objects present internally, as if an internal light were on, and does not mean at all to refer to a step that needs to be bridged between strictly perceptual content and full-blown rich perception. However, the discussion of *phantasia* at the end of *DA* III.3 must be taken more broadly than our notion of imagination. Animals are said to act in accordance with *phantasiai* frequently, not having reason, and this must mean *phantasiai* during perception, not just the internal

objects of what we call imagination in the sense of mental imaging. During perception there is no internal light and internal image. So, it is appropriate to think of the metaphor as pointing to what makes possible the presentation of certain kinds of object both in perception and outside perception.

[9] Some have identified the passive intellect with *phantasia*. For example, Trendelenburg in his commentary claims that *nous pathêtikos* refers to all lower powers necessary for thinking (see Brentano's short outline of the view in *Essays on Aristotle's De Anima*, eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), p. 323). This cannot be right, because it confuses faculties that Aristotle never confuses. Nevertheless, it would be true that if the contents of *phantasia* were wiped clean, the passive intellect would be empty. This is because the capacities it acquires are capacities for using the contents of *phantasia* in a certain way. Hence, passive intellect is perishable because it disappears when the primary sense organ is gone. There is not much use in saying that it is there but empty if there is no further possibility of it regaining capacities. In the child it is empty, but a potentiality to be filled that indeed will be actualized. Hence, it can be said to exist potentially. But at death, all potentiality is wiped out. That is what I take to be the meaning of the perishability of passive intellect mentioned at *DA* III.5.430a23-25.

[10] Philoponus expresses this view in *de Intellectu*, the part of his commentary on *de Anima* preserved in Latin, 48,27-41.

[11] We can understand the motivation behind the move in the commentators to understand the active intellect as possessing all the forms in the highest state of actuality, i.e. thinking them all. And this forces an interpretation that makes active intellect the divine mind, or at least some higher intellect that has immediate vision of the world of (Platonic) Intelligible Forms, or which contains all Forms as its own objects of thought. This is the easiest way to preserve the principle that the actual is prior to the potential and is the agent of actualizing what is potential. If the maker mind makes all things, it must actually be all things first. For a contemporary proponent of this view, see Charles Kahn, "The Role of *Nous* in the Cognition of First Principles in *Posterior Analytics* II 19," in *Aristotle on Science: the Posterior Analytics*, ed. Enrico Berti (Padova: Editrice Antenore, 1981), pp. 411ff. It seems that for Aristotle, the divine mind thinks only its own thinking, and so would not have separate objects corresponding to essences in the material world. It could not have Forms as objects because they would be of less excellence than the divine mind itself, and Aristotle gives us no reason to think that Forms are identical with the divine mind (*Metaph.* XII.9).

[12] I see no reason not to consider intelligible objects, intelligible forms, and universals the same thing. At *DA* III.4.429a27-29 and III.8.431b28-29 they are called (intelligible) forms. At III.4.429b3-6 and 430a2-5, intelligible object or object of thought (*noêton*) and object of knowledge (*epistêton*). At II.5.417b21-23, universals in the soul.

[13] Alexander of Aphrodisias draws similar parallels between *phantasia* and the intellect in his *de Anima* 68,21-30. However, he treats the state that is left behind after perception as a picture in storage, rather than a capacity to conjure a picture. He also seems to divide *phantasia* from perception so that it has to do only with mental images outside of perception, and not false appearances during perception (69,11ff.)

[14] I read the *ho kat' energeian* (*DA* III.4.429b6-7) to be parallel to *energeiai* (dative) *ginontai epistêmones* at II.5.417b30a (following the Ross' *OCT* edition). "Both of the

first two men, therefore, being knowers in potentiality become knowers in actuality" (417b30-30a), but in different ways they make the transition, as Aristotle goes on to explain. *kat' energeian* is equivalent to *energeiai* (dative). So we have our choice whether it refers at 429b6-7 to first or second actuality. I choose the first because of what follows.

[15] That the understander is identical with what he understands is stated in several places: *DA* III.4.429b5-7; 430a3-5; 5.430a20-22; 7.431a1; 8.431b20-28. In all of them, I understand the topic to be understanding, and I take actual understanding to mean not a particular exercise of understanding, but the state of understanding, whether in exercise or not. This is actual knowledge in contrast to the state of the ignorant person who is potentially one who knows.

[16] Deborah Modrak, "Aristotle on thinking," *Proceedings of the Boston Colloquia on Ancient Philosophy* 2 (1986), p. 231-2. Modrak notes that the identity for the thing thinking and an object of thought is a stronger kind of identity than that of agent and patient in activity. She explains that this stronger identity follows because the object of thinking, when it is an object without matter, i.e. an object of theoretical science, is itself a thought.

[17] Kosman has translated *theôrêtikê* as 'actual' in the statement: "For theoretical knowledge (*hê epistêmê hê theôrêtikê*) is the same as the object of knowledge (*epistêton*)." And he understands actual knowledge to be the exercise of knowledge. See L. A. Kosman, *Essays on Aristotle's De Anima*, eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), p. 353, n. 33 and p. 357, n. 40. I agree with him that *theôria* is second actuality understanding, but this does not carry over to *epistêmê theôrêtikê*. The motivation is understandable if one is convinced that it is the general thesis about identity of agent and patient in activity that is operative here. But we have been told that the mind has become its objects once it has learned and to that prior identity the next line appeals. Furthermore, there is a more plausible explanation for the term *theôrêtikê* here. What is being said applies only to objects of a certain kind, those without matter. And those are the domain of theoretical knowledge as opposed to practical knowledge. I presume this is because practical knowledge has to do with particular things and particular actions and not just universal claims. Evidently, Aristotle allows that we can think of things other than universals (*DA* II.5.417b25-27 and *Int.* 1.16a7-8), but the claim about identity of thinker and object appealed to here applies only to universals, which are forms without matter. The reason that Aristotle limits his identity claim to objects that are without matter is because any thinking about particulars would be like perception in that there cannot be identity with an external object, except in the sense allowed by *Physics* III.3. Because he limits the claim to things without matter, which are mental objects, we know that the identity discussed in *Physics* III.3 is not being appealed to here. So *theôrêtikê* should be understood in the obvious sense as contrasting different kinds of knowledge, not as a term for signifying the exercise of knowledge. The same point about identity of understanding and its object is made at *Metaph.* XII.9.1075a1-6 where it is extended to include even the productive sciences in so far as they deal with things without matter, i.e. essences.

[18] Aristotle makes the claim about thinking at *DA* II.5.417b23-24. Because universals are in the soul, we can exercise thinking whenever we want. At *DA* III.3.427b17-20, Aristotle claims that acts of *phantasia* we can do at will, and provides as an example the creating of mental images as a mnemonic technique. Though not stated explicitly here that the reason we can do this is because sensible forms are retained in the soul, it is

clearly the case. Only later in the chapter does Aristotle establish that *phantasia* is constituted by second level *kinêseis* of perception that remain after perception has passed. It is this retention that explains the ability to create mental images at will.

[19] At *PA* I.641a17-b10, Aristotle argues that *nous* is not a part of the study of physical science; cf. *Metaph.* VII.1.1026a5-6.

[20] Possessing forms as capacities is the basis for being able to use a cognitive activity at will, a characteristic of both imagination (*DA* III.3.427b17-20) and thought (*DA* II.5.417b24-25). Hence, Aristotle can say that *phantasia* is a kind of thinking (*DA* III.10.433a10).

[21] See *GC* I.7.323b29-324a14. Likeness in genus with specific contrariety is Aristotle's reconciliation of two opposing views about affection, that like affects like and that unlike affects unlike.

[22] See *Sens.* 3.439a12-b18 for the view that even solid objects possess the transparent and in virtue of that have color.

[23] This potentiality of the mind to understand and think anything can be compared to prime matter with respect to the physical existence of all forms; what can take on all forms must be completely formless in itself (see *Metaph.* VII.3.1029a20-25). Although prime matter is probably only an abstract conceptual limit for form-matter compounds, mind as potentiality for the existence of all intelligible forms really exists in each human being. We might call it pure potentiality because it is not based in some actual property of an entity. The mind at both levels of potentiality (ignorant and learned) is pure potentiality in this sense.

[24] See note 17.

[25] See pp. 177-80 above and note 14 for my earlier discussion of the two passages in *DA* III.4 (429b5-9 and 430a2-5) about identity of the intellect in a state of understanding and the object of understanding.

[26] Things in the world are intelligible because forms or essences are concretized in particulars. This essential structure of the world is what is potentially intelligible. When mind has abstracted that structure from the particularity and contingency of matter, then the world is actually intelligible. This takes place only in minds and having this understanding is what it is to possess intelligible forms. Intelligible forms are not in the world of matter; what is in matter is concretized essences which are potentially intelligible.

[27] Thus it is explained why thinking does not take place in material things. But why does not thinking take place always, given that the mind is always an actually intelligible object once one is educated? Aristotle poses this question, but leaves it unanswered. I do not think the answer comes in *DA* III.5. As explained earlier, active *nous* explains understanding in general, in the way that the art of building explains building. The answer to the question has been already given partially: that mind is the place of forms, but in a state of potentiality. But what causes individual acts of thinking will be contingencies having to do with the rational animal as a whole, i.e. including psychological factors associated with the rest of the cognitive faculties, such as desires.

[28] This state of the color Aristotle says has no name, where as for sound, it is called sounding (*psophêsis*), which is identical with hearing (*akousis*). Evidently there is no sounding in the forest when the tree falls and no hearer is present. Similarly there is no "_____ing" when there is no perceiver seeing color. In both cases what there is would be motion or change in the medium. This activity in the medium is what makes the sensible object actually perceptible, but not what makes it perceived. When it is perceived, Aristotle considers that it is then in a higher state of actuality, identical in event with the actual perceiving, but not identical in account. (*DA* III.2.426a2-26) It may seem funny to attribute something extra to the color in the object just because a perceiver happens to be present. But because it is the agent, and it is doing something when a perceiver is present that it does not do otherwise, that is why Aristotle can say that it is then actualized fully.

[29] The Greek reads more literally, "perceptions and mental images (*aisthêseis kai phantasiai*) remain in the sense organs." Since perceptions are perceptions only while the object is present and acting on the sense organs, there would be no sense to a perception remaining after the object is no longer acting on the perceiver. That explains why the *kai* must be epexegetical: "perceptions, that is, the images they give rise to in imagination." In other words, the perceptions are preserved in the form of mental images. *Phantasia* in the plural, *phantasiai*, means the same as *phantasmata*, except that it cannot mean specific capacities in the way *phantasmata* can be. *Phantasiai* are acts of the faculty called *phantasia*, just as *aisthêseis* are acts of the faculty called *aisthêsis*. We should expect Aristotle to point to an act of imagination rather than the dispositional state towards such since the receiving of a sensible form is also an act of the perceptual faculty, and it is only in act that the faculty is such that it can be aware of its own activity, which is the subject of discussion. Furthermore, it is only when I actually imagine a red rose that there is anything red present for *phantasia*. Since Aristotle wishes to show how the perceptual faculty gets colored, he must point to acts of imagination, not capacities of imagination.

[30] See *Metaph.* XII.9.1074b36. The cognitive faculties are said to have themselves as an object only secondarily, *en parergôi*. Hence, an awareness that is always present but not the main focus of the act.

[31] S. Marc Cohen, "The Credibility of Aristotle's Philosophy of Mind?" in *Aristotle Today: Essays on Aristotle's Ideal of Science*, ed. M. Matthen (Edmunton, Canada: Academic Printing and Publishing, 1987), pp. 115-116.

[32] I say "*might*" because even for these it would be more consistent to say that something in the outer organ gives rise to a *phantasma* of a special sort. I am not convinced that after-images and dreams are thought by Aristotle to take place like images on a screen in the eyeball, even though Aristotle's few remarks in *Insom.* can be read this way.

[33] At *DA* I.4.408b17-18, Aristotle is speaking of the soul's relation to the sense organs as a whole. Sometimes changes or movements (*kinêseis*) proceed through the body and reach the soul (perception); other times the soul initiates movement which jogs the states in the sense organs (*en tois aisthêtêriois*) that retain sensory information (recollection). But we know from *de Memoria* that it is only the primary sense organ that is involved in recollection and memory; the affections which are called *phantasmata* belong to the soul and the part of the body containing the soul (*Mem.* 1.450a28-29). The use of the plural is

just a way of referring to the organic structure in general that houses the soul-faculty. There also is no difficulty in the fact that Aristotle says that each sense organ is receptive of sensible form without the matter. It is through each sense organ that different forms come to reside as cognitive states of the primary sense organ. Furthermore, we can appeal to the "one thing, many functions doctrine" and claim that the organ of sight (or any other individual sense) is the primary sense organ operating via a certain receptor, the transparent eye-jelly. The receptivity of the entire organic stucture is referred to also in *PA* II.1: each individual sense organ is said to be receptive of its own range of sensibles (*to aisthêtêrion hekastou dektikon einai tôn aisthêtôn*--647a7-8); and the heart is receptive of all the sensibles (*dektikon pantôn aisthêtôn*--647a28).

[34] One response to my argument would be to say that Aristotle's suggestions for establishing the "same sense" solution are off the cuff, and not to be treated rigorously; his real solution to the problem is the identity of faculty and object in activity, a solution that supersedes the first suggestions. Richard Sorabji has suggested this reply to me in private discussions. I do not think the first suggestions are off the cuff, and I have taken the second solution, that the eye is in a way colored, to actually be further supported by the discussion of identity that follows.

[35] This is Steve Everson's view in *Aristotle on Perceptual Cognition* (Ph.D. diss., King's College London, 1991).

[36] An example would be George Berkeley's argument from perceptual relativism (the example used is a hot hand and a cold hand put into a bucket of lukewarm water) against the objective existence of sensible qualities found in the first dialogue of *Three Dialogues between Hylas and Philonous*.

[37] This is Burnyeat's interpretation. He would deny that the internal state that makes up seeing red is a distinct physiological state. What makes the internal state seeing red is only that red is seen rather than green or blue. The eye-jelly itself undergoes no physical change. The only change is a spiritual change *in the eye*. See M. F. Burnyeat, "Is an Aristotelian philosophy of mind still credible?" in *Essays on Aristotle's De Anima*," eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), p. 22: "no physical change is needed for the eye or the organ of touch to become aware of the appropriate perceptual objects."

[38] Either in sensible matter, such as this one drawn in the sand, or in intelligible matter, such as this particular equilateral triangle with a 3 inch base I put before my mind's eye. See *Metaph.* VII.10.1036a1-11 about intelligible matter. It is not clear whether intelligible matter is needed to differentiate triangles that occur in different thoughts, but may be identical in properties, or to differentiate by properties. And if the latter, what kinds of properties; only properties that are irrelevant to its being a certain kind of triangle, such as size, or is it intelligible matter that distinguishes an acute triangle from an obtuse triangle. If the latter, then intelligible matter can be equated with the genus, triangle, and the form and differentia is equilateral, isosceles, etc.

[39] See *Metaph.* XII.9.1074b38-1075a5. Even in the practical arts, where one is making individual things, or deciding for particular circumstances, Aristotle allows that the object of thought is separate from the matter insofar as an essence must be cognized.

[40] Furthermore, there is no mention of the mind being a patient affected by an agent except insofar as the analogy to perception (*DA* III.4.429a13-16) speaks of a *paskhein ti*.

But the point of analogy may go no farther than that both perceiving and thinking are actualizations brought about in some sense by an object. Indeed, the *paskhein ti* must refer to the *paskhein* that is not really a *paskhein*, i.e. an actualization (as discussed in II.5), because otherwise it is very difficult to understand the movement in Aristotle's exposition to impassivity in the very next sentence. When we add to this that the object that does the actualizing is not outside of the mind, then we are a long way removed from a context where the *Physics* III.3 discussion of identity of an agent's action and a patient's affection has application.

[41] The only possible object of thought that would be separate in reality would be the unmoved mover. But Aristotle seems to have some doubts about whether such could truly be an object of human thinking; see *DA* III.7.431b17-19 and *Mem.* 1.450a7. He cannot doubt that we can think of the unmoved mover in some way, since he philosophizes about it. But perhaps there is question whether our mind can have it as an object with which it becomes identical. Perhaps this is possible only for the divine mind itself. See *Metaph.* XII.9. All abstracted objects of thought exist only in the mind because they exist nowhere else separated in reality. Existing only in the mind, they are a part of mind and identical with mind. But the unmoved mover has separate existence, and so when we have it as an object of thought, it cannot be anymore identical with our thought than our perceptions can be identical with physical things. Because the unmoved mover is separate, but yet not a property of any physical thing, there certainly should be a puzzle about how it might be an object of our thought which depends on abstraction from sensible appearances.

[42] See *DA* I.3.407a7: *he de noêsis ta noêmata.*

[43] It is curious to note that Aristotle avoids the terms *noêma* and *aisthêma* when speaking about thinking thinking and perceiving perceiving. Yet it is clear that the form within which the faculty has become, or, for perception, the internal state brought about by an agent, which is a form received, are the focus of the claims about identity. He uses these terms elsewhere when he is clearly talking about internal contents. In *de Anima*, for *noêma*, see I.3.407a7, III.5.430a28, 7.431b7, and 8.432a11-12 ; for *aisthêma*, see III.7.431a15 and 8.432a9 . So it is a puzzle why he chooses to speak of the objects rather than the contents in the discussions of secondary awareness of mental activities.

[44] That Aristotle is not adverse to thinking about contents, see the two notes just above.

Chapter 6

De Anima II.12

In this chapter I will bring the results reached so far to bear on interpreting the key chapter that began this inquiry, *de Anima* II.12. First let me restate briefly those results.

The reception of form in a cognitive faculty is the cognitive acquisition of information. For the intellect it is learning; for the perceptual faculty it is sensory information taken in during perception. Once received, the information is retained in the cognizer. The intellect that has retained forms has become learned in some respect; the perceptual faculty that has retained forms has gained memories and also the resources to imagine all sorts of things by recombining the parts of the perceptual experiences remembered. These retained perceptual forms also play a role in perceptual judgments about the common and incidental sensibles in later acts of perception. I have argued that the meaning of the notion of possessing a sensible form, whether it be in the first reception or in subsequent use, concerns the cognitive content of the perceptual act. One reason for this is that the contents of acts of imagination count as sensible forms that have been retained in the cognizer, and the only sense in which there is red or any other sensible form (= proper sensible) in me when I imagine a red rose is because it is there as the content of a cognitive act, in this case as the redness of the mental image. There is neither red in the eye-jelly nor red in the heart that is the object or cause of the act. Another reason is that the parallel Aristotle draws between receiving sensible forms and receiving intelligible forms can be understood best if both kinds of received forms are cognitive states. During perception, the sensible form is in the object, but its being presented to me Aristotle counts as the activity of that sensible form taking place in me. That activity, the second actuality of the form in the object, is identical to the activity of the perceptual faculty, being aware of the red of the rose. This awareness is a state of the

perceiver which is physiologically based. Aristotle compares it to the wax imprint of a signet ring. The wax itself stands for the physical characteristics, whatever they might be, that enable the primary sense organ to receive information through a physical process. The sign in the wax, which signifies the cause (the sender of the letter), stands for the information-bearing feature of the perceptual state caused by a sensible object; the sensible form comes to exist in the perceiver, but here it is information for the perceiver, not a sensible quality. Just as the seal imprint signifies the sender, the sensible form in the perceiver presents the sensible form of the object. Just as the seal imprint remains after the impressing, the sensory information remains as a cognitve capacity later exercised in imagination or some other act of *phantasia* that makes use of the information. Unsurprisingly, then, Aristotle appeals to the same analogy in *de Memoria* to understand memory.

The only thing lacking in the analogy is that the imprint in wax does not have two levels of actuality as does the form in a cognitive faculty. The imprint in wax remains the same uninterruptedly. We have to understand that the form in the cognizer drops down from second actuality to a new first actuality in the time between an act of perception and a later act of imagination. This is like the presence of the form in the sensible object in this respect: its actualization is a cognitive presentation of color, sound, etc. But it is unlike in this: the form in the cognizer, even as a capacity, is information for the cognizer, whereas the form in the object is simply a property. A neuro-physiologist probing the primary sense organ would not see any red image or smell any rose fragrance. Nevertheless, the forms are there in virtue of what can be presented in an act of imagination. They have a potential existence. I do not think any more needs to be said about how the forms are in the imprints on the primary sense organ. Just as seeing red in an object is the evidence that the object is red, at the same time it is evidence that this red is possessed by the perceiver as information, and similarly, a later act of

imagining the red is evidence that the red is in the perceiver. Perhaps the inadequacy of the wax impression to capture levels of actuality and the fact that Aristotle uses it for both perception and the capacity for image recall are in themselves support for my claim that an information-bearing state of a cognizer is properly called possession of the form regardless of whether it is in act or not. Given such a model, it is easy to assimilate two states which otherwise may not seem so similar: the mental image is obviously red (mental red, I suppose) and hence easily called a sensible form, but the capacity for recalling that image is only a potentiality for presenting mental redness. Nevertheless, in virtue of what it is a potentiality for, the capacity counts as a sensible form retained.

I claim, then, that Aristotle's notion of a form received into the perceiver is meant to capture both the cognitive aspect of perception and the cognitive capacities perception produces in *phantasia*. During an act of the faculty, the sensible form in the perceiver will be the awareness of the form in the object. Hence, my interpretation is a cognitive interpretation. But I have stressed that the information-bearing states which are the forms received, are, in the case of the perceptual faculty, physical states likened to imprints in wax. Aristotle's concern is not to explain how this is so. He accepts the obvious, that (1) perception is an interaction between physical objects and physical organisms and (2) the organism is aware of the object. Given this, he makes use of his key notions of form and matter to describe perception within his theoretical framework. Sensible form exists in one way in objects as properties and in another way in cognizers as information-bearing states belonging simultaneously to the soul and its chief organ.

I now will show how the cognitive interpretation I am proposing can be carried through in a reading of the entire chapter *de Anima* II.12. There are three considerations from this chapter that have been used to support the physiological interpretation of the reception of form without matter. First, Aristotle says that the capacity to receive sensible form belongs to the (primary) sense organ and this has been taken to mean that

receiving form is only the material explanation of perception, not something the faculty *qua* faculty does. Second, the use of the term *logos*, which is plausibly read to mean ratio, and in the context of this chapter a physical ratio of composition in a sense organ, suggests that receiving form is the same as the outer organ becoming like; furthermore, this reading of *logos* seems necessary if what is said about *aisthêsis* being a *logos* is supposed to explain why intense sensible qualities destroy the *logos* and why plants cannot perceive. Third, the motivation for the last part of the chapter about the different effects of sensible qualities and especially the question posed, "What is perceiving beyond being an affection?", are easily understood if receiving sensible form has turned out thus far to be only a necessary condition for perception, as it would be if it were the red in the eye-jelly. Each of these three points will be handled in parts I, II, and III.

It is not possible for me to refute the consistency of a physiological interpretation for *de Anima* II.12 considered by itself.[1] My reasons for a cognitive interpretation so far come from outside this chapter: considerations about the role of the primary sense organ, about *phantasia* as the storehouse of sensible forms, and about the intellect as a similar form retainer. Chapter II.12 on its own cannot stand as proof of either interpretation. I wish here to provide an alternative consistent reading of this chapter, so that I might remove the last obstacles to my interpretation.

After providing an alternative interpretation that explains the text equally well with respect to the three points, it will still be left to understand the purport of the phrases 'with the matter' and 'without the matter'. It is the contrast suggested by these phrases with which I began my investigation in chapter 1. Aquinas takes them to express the difference between the two modes of being for a form: the cognitive mode is without matter, or immaterial and intentional; the other mode is with matter, or material instantiation of the form as a property of a thing. Sorabji understands the terms to express two ways that a form might be acquired from an agent, one by taking in matter

from the agent, the other without taking in matter. In part IV, I will provide a different interpretation which avoids difficulties in each of these views. With that, my interpretation of receiving sensible form without the matter will be complete.

I

After explaining that perception is the receiving of sensible form without the matter, Aristotle continues:

> But it is the primary sense organ in which such a capacity resides. (*DA* II.12.424a24-25)

Sorabji suggests that this is a qualification of what was first said: although Aristotle first says that the faculty of perception is what is able to receive sensible forms without the matter, he now qualifies that claim by noting that it is the organ that does the receiving rather than the faculty *qua* faculty.[2] The following sentence however suggests that we should treat the relation of this sentence to the first sentence as a contrast rather than a qualification, and a particularly Aristotelian contrast, that of form to matter.

> They are then the same, but the "to be" is different for each. For the thing perceiving will have some extension, but what it is to be a thing capable of perceiving does not, nor does the sense faculty, but it is a certain form (*logos*) and capacity (*dunamis*) of that [extended thing]. (*DA* II.12.424a25-28)

The distinction drawn here is between a physical body and its function. The particles *men* and *de* in the first line (*esti men oun t'auton, to d'einai heteron*, l. 25) are used to make the very same contrast in what preceded: *hê men aisthêsis* (l. 18) . . . *aisthêtêrion de prôton* (l. 24). The sense faculty is the capacity to receive sensible forms and that is the *logos* and *dunamis*, while the primary sense organ is the extended body that has that capacity. Certainly, the receiving of sensible form takes place in the organ, but that does not make the receiving of form the material explanation. A house is a shelter for persons and goods and the function of sheltering is done by something made from bricks and timbers, but it would be wrong to say that sheltering is done, properly speaking, by bricks

and timbers *qua* such, not by them *qua* house (see *Metaph.* VIII.2.1043a12ff.). No, it is as a house that they shelter, and what is to be a house is to have the capacity to shelter. Similarly, there is a physically extended thing that does perceiving, but what it is to perceive is to receive sensible form. That is the most naturally Aristotelian way to understand the contrast drawn by the *men* and *de* in lines 18 and 24, and not that it is the organ rather than the perceptual faculty that receives sensible forms. Thus, having the capacity to receive sensible forms is explicitly offered as the formal definition, or at least formal description,[3] of the perceptual faculty, not the material explanation. It is offered as what it is to perceive, and then it is said that this function takes place in a body of a special construction. The relation is similar to that of soul to body and we should understand it in light of Aristotle's claim that perception belongs to both soul and body and that it is produced in the soul (i.e. a certain part, the perceptual faculty) through the body (*Sens.* 1.436b6-7).

Aristotle never gives us a full account of the material explanation in terms of the physical processes because he does not have one. In part, the becoming like is the material explanation, at least for the outer organs; but becoming like at the primary sense organ has no meaning apart from the cognitive likeness. By pointing out that it is in the primary sense organ that the capacity resides, Aristotle is referring in a general way to the material explanation; not to the details of any process but to the organ in which perception takes place, just as sheltering takes place in bricks and timbers of a certain arrangement. The material explanation would be whatever is necessary in an organ for cognitive presentations of colors, sounds, etc. (= receiving sensible forms) to take place. He speaks of this material requirement, but at an abstract level, when he calls the heart a single mean for all the sensibles (*DA* III.7.431a19-20). Outside of touch, it is a mean only in that it is whatever is required to be receptive of a range of alterations that are cognitive states, analogous to its being a literal mean for touch. It still counts as a mean

in that there is a certain range of intensity of stimulations that will provide normal perception.

The contrast between form and organ, where form is function and capacity, and the organ is the physical structure possessing the capacity, applies regardless of how we understand the force of *prôton.* If we were convinced that the capacity of receiving forms cognitively resided in the eye alone, the contrast between function and organ would still hold. For reasons I have laid out earlier, I think we should understand *prôton aisthêtêrion* to mean the primary sense organ, the heart. This may mean that there is a lack of continuity between *de Anima* II.12 and II.11. The primary sense organ has not been mentioned as the receiver of all sensory information before this; it has only been spoken of as the organ of touch in the previous chapter. However, this is not so serious if we note that there is a definite closing at the end of II.11: "With respect to each of the senses [considered individually], an outline has been described." The beginning of II.12 introduces a direct contrast to the treatment by individual sense: "Considering all the senses as a whole . . ."[4] The closing of this new section comes at the end of III.2: "Concerning the *arkhê* by which we say the animal is capable of perception, let this account suffice." We can consider these three chapters to be about perception in general, considerations that apply regardless of the mode. And it is in these chapters that the unity of the five senses is brought out. We need only presume that Aristotle's audience had a general overview of his biological theories and knew that the heart was the key organ for all soul functions and the *arkhê* of perception. It then would not be so out of place for Aristotle to finish the discussions of the individual senses and then begin the next day: "We have completed our discussion of the means by which the animal is affected through various media. Now, lets talk about the entire perceptual system and what it is to perceive. The perceptual faculty taken all together is that which takes in forms in a special way so as to count as information for the animal. Now, the faculty is

one thing, the form or function, while its matter is the primary sense organ, an extended bodily part, but they are numerically one thing in that the capacity belongs to the primary sense organ and it is in virtue of that capacity that it is the primary sense organ." As the discussion continues in III.1 and III.2 the unity of the perceptual system becomes more clear. Furthermore, we might conjecture that Aristotle discusses touch last, the organ of which is also the chief perceptual organ, in order to provide a transition to discussing the same organ but under the auspices of receiver of all sensory information. The structure of *de Anima* II and III, starting with lower faculties and building to higher faculties, should have dictated touch to be the first discussed and sight the last, since touch is what marks off animals from plants, while sight is the most sophisticated and provides Aristotle with analogies for higher faculties (both *phantasia* and *nous*). I suggest that discussing touch last is dictated because he is working from objects and outer organs to inner organ, and the climax of the discussion of the perceptual faculty is about its unity grounded in an inner organ that receives all sensory information.

II

We have already encountered the term *logos* in *de Anima* II.12 in the quote above (424a27-8) and I have offered a reading of it to mean form. Strictly speaking it means a verbal account, hence definition. But since a definition signifies an essence or form, *logos* often means form. In *de Anima* II.1, soul is said to be substance (*ousia*) in the sense of being the form (*eidos*) of a natural body (412a19-20). Later he repeats this by saying soul is substance *kata ton logon* (*DA* II.1.412b10-11), literally according to the account, but meaning "with respect to form" in contrast to "with respect to matter", *kata tên hulên*. The phrase *kata ton logon* should generally be taken to mean this and this very phrase provides us with the first occurrence of *logos* in II.12 (424a24).[5] Here the phrase

only emphasizes that it is the sensible form, not the thing with the form, that affects a sense.[6]

Even if this first occurrence should not be taken as 'ratio', it is the subsequent occurrences on which much hangs. The sense faculty, as opposed to the primary sense organ, could be a certain physical ratio in virtue of which the organ has such a capacity or *dunamis*. This seems plausible given the discussion of touch and its organ (the primary sense organ) in II.11 where it is said that the sense is a sort of mean with respect to the opposites in a genus of sensibles, such as hot and cold for temperature. However, Aristotle does not call it a ratio there, and he does qualify his statement, "a sort of mean." Later the primary sense organ is referred to as a single mean (*DA* III.7.431a19) for all the sensibles, echoing a claim in *Parts of Animals* that the heart is the receiver of all the sensibles (*PA* II.1.647a28). Since there is no physical ratio that is receptive of all the sensibles, we may have to understand by a mean just whatever composition is capable of being stimulated by the different genera of sensibles, each made up of a pair of opposites. So the discussion in II.11 about a mean in no way forces us to read *logos* in II.12 as a ratio. The notion of a mean is fairly abstract for Aristotle.

The paradigm we should follow in understanding *logos* in the context of a faculty and organ is provided in the first chapters of *de Anima* Book II. His use of the eye to illustrate the relation of essence or soul to the body provides a clue:

> . . . if the eye were an animal, its soul would be sight; for this is the substance of the eye with respect to form (*kata ton logon*). The eye is the matter of sight, and sight being removed it is no longer an eye, except in name, like one in stone or in a painting. (*DA* II.1.412b18-22)

This is offered as a key to understanding soul and body. Sight is form, eye is matter. Then in II.2 the term *logos* is used in precisely the way I think it should be understood in II.12:

> The soul is firstly that by which we live and perceive and think, so it must be a certain *logos* and form (*eidos*), not the matter and substrate. (*DA* II.2.414a12-14)

It would be odd to take *logos* here as a ratio when Aristotle has explicitly rejected the view that the soul is a ratio of physical mixture (*DA* I.4.408a14-18). Instead, it means the same as form and essence. Form for an animal is the collection of functions of the animal body, just as sight is the function of an eye. In II.12 we should understand *logos* to mean simply form. Form for living things is usually function and functions are also capacities. Hence the *kai dunamis* in *logos tis kai dunamis* (*DA* II.12.424a26-28) clarifies what is meant by *logos*. Speaking of perception in general, it is a capacity (*dunamis*) to receive sensible forms that belongs to the entire perceptual apparatus but most strictly speaking to the primary sense organ and the relation between this capacity and the organ is that of form/function to matter.

What I have offered so far is immensely plausible given the text up to this point. But the interpretation of *logos* in ll. 27-28 has to be carried over to the occurrence in line 31 and here the difficulty begins. Something in what has been said thus far in the chapter is supposed to make it clear why (1) intense sensible qualities destroy a sense faculty and (2) why plants do not perceive. Here is the first of these two claims:

> It is clear from these considerations why excesses of the sensibles destroy the sense organs; for if the change (*kinêsis*) is too strong for the sense organ, the *logos* is dissolved (and this is the sense faculty), just as the harmony and tone vanish when the strings [of a lyre] are struck too forcefully. (*DA* II.12.424a28-32)

The discussion in II.11 about touch as a mean provides one way to read this explanation. Every sense organ is a certain ratio of physical composition. So, too, the tuned strings stand in musical ratios to each other. Violent physical action disturbs this in both cases and then the organ does not work or the lyre makes bad sounds. One trouble with this interpretation is that it is only touch that does have an organ with a ratio. For the distance senses the receptive material is a simple element. Ratio will have to be understood at a

more abstract level as whatever physical composition provides the receptivity. But then it is not so clear that there is an advantage to reading *logos* as ratio. Of course, my claim that it is the primary sense organ which is the principle subject of discussion in this chapter makes it easier to take it as ratio for just the reason that that is the only sense organ that is a physical ratio in composition. But it is only the idea of a mean that suggests a ratio and the primary sense organ's being a single mean must be understood abstractly for most senses as whatever state is necessary to respond to stimulation and return quickly to the neutral state after stimulation. This capacity for response, which is the form (as function) of the organ, is more likely to be the referent of *logos* rather than some abstract notion of a ratio derived from an abstract notion of a mean.[7]

Perhaps the strength of the ratio interpretation comes from the supposed weakness of the other interpretation. If *logos* means form and function, then the explanation becomes vacuous: intense sensibles destroy the functioning because they make it so that the sense cannot function. This is what follows if sense being a *logos* (= form) is supposed to explain the loss of sight when the light is too bright. There is, however, a different way to read the explanation. It is not that a sense is a *logos*, but that a sense is a certain *logos* in a certain kind of matter, a sense organ. If we look at the discussion of the same phenomenon in *de Anima* III.4, we will get a better idea about what is playing the role of explanation here.

> That the impassivity of the perceptive part and the intellective part is not the same is clear from the sense organs and sense faculty. For the sense faculty is not able to perceive after too strong a sensible, for example, sound cannot be perceived after loud sounds, nor can one see or hear after a strong color or smell. But *nous*, when it thinks some intense intelligible object, is not less able to think less intelligible objects, but more able. For the perceptive part is not without body, but the other is separable. (*DA* III.4.429a29-b5)

The impassivity is probably that as faculties they can only be actualized, not changed into something other than themselves.[8] Aristotle quite purposely mentions both faculty and organs when he says that the difference between mind and sense is clear from

considering the sense organs and the sense faculty. What makes them different is that the sense faculty has organs. This means it will have limitations the mind does not have. I do not think we need to look for any deeper explanation than this of why excessive sensibles destroy the senses in II.12. Because the capacity belongs to bodily organs, there will be limits of responsiveness and the capacity to respond to sensory stimulation will be destroyed if the stimulation is too violent, just as the strings lose their capacity to produce harmonious tones.

This is further supported by the discussion of impassivity of soul faculties in I.4. The soul itself does not perish but the body deteriorates. This is not to say that souls are immaterial substances, but that the function and capacity is distinct from the body in which it is realized. Hence, Aristotle says that if an old man was given an eye of a youthful condition he would see as a young man sees.[9] As the body deteriorates so do its functions, but the reason is the body. This applies even to the activities of *nous* in this discussion. The perceptual faculty has a further constraint because it is essentially a bodily activity; not only can old age hinder its operation because of deterioration but, even for the healthy and young perceptual apparatus, there is a limit to the intensity of stimulation it can undergo without losing its responsive condition. It is the fact that the capacity resides in bodily organs that explains why the senses fail, not that a sense is a ratio.[10] The distinction between capacity and bodily part is the important point of all three passages in I.4, II.12, and III.4. And the explanation goes no deeper than that in all three passages. It is merely that perception is bodily, a capacity in an organ, that explains the destruction of the capacity by excessive sensibles; not anything specific about the structure of the organ, such as its being a certain ratio of the elements.

The way to understand the analogy to the strings of the lyre is to consider the attunement of the strings as a capacity to make harmonious sounds when plucked. The strings have limitations and these must be respected if the harmony is to remain, just as

the limitations of sense organs cannot be surpassed without losing the *logos*, the capacity for functioning as it should. For the strings, it is ratios of tones that constitutes their harmonious attunement. So it would be wrong to say that the idea of ratio has no place at all in this discussion. The *logos* which is the capacity for harmonious soundings depends on a *logos* which is a ratio. But for reasons already given, the notion of a ratio should not be taken as the meaning of *logos* as it applies to the perceptual faculty.

A similar challenge arises for the other thing to be explained, why plants do not perceive. If *logos* is taken to mean form as function, is the explanation merely that plants do not have this form? No. That is part of the explanation, but Aristotle fills it out so that it is not a vacuous explanation. The perceptual faculty is a certain capacity that is necessarily realized only in a certain matter, an animal's primary sense organ. This is a soul faculty and plants have soul, but they neither have this part of soul nor the necessary organs. Again, if the focus is put merely on the sense being a capacity, then the explanation seems to be only that plants do not have the capacity. But the explanation is that the faculty of perception essentially requires the bodily perceptual apparatus that an animal has, which is a special structure unified in the primary sense organ. Even the simplest animals have the chief sense organ in its capacity as the tactile organ and it is this organ which plants lack. In concluding this point, Aristotle says:

> The reason is that plants neither have a mean nor do they have the *arkhê* such as to receive the forms of sensibles. (*DA* II.12.424b1-2)

The mean is the material condition, i.e. having a primary sense organ (= organ of touch),[11] and the *arkhê* I take to be the formal condition spelled out at the beginning of the chapter, which is the soul's faculty for perceiving. This does count as a decent explanation if the context is properly understood. Perception is a soul faculty realized in matter that responds to sensible qualities. One might quite reasonably ask, "What about plants; they have both soul and matter that responds to sensible qualities." The response

is twofold: (1) soul is made up of different soul faculties and perceptive soul is what is required, and (2) each faculty requires the right kind of matter and for perceptive soul this is a primary sense organ. This reminds us of a similar point Aristotle makes about soul in general. It resides in a body (as its capacities) and not just in any body but a body of a certain kind proper to the capacities that make up the soul (*DA* II.2.414a19ff.).

Thus, it is possible to read quite natural Aristotelian explanations for why excessive sensibles destroy and why plants do not perceive if the explanation is understood to be the distinction of faculty and organ as form and matter. That the faculty is essentially realized in organs explains why excessive sensibles destroy, just because organs will have limitations in their responsiveness. That it is a specific kind of soul faculty requiring a special kind of organ explains why plants, which have soul faculties and responsive matter, nevertheless do not perceive. These are not profound explanations but they are not totally vacuous explanations. This is especially true if we take this chapter as a new starting point beginning with general considerations about the perceptual faculty as a whole.

There is one passage that calls into question my rejection of 'ratio' as the translation for *logos* in line 424a31. Aristotle claims again in *de Anima* III.2 that perception is a *logos* and in the context he definitely means a ratio. He is speaking of the ratio in musical concords. Because in an act of hearing the sound and the hearing are one, it follows that hearing is a ratio. The passage closes with the claim that perception (*aisthêsis*) is a *logos* and that sensible qualities in excess give pain or destroy. Andrew Barker has brilliantly argued that the entire discussion cannot be about *aisthêsis* as the faculty, which is the subject of discussion in II.12, but about actual perceptions by a single sense of a complex sensible object. A musical concord serves as the paradigm example, but then it is extended to mixtures of flavors and odors, and colors, and even feelings of temperature. There are difficulties in Barker's argument. It seems stretching

it to say that Aristotle is speaking of feeling two temperatures when he says that what is most pleasant to touch is what can yet be further warmed or cooled. And it is strange that Aristotle should speak in exactly the same words of excesses destroying the senses when he means something quite different, not the loss of the faculty, but the loss of a unified perception, or at least, of a harmonious perception of a complex object. Still, there can be no doubt that Barker is right that the discussion has to be about acts of perception in order for Aristotle's argument to have any cogency, and there is very good reason to think that all Aristotle can get from the first premise is that certain perceptions will be a *logos* because their object is complex, not that any perception is a *logos*. The conclusion, then, cannot be even a general claim about all acts of perception. It is plausible that this is the beginning of the discussion about perception of more than one object at once. This paragraph can be taken to be about perception of two objects by one sense; it is immediately followed by discussion of simultaneous perception of two objects for different senses. If this is so, then the discussion here may have little to do with the claim in II.12 that the sense faculty as a capacity is a *logos*. Even if we read ratio in both places, the two ratios would be completely different things, the one a ratio of composition which grounds the capacity, the other a ratio between parts of the content of a perception.[12]

The two discussions are so distinct that I do not think the necessity of reading *logos* as ratio in III.2.426a27-b7 provides a serious objection to my interpretation of *logos* in II.12 as form. It still remains odd that Aristotle would use exactly the same words about the sense being destroyed. Perhaps line 426b7 is a gloss added by a copier or a student, if these are student notes, motivated by the *prima facie* similarity to the discussion in II.12. It does seem out of place in that the next line follows more naturally when this line is excised. If we drop this one line, then the entire rest of the chapter starting at 426a27 is easily read as being about complex perceptions; and hence not

related to the discussion in II.12. Still, the claim "the sense (*aisthêsis*) is a kind of ratio (*logos*)" is used in the argument at 426b3; but *aisthêsis* here must mean an act of perception, not the faculty, and as a conclusion of the first lines it can only mean certain acts of perception, those involving multiple objects in one sense modality. The argument can be read in the following way:

> (1) Harmony is a kind of vocal sound.
>
> (2) Harmony is a ratio.
>
> (3) Sounding and hearing are identical.
>
> (4) Therefore, the hearing is a ratio.
>
> (5) Since, then, acts of perception in such cases of multiple objects are a ratio (*hôs logou tinos ontos tês aisthêsis*), we can understand why these complex perceptions are destroyed when the mixture of the components is different.

The idea may be that two tones not in harmony become just a single unpleasant sound and what is destroyed is the simultaneous but distinct perception of two tones. Admittedly, it is difficult to produce a consistent interpretation of this text (426a27-426b7). But the assumption that the claim about the sense being a ratio is the same claim as in II.12 about the sense faculty makes the argument invalid and the discussion completely baffling. So there is little that can be made of this discussion in III.2 as an objection to my interpretation of *logos* in II.12.

III

After the discussion of plants, Aristotle turns from the sense faculty to the sensibles. In discussing the possible affects of odor, it comes up that odor affects the air as well as noses: "For air smells just as if it has been affected in a certain way." Then Aristotle asks, "What is smelling beyond (*para*) being affected in a certain way?" One interpretation of the relevance of the last part of the chapter and this question is that the discussion of smell revealed that what odor does to air is no different than what had been

attributed earlier in the chapter to the sense organs. A literal taking on of the quality, according to this interpretation, has been offered as a necessary condition for perception, but now the question is raised whether it is a sufficient condition.[13] Air also takes on odors, so what is the difference? The answer provided here is that smelling is perceiving, while the air affected becomes smellable. If this is Aristotle's answer to what makes smelling different from the air becoming smelly, it has been rightly criticised as hopelessly inadequate;[14] or, perhaps, this is only a hint at a fuller explanation to be given later.[15] However, it is possible to read the last part of the chapter in a different way.

According to my interpretation, Aristotle has already answered the question, "What more is perceiving than an affection?", in the discussion of plants. Plants are warmed and cooled, just as the air becomes smelly, but it has already been said why this is not perception. There is neither the right organ nor the soul faculty present. Obviously the air is lacking these. We need to understand the question about air and smelling in the context of the new discussion started after the discussion of plants, which is about sensible qualities and how we should characterize them.

I must first explain how this change in discussion is relevant to the previous part of the chapter. The reason for the change of subject is that the discussion of plants mentions the obvious fact that certain sensible qualities affect both sense organs and non-sentient bodies. But this does not seem to be true, at first, about other sensible qualities, e.g. color and sound. Aristotle has previously defined each sense faculty according to its objects.[16] A sense faculty is activated only by a certain object, and its organ is designed to be affected by that object. But is the object such that it has no other possible effect besides the actualization of a sense faculty? We should expect the answer to be no, given what has been said about tangible qualities (*DA* II.11.423b27-29) and given the example of plants being warmed. But with the distance senses, it is not clear (*DA* II.12.424b3ff.).

The color of a body does nothing to affect other bodies, except sense organs, so far as Aristotle knew. An apparent counter-example is lightning, which is a brightness that splits trees; but, on further reflection, we understand that it is not the light that is the agent, but the air with the lightning (*DA* II.12.424b10-12). But then, Aristotle reminds us that tangible qualities must be allowed to do more than affect senses, or else there would be no agents of change in non-sentient things.[17] So, perhaps the sensibles for the distance senses can be agents of some kinds of change in certain non-sentient bodies. Further consideration reveals that certain indeterminate bodies are affected, such as air for smell. We could add examples for color and sound: the color of bodies of water and echoes in a canyon.[18] And if we recall Aristotle's discussion of color and sound in II.7 and II.8, we will remember that the nature of color is to be able to cause a change in the actually transparent (*DA* II.7.418a31-b2) and what is sound-producing is that which can produce movement in a continuous body of air (*DA* II.8.420a3-4). The example presented at the end of II.12 indicates that smells also affect the medium. So, it must be allowed that the sensibles for the distant senses produce an effect in their respective media as well as in sense organs, and would do so even if there were no perceivers. The media are the indeterminate stuffs Aristotle has in mind at 424b15. So, it turns out that all the sensible qualities are like the tangibles in that they cause change in non-sentient things, but the sensibles for the distant senses do this only in their respective media.[19]

On the original assumption that a sensible quality for a distance sense is to be defined as the power to cause sensation, we now have a problem. Smell is acting on air. Does this mean the air is smelling? Obviously not. It just means we must drop our assumption that the distance sensibles are only a power to cause sensation. They are also the power to affect certain other bodies: odors make the medium to possess a sensible quality, albeit a borrowed one and one dependent usually on the presence of the source. Aristotle mentions sound along with smell (*DA* II.12.424b14-15), and it may be that

echoes are an example of the medium sounding. Colors, too, can give a color tone to a transparent medium.

We can understand the question posed at the end of the chapter to be rhetorical, and not a puzzle posed by an inadequacy in the previous characterization of perception as receiving sensible form. If it is assumed that smell causes only one affection, then we will be forced to say the air smells the rose. Again, under the assumption that smell causes only one affection, we will be able to distinguish the affection in air from true smelling only if we discover something more in smelling than the being affected by smell. But in the closing line we can understand Aristotle to be backtracking, as if to say, "Enough, then, of the assumption that smell (and the other distance sensibles) causes only one affection; there is not something more to smelling than being affected by smell, but the affection of smell on the sense organ is different from the affection of smell on indeterminate bodies." The difference is not in the outer organs considered independently, since they are composed of air and water and borrow the sensible quality in much the same way as the indeterminate media; but in the context of the entire perceptual faculty and its chief organ, something different takes place, the cognitive reception of sensible form. With the affection in the nose there is perception, but for the air, it has only been made a perceptible object momentarily by the presence of an odor source.[20] This is exactly the right answer in a discussion of the powers of sensible qualities. The simple and quite intelligible result is that the sensible qualities for the distance senses are not really different from the tangibles in that they too can affect non-sentient bodies as well as sentient bodies. The difference between the two affections is just as previously discussed: perceiving takes place only in the context of special material parts, the sense organs unified at the primary sense organ. Only this organic structure has the psychic faculty which is sentience, the capacity to receive sensible forms in the way that counts as cognition. It is a certain form or *logos* in a certain kind of body.

IV

In chapter 1, I took as my starting point the contrast drawn apparently between perceivers and non-perceivers in *de Anima* II.12: perceivers receive sensible form without the matter, while non-perceivers do not have the *arkhê* for receiving sensible form but are affected with the matter. A satisfactory explanation of the import of the terms 'with the matter' and 'without the matter' could not be found for either the cognitive or physiological interpretation of receiving sensible form. After briefly reviewing the difficulties, I will attempt an alternative interpretation that avoids these difficulties. This alternative interpretation of the import of 'with the matter' and 'without the matter' will turn out to be compatible with either a physiological or cognitive interpretation of receiving sensible form. So, it will provide nothing to further establish my interpretation of receiving sensible form as the correct one. Still, it will give a plausible sense to the phrases 'with the matter' and 'without the matter' and hence bring to completion my attempt to understand what Aristotle means when he says that the perceptual faculty is what is able to receive sensible forms without the matter.

The air receives odor and the plant receives warmth in a manner different from the sense of smell or touch. This different manner is the cognitive possession of the form which takes place in the primary sense organ. Are the qualifying phrases, 'without the matter' and 'with the matter', supposed to explain the difference between affections in sense organs and affections in non-sentient bodies? The text easily suggests this. But in chapter 1 we found that neither interpretation of receiving form could satisfactorily make sense of these qualifying terms.

For the traditional cognitive interpretation of Aquinas, the notion of receiving sensible form *without matter* is thought to be unique to the affection which is perception, since it characterizes what it is to be a perceiver. But that was the source of the puzzle. On a straightforward understanding of the phrase, many alterations in sensible quality by

non-sentient bodies is done by receiving form without receiving any matter from the agent of change. Aquinas achieves the desired result by giving a special sense to 'without the matter': it means a special *immaterial* reception of form, also called a spiritual reception or cognitive reception.[21] In other words, receiving forms without matter means awareness of the form and not a literal becoming hot or red or onion-smelling. Non-sentient bodies, although receiving sensible forms, do not do it in this way. Instead, they instantiate the form in their matter; the rock becomes hot stuff when it is heated. On this interpretation, it is the receiving patient that is qualified by the two terms and the contrast is whether or not the *matter* of the receiver becomes qualified like the agent. The difficulty with this interpretation is that the wax and ring analogy makes it clear that it is the matter of the agent that is the referent of 'matter' in 'without the matter'. Despite attempts in chapter 1 to read the Greek in a different way, it was not possible to come up with a satisfactory reading to get around this problem. We must understand receiving form without matter somehow as receiving form without the matter of the object coming to exist in the perceiver.

The physiological interpretation proposed by Sorabji accomodates this constraint with ease. Empedocles' theory was that bits of the elements that make up the objects stream to the receiving organ and are taken into the organ, each element being attracted to its like. Aristotle is contrasting his view with that of Empedocles: a sense organ does not take in particles but receives the form, i.e. becomes qualified like the agent, without taking in any bits of matter from the agent. The difficulty for this interpretation comes with the application of the contrasting phrase 'with the matter' to what plants do when they are heated or cooled. It forces us to understand that Aristotle thought plants become warmed or cooled by taking in warm or cool stuff, perhaps vapors.[22]

There might be some slight plausibility to this in that plants are porous materials and could take vapors in. But in *de Anima* III.12 and 13 we are given another reason why

plants do not perceive. It is because they are not compounded as a mean of all the elements but are made mostly of earth (*DA* III.12.434a27-28, b10, 13.435a11-13, 19-b1). Earth cannot serve as a sense organ.

> For touch is like a mean of all the tangible qualities, and its sense organ is receptive not only of the different qualities of earth, but both the hot and the cold and all the other tangibles. And for this reason we do not perceive with our bones or hair or such parts, because they are of earth; and for this reason plants do not have any perception, because they are of earth. (*DA* III.13.435a20-b1)

One would think, then, that all earthy things would be affected in the way that plants are by heat and cold. Could it be that Aristotle thought the earth wall of an Athenian house on the south exposure or stone steps became warm only by receiving some warm stuff into it? Perhaps this is not so far-fetched as it might at first seem. The constituents of earth are the dry and the cold. Earth itself cannot become hot or it would no longer be earth, so it must be mixed with something, probably hot air, in order for it to become hot. Cooling would be a matter of the added hot stuff being extracted. The same would apply to the other elements. Only a composite of all elements could itself acquire all tangible qualities or be altered in these qualities. But given this, how is the composite going to change in any direction? To become a little hot, the balance of the contraries must shift toward the hot and this could only happen by taking in a little bit of hot air. So, given this understanding of being affected with matter, it is very difficult to conceive of how the primary sense organ, a mean in composition, could be altered in tangible quality without taking in a little bit of matter that contains the appropriate contrary. To become hot without hot stuff would be to become hot without changing the balance of contraries, i.e. without really becoming hot, and that sounds like a cognitive reception of form.

So, if to be affected with matter is to receive a tangible quality by receiving some matter that has the quality, it turns out that even the organ of touch, the one sense for which there seems to be strong evidence that Aristotle thought a literal quality change

takes place in the primary sense organ, does not undergo real quality change. But the reason for requiring a mean composition for the organ of touch was presumably so that it could be affected by any tangible quality.

Perhaps this difficulty makes such an interpretation of being affected with matter suit a cognitive interpretation of receiving sensible form without the matter at least as well as a physiological interpretation. Aristotle may have thought that there are only two possible ways for a sensible quality to alter a body, either by some stuff with the quality entering the body or, in the case of sense organs, by receiving the form without becoming a body so qualified. The example of imagining the red rose, its color, fragrance, and the prick of its thorns, suggests that the perceiver does possess the sensible forms, including the tangible forms, without any part of the perceiving part being really red or rose-smelling or sharply pointed, and these must be received during perception. So it may be that the only way to be cooled or heated without matter leaving or entering is to be aware of cold and hot or to have the mental image of them. Why such a cognitive reception requires a mean composition in the organ remains a mystery. Still, the important point is that even if we understand being affected with matter to be alteration in sensible quality by taking in stuff, the contrast to this remains undetermined. It could very well be cognitive reception rather than a literal quality change that takes place without taking in stuff.

It is very difficult to come up with a satisfactory explanation of being affected with matter, regardless of how one understands receiving sensible form without matter. The matter must be matter in the agent. But how this is supposed to draw a distinction between affections in the organ of touch and affections in plants remains elusive.

Recently, Sorabji has suggested that what comes a little later in the discussion in *de Anima* II.12 throws some light on being affected with matter.[23] Aristotle asks about the non-tangible sensible forms: Can they also affect non-sentient bodies? Some events

that might suggest a yes answer turn out to be cases where the substrate causes the alteration and not the sensible quality, such as when the fast-moving air in a thunderbolt splits the tree. It is neither the light nor the sound that does the acting. Perhaps to be affected *with* the matter is to be affected *by* the matter and not by the sensible form, and perception takes place when it is the sensible form that acts. The difficulty with this is that it will not work for the tangible qualities, as Aristotle immediately notes. If it will not work as an explanation for hot and cold, then it is unlikely that Aristotle would suggest it as a solution for how a plant is heated or cooled. One might propose that it is a quick and preliminary guess at what makes heating different from feeling warmth, and a guess that is quickly abandoned.[24] In which case, any contrast made by the two phrases 'with the matter' and 'without the matter' is lost. This in itself turns out to be no hindrance to Sorabji's physiological interpretation. On his view, the last part of chapter II.12 is motivated because of a failure of the account thus far to explain what makes affection in a sense organ different from affection in a non-sentient body. That the explanation that plants are affected with matter ends up rejected only gives more urgency to the question, "What is smelling apart from being affected?" Still, we might ask why Aristotle does not pursue the question about plants further. If his explanation has failed, he still needs to explain what makes feeling warm different from being warmed; why move on to smelling?

The most unsatisfactory part of Sorabji's suggestion is that the rejected explanation is so weak that it is difficult to believe Aristotle would even offer it as a preliminary guess. He has already established that the tangible qualities are what affect bodies *qua* bodies (*DA* II.11.423b27-29) and the foundation of his physics stated in *de Generatione et Corruptione* is that the hot and dry, wet and cold are the efficient causes of change in bodies at the primary level. So how could he ever suggest that it is not hot or cold that heats or cools the plant, but the matter that has the quality? If we look more

closely, the example of the thunderbolt is not really parallel to the plant being heated by matter. Even if the plant does take in hot air to be heated, it is nevertheless in virtue of the heat of the hot air that the plant has become warm. So there is no way to construe it as an example of the matter acting but the sensible quality not acting; it would be the matter acting in virtue of its sensible quality. In the case of the thunderbolt, it is the matter acting in virtue of something other than its visual or aural qualities, namely the force of its fast motion. We can conclude that the example of the thunderbolt has nothing to do with how plants are affected with matter. Aristotle could not be suggesting that penetrating air warms the plant by something other than its tangible qualities. The example of the thunderbolt is motivated by a different issue, as I explained in part III: do sensible qualities for the distant senses do anything besides cause perception?

It is still a possibility that the plant is warmed by penetrating air, but there is little consolation in this for a physiological interpretation, as I have noted. If the primary contraries for the tangibles, the hot and cold, wet and dry, affect bodies only by being absorbed with an appropriate elemental stuff (or nearly elemental), such as hot air, then to be heated without this cannot really be heating at all, but cognition of warmth. It is possible that for Aristotle there was no in-between alternative. If it were really true that for Aristotle all change by the tangibles involved a transfer of matter, and given that for the most part, the other sensibles do nothing to bodies *qua* bodies, then the idea of a literal quality change, a true *pathos*, taking place without transfer of matter may have been completely foreign to him. This may even explain why the question arises later for smell and sound and is not raised again for the tangibles. The distinction between affection in the sense organ of touch and affection in a body *qua* body would be cleanly made. The challenge comes when there is an example of a quality change in a non-sentient body that does not involve absorption of matter. It is natural for this problem to come up only for the distance senses. Their proper sensibles, if they affect anything

other than sense organs, affect only their media. The media may be thought of as what separates the form without taking matter from the object.[25] But sometimes the media are perceived as possessing sensible qualities, and are not just an in-between for transfer: e.g. the echo in a canyon, the refracted or reflected color in a body of water, the smell of the air. Aristotle's response is just what he should say: although there is a sense in which the form is separated, these are special cases where the media becomes sensible and not cases of perceiving. This is perfectly compatible with a cognitive interpretation of receiving form without matter. The paradigm example of a sensible form separated from matter, according to my interpretation, is a mental image. For this, it is clear that the form has been separated from the object that caused a similar perception. The echo in the canyon and the fragrance in the air are like a mental image in that the form is detached from its source.[26] An example of a form detached outside of cognition would not arise for the tangibles if Aristotle thought that stuff was always absorbed or extracted whenever change takes place in bodies *qua* bodies.

But is it necessary to attribute this view about the tangibles to Aristotle? I have tried to make it somewhat plausible, but it seems equally plausible that he would have accepted that the sun makes things warm and the fire heats the kettle of water simply in virtue of heat and not by passing air or vapor into the patient. Perhaps we should try a different strategy in our search for the contrast made by the phrases 'without the matter' and 'with the matter'.

We need an understanding of the two phrases that respects the natural reading of the wax and ring analogy by taking the matter to be the matter of the agent object and at the same time does not commit Aristotle to what seems a strange view for him to take about tangible affections in non-sentient bodies. Let us leave aside being affected with matter and turn to the complementary notion of receiving sensible form without the matter. Then we can come back to the other with fresh ideas. Aristotle's criticism of

Empedocles' theory of the soul provides an important clue. To receive form without the matter is to receive the form without receiving the object itself. This corresponds to the most straightforward understanding of the wax and ring analogy: the wax has the insignia but without the ring.

This is suggested by the discussion in *de Anima* I.5 about the theory of soul that makes soul a combination of the elements. One reason this theory is propounded by Empedocles is because it is supposed to explain how we can have cognition of everything in perception and knowledge. Like is supposed to be cognized by like. Elsewhere Aristotle has argued that unlikeness must be the basis of any affection, including cognition.[27] But here he raises other difficulties. Let us suppose that like did cognize like. Then soul would have to have not only the elements but everything else that is composed of them in different ratios. Otherwise there will be nothing to cognize bone or man.

> But this is impossible, needless to say. For who would question whether there is a stone or a man in the soul. (*DA* I.5.410a10-11)

It is true that Empedocles' theory involved emanations of the elements from the object penetrating into the soul. But Aristotle does not focus on the manner of reception. His attack is made in the context of this question: What must be in the soul during cognition in order to account for the content of cognition? It is true that Empedocles' theory contains a double absurdity because like cognizes like: not only must elements in the relevant ratios come into the soul, but they must also be there already, if only bone can cognize bone. That Aristotle's focus is on the internal state *during* cognition, what comes to be rather than what already is, is suggested by the passage in III.8 that reminds us of the earlier discussion. Aristotle asks what must the cognizing parts of the soul become identical with in activity:

> They must become identical either with the objects themselves or with their forms. But certainly not the things themselves, for the stone is not in the soul, but only the form. (*DA* III.8.431b28-29)

Aristotle's response to Empedocles is that it is ridiculous to think that one had to have the object itself, form and matter, produced in the soul (whether before or during cognition) in order for there to be thought about or perception of the object. The cognitive soul is a capacity for receiving *forms*, intelligible and sensible, not things.

Perhaps we should not read any more into the phrase 'without the matter' than just that. What is required to be in the perceiver is not the object itself but only the form. This interpretation is neutral about how the form exists in the perceiver, whether it is a cognitive presence that could be said to be in the perceptive soul itself (and simultaneously a physical state of the heart, the place of the perceptive soul) or a literal presence in some receptive material of an outer organ. Either way, it would be the form and not the object. The contrast to receiving form without the matter would be receiving the form and matter, i.e. the entire object. The contrast is not to receiving the form with bits of matter emanating from the object. Aristotle is not concerned about the intermediate changes between object and cognizer here. No doubt, the reception of sensible form requires changes in some medium, but usually not the transfer of matter from the agent; and this would be true regardless of whether the patient is a sentient organ or a non-sentient body. I suggest that Aristotle is not trying to distinguish sentient and non-sentient affection according to the manner in which the form comes to exist in the recipient. Instead, Aristotle is making only a simple point about the soul and cognition concerning what must actually be in the soul when one perceives or thinks.

Although red in the eye-jelly would be a suitable example of having the form and not the object in the perceiver, there is reason given just within the discussion of Empedocles to think it is not what Aristotle has in mind for receiving sensible form. The point is made generally about intellection and perceiving, both in *de Anima* I.5 and III.8.

And the absurdity of Empedocles' position is supposed to be equally apparent for both modes of cognition. Now, Aristotle readily grants that the proper objects for the senses are the sensible forms, not the object with them. It may certainly be absurd that we have a physical rose inside us when we think about a red rose; but it is not so absurd that something in the eye goes red when perceiving the red rose. Red in the eye-jelly and a rose in the mind are of a completely different order of things. That Aristotle treats of both forms of cognition at one time with the stroke of the same brush in III.8 suggests that he is thinking of things more similar than red in the eye-jelly and a rose in mind. I have already suggested that the context of the discussion is the question, "What must be in the soul in order for there to be cognition?" The answer that can be given across the board for perception and intellection is that we have mental content, not the object itself, or, as Aristotle puts it, the forms detached from the matter, i.e. detached from the object of cognition. The mental contents of a perception are the sensible forms. That these come to be inside the perceiver is indicated by a subsequent imagination of the same sensible forms. The reason Aristotle can treat perception and intellection together is because the idea of a form received detached from physical objects is meant to capture what it is "to have something in mind." During perception, what one has in mind, what is cognitively present to one, are the sensible forms. The same in imagination. And for intellection, intelligible forms or concepts are in mind. Red in the eye-jelly is not cognitively present, neither in perception nor in imagination. It would be odd if Aristotle's notion of a form received meant a non-cognitive entity for perception but a cognitive one for imagination and intellection.

Receiving forms detached from the objects that are agents in the reception is not unique to cognition. The kettle of water receives heat without taking the hot coals into it. My interpretation of the phrase 'without the matter' to mean "detached from the physical object" perhaps precludes that a direct contrast is being made between affection in sense

organs and affection in non-sentient bodies. A direct contrast would have it that being affected with matter is to be affected by the object. But this is either true of all affection, in that it is correct to call the physical object with the acting property the agent, or else it is true of practically no affection for the following reason: rarely does any affection require the absorption of the entire agent into the patient. And surely not in the examples Aristotle provides: the plant heating and cooling, and the air becoming smelly. So, receiving a form detached from an agent object is not unique to cognition. What makes receiving a form without the matter different in the case of cognition is that it is a faculty of the soul that is receiving the form. The contrast to this kind of reception is not going to be receiving form with matter but simply receiving in a non-cognitive way. This forces a completely different interpretation of what it is for the plant to be affected with the matter. It may not even be a characterization of affection in non-sentient bodies.

My interpretation of why plants do not perceive makes it plausible to take a completely different tack about affection with matter. I have interpreted the discussion to be at least as much about formal characteristics as about material characteristics. Plants do not perceive because they neither have the right kind of soul, one that receives sensible forms without matter, i.e. cognitively, nor do they have the organ that is required for that, namely the organ of touch which is a mean. Nevertheless, they do have soul, the kind of soul with a different power. This soul has the faculty of nutrition. And nutrition could be characterized as a process of being affected with matter. If the discussion is about different kinds of souls, then this is a plausible interpretation of affection with matter. The result then is that the contrast between receiving sensible forms without the matter and being affected with the matter is not a contrast between affections in sentient and non-sentient bodies, but a contrast made within the context of discussing faculties of the soul between perception and nutrition.[28]

In chapter 1, I had presumed that the reason Aristotle spoke of plants was because they are the first things lower than animals that do not possess sensation and that what would be true of them would be true of everything below them. I had tried, without success, to make sense of the contrast between receiving sensible form without the matter and being affected with the matter as a contrast between the affections in sense perception and all affections in non-sentient bodies. Now, I am suggesting that we reject the assumption that the contrast is making such a distinction. That the contrast is between perceiving and taking in food is quite understandable given what I have proposed as the explanation for why plants do not perceive. The explanation appeals to form as much as matter. It is not just that they lack the right organization of matter, but that they lack the right kind of soul and its faculties. Perception is a certain form or *logos* realized in a certain matter. This *logos* is the faculty of animal souls. Plants have soul, but not the kind with this faculty; instead, they only have the faculty of nutrition and growth, which is a faculty for taking in matter as food.[29] It is interesting that all soul faculties can be understood as faculties for taking in something from the organism's environment. Taking in food with its matter provides the organism and species with continued bodily existence. Taking in sensible forms provides the more complex living organisms, called animals, with what they need to get about, to recognize food and to mate; the sensible forms preserved in *phantasia* provide objects for desire that motivate the animal to seek what is not present. Finally, the rational animal takes in intelligible forms and thereby understands the structure of the world. Sensible forms in the cognizer have a sort of material existence in the primary sense organ, but not with the matter of the sensible object; intelligible forms exist immaterially in the soul faculty called *nous*. It is appropriate, on my interpretation of the explanation for why plants do not perceive, that Aristotle should remark about the soul faculty that plants do have. That plants have one

soul faculty but not another is the explanation, along with their not having the primary sense organ that the perceptual soul requires.

Let me sum up Aristotle's criticism of Empedocles and my conclusions from it. Empedocles theory implies that a material replica of the object would have to be in the soul, because like is supposed to cognize like. In Aristotle's terms, this object in the soul would be a form-matter composite, a physical copy of the object. But this is absurd. Aristotle's view is that the form only, detached from the matter, comes to exist in the soul. The only soul faculty that involves taking matter into the organism is that of nutrition and growth. The result of such an interpretation of 'without the matter' and 'with the matter' is that the distinction does nothing for explaining the difference between affections in sense organs and affections in non-sentient bodies. We cannot get from it that perception is an immaterial process, which in fact it is not on Aristotle's view; we cannot get from it that plants are warmed or cooled by taking in warm or cool matter. It also turns out that the phrases, in themselves, are completely neutral with regard to the debate between cognitive and physiological interpretations of receiving sensible forms. Furthermore, they are completely neutral concerning the question, What is the internal state that counts as a form received? It could be the red in the eye-jelly or a state of the primary sense organ. Or it could be a spiritual change? Its being an immaterial change is not what is signified by the phrase 'without the matter'. The only thing established definitely by the phrase is that the object itself does not come to exist in the soul, just as the gold ring (or a replica of it in gold) is not left in the wax.

However, it does turn out, that because the context of discussion is cognition, a sensible form received detached from an agent object is a change in the soul as well as the primary sense organ. And so Aquinas' interpretation is not completely wrong. In effect, receiving forms without matter in the context of cognitive faculties is receiving forms cognitively. But it cannot be an immaterial reception because there are material

causes for a cognitive state in the primary sense organ. An immaterial existence, for Aristotle, is proper only to intelligible forms in the intellect (*DA* III.4.430a2); sensible forms in the perceptual faculty do have a kind of material existence in that they are psycho-physical states (*Sens.* 1.436b1-8). In the analogy, too, the imprint in wax is not an immaterial existence. The wax preserves the form of the ring as a sign without its being in a ring, just as the perceptual faculty possesses a sensible form cognitively without its being in a sensible object. The phrase 'without the matter' can go no farther than the analogy, and the sign in wax is certainly not a form received cognitively. The work of indicating a special kind of existence is done by the fact that it is a cognitive faculty or part of the soul in which the form comes to exist. As I said in the previous chapter (part IV), I think that any further explanation of the special kind of existence, i.e. of intentionality, comes in Aristotle's doctrine about the identity of cognizer and object via the cognitive form within. It does not come from the notion of being a form detached from an object.[29]

There is no warrant for counting 'being affected with matter' as a characterization of all non-sentient affection. The matter referred to is the matter of an agent. It is in nutrition that the matter of an agent plays a role, not in non-sentient affection with regard to sensible qualities.

My interpretation of 'without the matter' and 'with the matter' is compatible with both the cognitive and physiological interpretations of Aristotle's doctrine about reception of sensible forms. But it can nevertheless be established that the perceptual faculty's receiving sensible forms without the matter is receiving sensible forms cognitively. Aristotle's criticism of Empedocles is meant to apply to cognition in general; and so we must take it that sensible forms exist in the soul similar to intelligible forms, which is just what Aristotle says in *de Anima* III.8. Furthermore, I have established a consistent reading of II.12, according to which receiving sensible forms

without the matter is a formal description of perceiving, not a description of necessary material changes. In earlier chapters, I have established that the actualization of perception takes place with stimulation of the primary sense organ, so it is impossible that a color in the eye-jelly be more than a part of the material explanation. I have provided reasons to think that sensible form must perform roles similar to intelligible form with regard to the retention of information and later use of it, and all retention of sensory information takes place in the primary sense organ. So the internal state that is a sensible form received is whatever state of the primary sense organ that is present when an animal is aware of a certain sensible form and that can also remain afterwards and give the animal cognitive access to the same sensible form via imagination. It is not just a state of the primary sense organ, but also a state of the soul, because it is the awareness and capacity for awareness realized in the organ.

The meaning of 'a sensible form received' is derived completely from the cognitive experience, either the seeing red or imagining red. Certainly, red in the eye-jelly or tones in the ear canal may be a necessary part of the receiving process, just as are the *kinêseis* through a medium and the *kinêseis* from outer organ to inner organ, but they cannot count as the form received. The sensible form received is the color seen or the color imagined, which for Aristotle is a sort of imprinting of information upon the primary sense organ and soul, like the sign of the signet ring on wax. When this state is not activated, such as between perception and a later act of *phantasia*, we must consider the sensible form received to exist in a state of potentiality, something like the sensible form in the object when not being perceived. However, there is an important difference between these two: the sensible form in the object makes it red, but the sensible form in the primary sense organ and soul is a state of possessing information. Just as the insignia on the wax is bearing information about who is the sender of the letter regardless of whether someone is looking at it, the information stored in a *phantasma* (as a capacity) is

there even when not brought to mind. The *phantasma* of the red rose has redness and fragrance and shape in it as information. This informational mode of existence in a perceiver Aristotle characterizes as forms detached from the objects they refer to. For both the intellect and the perceptual faculty, the idea of a form in a cognitive faculty is meant to capture what it is to "have something in mind" either in act or as a specific capacity such as a state of understanding; the sensible forms retained in *phantasia* are the counterpart to the understandings of *nous*.

Notes to Chapter 6

[1] I think Richard Sorabji's interpretation of *DA* II.12, as presented recently in "Intentionality and Physiological Processes: Aristotle's Theory of Sense-Perception" in *Essays on Aristotle's De Anima*, eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 209-223, is a brilliant attempt to weave this chapter together in a way that supports a physiological interpretation of receiving sensible forms.

[2] Richard Sorabji, "Intentionality and physiological processes: Aristotle's theory of sense-perception," in *Essays on Aristotle's De Anima*," eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), p. 213. He reads *prôton* adverbially: "But it is the sense organ primarily . . ." But his reading of the force of *de* here, following a *men*, to mean a qualification of what was said in the *men* clause, is independent of which way *prôton* is read.

[3] I say this because those who are looking for an explanation of perceptual awareness will find this definition unhelpful. It may say nothing more than that perception is cognition, but cognition is described in terms of receiving form.

[4] I am reading *peri pasês aisthêseôs* to mean the sense faculty in general, as a *whole*, rather than *every* sense faculty, each taken individually. In this way, there is no reason to think he has in mind the individual organs separately, and thus I remove what might provide a very small reason not to take *prôton aisthêtêrion* to refer to the single central organ.

[5] *kata ton logon* is a technical phrase that is used to indicate something considered only from its formal aspect. It implies a contrast between two ways of considering something. The technical phrase is most often used to distinguish two ways of considering substance, substance as form (*hê kata ton logon ousia*) and the composite substance, form with matter (*hê meta tês hulês ousia*). An equivalent phrase for the first is *hê kata to eidos ousia*, substance according to form. See *Metaph.* VII.10.1035b15, VIII.3.1044a11; *DA* II.1.412b11, 412b20). Qualities also, like *to leukon* (whiteness), can be considered *kata ton logon* (*Metaph.* XIII.2.1077b6). Sometimes the phrase is contrasted with *kata tên hulên* (according to the matter), indicating the formal aspect and the material aspect respectively (*GC* I.2.317a24). *kata tên hulên* is also contrasted with *aneu hulês* (without matter) (*Phys.* II.2.194a14). In general, to consider something *kata ton logon* is to consider the form without the matter. *kata ton logon* and *aneu tês hulês* often can be taken as equivalent terms. See Hicks, *Aristotle's De Anima*, pp. 416-17 (note to 424a24), for a similar reading of this technical phrase.

[6] Others have made heavy weather of why the phrase should be read here as "according to the ratio". See Julie K. Ward, "Perception and *logos* in *de Anima* II.12," *Ancient Philosophy* 8 (1989), pp. 217-233, and Allan Silverman, "Color and color perception in Aristotle's *de Anima*," *Ancient Philosophy* 9 (1989), pp. 271-292. This could be either according to the ratio of the sense organ which determines how it will receive the form, or according to the ratio of, say, black and white, or bitter and sweet, that makes up the sensible qualities themselves, or both. See the note just above for the reasons the phrase should be taken as a technical phrase with only one meaning. It means nothing more nor less than the *aneu tês hulês* which introduces the discussion. It is not the composite that is received but only the form; it is not the object as a whole,

matter and form (where the matter for an accidental quality will be the substance it inheres in), that affects the sense, but the form only.

[7] There is a rejoinder to this. Aristotle could be thinking only of touch, since that is the one sense that all animals have and it is what first distinguishes animals from plants. In this case, the idea of a physical mean is all that is required. However, I take it that Aristotle is speaking of perception in general throughout this chapter.

[8] See *DA* I.4.408b18-31 and II.5.417b2ff.

[9] He might need a new primary sense organ, too, but perhaps Aristotle was knowledgable of cataracts but not of heart disease, at least not a heart disease that affects seeing. He goes on to say that intellectual powers decay, also, because of some organic decrepitude, and this must be the primary sense organ, especially in its capacity as the organ of *phantasia.*

[10] I think it is interesting that the very same phrase is used in *DA* I.4 as in II.12. Old age is not due to the soul being affected but *en hôi*, that in which it resides, being affected (408b23-24). In II.12 that in which, *en hôi*, the faculty resides is the primary sense organ (424a24-25). Because that in which the soul or faculty resides is a bodily organ, the consequences follow.

[11] Only this organ is ever called a mean, either in a quite literal sense when considered as the tactile organ (*DA* II.11.424a4) or in an abstract sense when considered as the receiver of all sensible forms (*DA* III.7.431a19).

[12] See Andrew Barker, "Aristotle on Perception and Ratios," *Phronesis* 26 (1981), pp. 248-66. Barker accepts that *logos* in II.12 should be understood as a ratio, but argues that the ratio of composition (= being a mean) that constitutes a capacity to perceive cannot be at all the ratio referred to in *DA* III.2. I disagree with him about *logos* in II.12, but agree that the discussion in III.2 is about a completely different matter.

[13] Richard Sorabji, "Intentionality and physiological processes: Aristotle's theory of sense-perception," in *Essays on Aristotle's De Anima,*" eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), pp. 217-218.

[14] Thomas J. Slakey, "Aristotle on Sense Peception," *Philosophical Review* 70 (1961), p. 478.

[15] Richard Sorabji, "Intentionality and physiological processes: Aristotle's theory of sense-perception," in *Essays on Aristotle's De Anima,*" eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), p. 208. On this interpretation, perception is defined only by comparing it to other cognitive activities like believing and thinking and imagining, which Aristotle does in *DA* III.3 and elsewhere.

[16] See *DA* II.4.415a16-22 for a statement of this methodology. First the different objects of faculties must be examined in order to distinguish properly the faculties. This method is carried out for each of the sensed in book II, chapters 7-11.

[17] *DA* II.12.424b10-14. I do not think Aristotle was ever seriously considering that the tangibles might do nothing but affect the sense of touch. The example of plants being warmed has just been mentioned, and in the previous chapter the tangibles had been

characterized as the properties that belong to bodies *qua* bodies, not *qua* perceptible bodies (*DA* II.11.423b27-29). The distance sensibles are the main subject of discussion. Aristotle brings up the tangibles at this point in the discussion in order to suggest that it is not inconceivable that the distance sensibles also might have two ways of affecting. So I read *epi tôn allôn* in ll. 5 and 8 a little loosely so that it means others, but not necessarily all the other senses.

[18] Aristotle discusses the color of air and water at *Sens.* 3.439b1ff. In another sense of being visible, the transparent is visible on account of the colors of other things (*DA* II.7.418b4-6). Echoes are discussed at *DA* II.8.419b26ff.

[19] I do not think Aristotle had in mind things like onion-smelling cheese in the refrigerator. See Kosman, "Perceiving That We Perceive: *On the Soul* III, 2." *Philosophical Review* 84 (1975), p. 507 A chunk of cheese is not indeterminate.

[20] I follow Hicks in understanding the force of *taxeôs* (*DA* II.12.424b18) to be that the air only temporarily remains smellable. See Hicks, *Aristotle's De Anima*, p. 421 (note to 424b18). It reinforces the fact that these indeterminate kind of bodies are easily changeable; they do not remain in one state, *ou menei* (424b15).

[21] The form in a cognitive faculty has "esse intentionale et spirituale" rather than "esse naturale" (*Commentary on De Anima*, sect. 553). Aquinas is no doubt following Philoponus, who speaks of a cognitive reception alongside a physical reception. Two receptions are most obvious with touch: heat makes my flesh warm and at the same time I feel warmth. See Philoponus, *in de Anima*, 432,32-433,11 and 438,6-15. But for sight there may not be a corresponding change where the organ of sight takes on the same quality as is seen. In the commentary tradition, the senses are graded on a scale from the more corporeal to the more spiritual, touch and sight being the two extremes. The more a physical reception plays a role in the cognitive reception, the more corporeal the sense. See chapter 3, note 23. Aquinas follows this tradition, for the most part, but it is not clear whether he makes a sharp distinction between two receptions taking place. Instead, immateriality comes in degrees, and the immaterial or cognitive reception of tangible qualities is just less immaterial (though not less cognitive!), or more corporeal than the cognitive reception of visible qualities. For a discussion of degrees of immateriality in Aquinas, see Paul Hoffman, "St. Thomas Aquinas on the Halfway State of Sensible Being," *Philosophical Review* 99 (1990), pp. 73-92.

[22] See Hicks, *Aristotle's De Anima*, p. 419 (note to *DA* II.12.424b3). Themistius understood Aristotle this way.

[23] Richard Sorabji, "Intentionality and physiological processes: Aristotle's theory of sense-perception," in *Essays on Aristotle's De Anima*," eds M. Nussbaum and A. Rorty (Oxford: Clarendon Press, 1992), p. 218.

[24] This is a suggestion Richard Sorabji made to me in conversation.

[25] This idea was suggested to me by Myles Burnyeat in a talk at a seminar at Oriel College with David Charles, May 1991.

[26] It seems obvious to us that fragrance is carried by particles, but it may not have been so to Aristotle.

[27] *GC* I.7 and *DA* II.5.

[28] That the vegetative soul is what is being discussed when Aristotle says that plants are affected with matter was first presented to me by David Keyt in conversation. The idea is also suggested by Hicks, *Aristotle's De Anima*, p. 419 (note for *DA* II.12.424b3).

[29] At *DA* II.4.416b27-30 Aristotle states that heat is essential to digestion. Presumably this is so for plants, too, although the heat source is not internal. This may explain why Aristotle has mentioned being warmed and cooled as examples of tangible qualities that affect plants at *DA* II.12.424b1. These are the tangible qualities that effect or hinder the actualization of the soul of a plant.

[30] Aristotle sometimes speaks of receiving the sensibles without mentioning that it is without the matter. This may be support for my claim that 'without the matter' does not do essential work in the characterization. See *PA* II.1.647a8, 28-29; *DA* II.12.424b2; III.4.429a15-16. Also, I see no reason not to say that the media receive forms without the matter, since they too receive the forms without the object. But this does not mean it is the same kind of receiving forms as in the perceptual faculty. Receiving in a cognitive faculty is cognitive receiving.

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