

## Activity, Passivity, and Perceptual Discrimination in Aristotle<sup>1</sup>

Klaus Corcilus

UC Berkeley

There is good evidence that Aristotle thinks of sense perception in terms of a passive process. He often describes perception in causal terms as a sort of affection (*paschein*) and he also seems to think that we perceive the world around us such as it objectively is. Now the combination of these two views requires that the objects of perception act on our sensory capacities so as to faithfully preserve the phenomenal features of the external world: the less we interfere with the external input, the more accurately it will present the world around us. On that account, then, the passive nature of our perceptual apparatus is a necessary ingredient of Aristotle's theory of sense perception.<sup>2</sup> But does this make perception a *merely* passive affair for Aristotle? Of course not. For so far there was talk only of the causal input of sense perception. But the matter cannot be decided on the basis of causal input alone. The awareness of the sense objects seems at least an equally important ingredient of sense perception, and awareness is not a part of the causal input. But if perceptual awareness does not impinge on us, it seems that this is something that we actively do. So the question seems not *whether* perception is an active doing for Aristotle but in which *way* it is, and, more specifically, how it relates to the undoubtedly passive components of perception.

These are the questions I would like to address in this chapter. They are by no means easy questions. One obvious reason for this is that 'sense perception' can mean quite different things in Aristotle. He was keenly aware of the rich spectrum in which sense perception occurs in the animal realm, ranging from low-level perceivers like, e.g., sea anemones which possess only a rudimentary sense of touch, to human beings, whose perceptual systems are embedded in

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<sup>2</sup> That this catches a genuine and important strain in Aristotle's thinking about sense perception is clear from passages such as *DA* 420<sup>a</sup>9-11 where it is said that the air in the ears tends to be unmoved (*akinetos*) in order for it not to interfere with the incoming sensual input so as to be capable of perceiving the differences provided by the incoming sensual input accurately (*akribôs*). Similar points about the passive (non-interfering) material structure of the sense-organs can be found in passages like *PA* 652<sup>b</sup>26sq., 656<sup>a</sup>25sq., 686<sup>a</sup>6sq.; and by way of a general statement in 672<sup>b</sup>14sq. (see also *GA* 780<sup>b</sup>31-33). For discussions of Aristotle's perceptual realism, see e.g. Broadie (1993) and Esfeld (2000).

incomparably more complex and diversified life activities. It thus seems a fair working hypothesis that both quantity and quality of activity in sense perception vary in accordance with the life of the species in question. Presumably, the simple life of a sea anemone will involve a bare minimum, whereas humans are capable of even willfully manipulating their own perceptions. On that hypothesis, then, quantity and quality of activity in sense perception are a matter of *degree* varying along the *scala naturae*.<sup>3</sup> the more sophisticated the life of an animal is, the more capable it will be to actively contribute to the way things perceptually appear to it.

Given this broad spectrum, I shall try to address my questions for the largest possible extension of animals. That means that in what follows I will deal only with the most basic form of sense perception in Aristotle's theory. This is the perception of, as he calls them, 'special' perceptual qualities (*idia*) like, e.g. single colors or sounds.<sup>4</sup> But the hope is that my treatment will provide a first step towards answering these questions in greater depth. So my goal here is to take a look at the interplay of activity and passivity in episodes of sense perception at the most

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<sup>3</sup> Cp. the very general remark in *HA* VII, 588<sup>b</sup>10-24 'The transition from them [i.e. plants] to animals is continuous, as we said before. (...) And with regard to sensation, some of them [i.e. the very simple animals like razor fish, testacea, and sponges] give no sign at all, others faintly, for example those called tethya, and the sea-anemone kind; but the sponge in every respect resembles the plants. But always, by a small difference at a time, one after another shows more possession of life and movement. And it is the same with the activities of their life.' (transl. Balme, slightly altered). See also *GA* 731<sup>a</sup>30-b5. I do not distinguish between perception and sensation, as Aristotle does not make explicit use of that distinction. It is not entirely clear what the distinction is and whether Aristotle has the resources to draw it, let alone an interest in drawing it.

<sup>4</sup> This method of procedure conforms to Aristotle's own scientific methodology. Generally, the treatment of each subject matter ought to start with the most general features and add the specifics later. More specifically, the *Posterior Analytics* insist that a science should explain (demonstrate) each of its *explananda* on a commensurately universal level (*prōton katholou*, *Anal. Post.* I 4, 73<sup>b</sup>25-74<sup>a</sup>3; <sup>a</sup>32-<sup>b</sup>3). This serves not only the end of methodological economy (i.e. minimization of explanatory work and avoidance of repetition, *PA* I 639<sup>a</sup>15-b5, 644<sup>a</sup>25-<sup>b</sup>15, cp. *Phys.* 189<sup>b</sup>31-32, *DA* 402<sup>b</sup>8-10), but also ensures the proper hierarchical *sequence* of explanations: within a given science, explanations should stand in the right order such that (ideally) there is only one place where each *explanandum* is dealt with. For Aristotle, only what is known in this commensurably universal way is scientifically, and therefore genuinely, known. His stock example is the knowledge of the proposition that every triangle has a sum of angles equal two right angles (2 R). To know this proposition in a commensurably universal way is to know it as a proposition about triangles *simpliciter* and neither e.g. about figures – since that would include items for which 2 R is not true (squares e.g.) – nor about specific kinds of triangle; so, even though 2 R is true of, e.g., equilateral triangles, it is unscientific to demonstrate 2 R on that level, since it would be false to say that 2 R holds *because*, or *in virtue of* the fact that they are *equilateral* triangles. This is the case only and uniquely because of the fact that they are triangles *simpliciter*. Aristotelian sciences have to comply to this order. This holds also for the science of living beings whose fundamentals are laid in the *De Anima*: Aristotle clearly thinks that there is one common and basic account of sense perception across all animal species. And since the basic features of perceptual discrimination are instantiated already in the humblest animals, it should not be irrelevant to the higher forms of perceptual cognition how things work in the simplest case. On the contrary. Since animals differ from plants by the possession of the perceptual capacity (cp. Bonitz, *Ind. Ar.* s.v. αἰσθησις), it is precisely at the point on the *scala naturae* at which animals differ from plants *minimally* where one should expect the most fundamental expression of their common essence.

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basic level. For reasons that will become apparent below, I will focus on a central component of Aristotle's account of sense perception, which is his account of perceptual discrimination. I shall address the following questions: what is the role of discrimination in episodes of basic perception? How does perceptual discrimination relate to the causal input of sense perception? Answering these questions will hopefully help us in getting a handle on the initial question about activity and passivity in sense perception.<sup>5</sup>

## 1. Preliminaries: Perception and the Role of Discrimination

For Aristotle the act of sense perception basically consists in the assimilation of the perceptual capacity to a perceptual object such that awareness of that object results. On the most basic level, these perceptual objects are simple perceptual forms. These are single perceptual qualities like, e.g., a certain color, a certain sound, a certain smell etc. Each type of perceptual quality correlates with a different sense-modality, or, as Aristotle calls them, with a different 'genus' of perception (i.e. perceptual capacity): colors correlate with sight, sounds with the sense of hearing and so on. Each sense-modality relates to its objects as potentiality relates to actuality: the sense of sight is potentially like colors, the sense of hearing is potentially like sounds etc. During the process of assimilation, the perceptual capacity, which is *potentially* like its object, comes to be *actually* like it. Aristotle thinks of the likeness-relation in strong terms. He repeatedly says that the actuality of the perceptual capacity coincides with the actuality of the perceptual object.<sup>6</sup> They are, he says, one and the same but different 'in being' (or 'in definition'), the one being the object, the other a subject of perception (*DA* 426<sup>a</sup>15-17). This entails that a, e.g., red patch of color is *actually* red only when it is perceived by someone and that, before that happens, the red patch is a merely visible, and hence still a potential, object of perception.<sup>7</sup>

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

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<sup>5</sup> Verbally, there is evidence for thinking both: Aristotle calls perception a *pathos* (passive affection, *DA* 403<sup>a</sup>16-19 and 24-5), whereas the Greek verbal form of 'discriminate' is active (*krinein*). Johansen (2002), 175-176, is skeptical about the adequacy of the active grammatical form, see below, \*\*\*.

<sup>6</sup> E.g. *DA* 425<sup>b</sup>26-426<sup>a</sup>1. But see below p. \*\*\*

<sup>7</sup> *DA* 426<sup>a</sup>20-26. See also the discussion of a potential smell *DA* 424<sup>b</sup>15-18.

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perceptual object (ii). Suppose *a* assimilates *b* to itself. On Aristotle's own analysis of change this requires that *a* be *actually a*, since if it wasn't, it would be *a* only potentially which would prevent it from acting *as a*. That means that it could not, at least not for the time being, act on *b* in the respect in which it is going to cause the changing of *b*. So *a*, in order to assimilate *b* to itself, has to be *actually a*. But now the actuality of *b* is said to coincide with the actuality of *a*. It hence seems that (i) and (ii) cannot both be true about sense perception. But the tension is only apparent. This is so because of the *double role* that Aristotle assigns to the perceptual object in his theory. The perceptual object functions as *both*, the phenomenal content of the act of perceiving – the actually perceived form (green, white etc.) – *and* the causal origin of the process of assimilation. The red color of a tomato, for instance, is not only the phenomenal quality of redness that is fully actualized only once it is perceived; it also causally initiates a motion in its environment that results in its perception.<sup>8</sup> This explains how Aristotle can hold both (i) and (ii): *as efficient cause* the object of perception is fully actualized at the beginning of the process, whereas the actualization of its *formal* features is its result. Both roles coincide in the same object.<sup>9</sup> Perception is, as Victor Caston puts it, 'about the very thing that brings it about' (2009, 323).

This double role of the perceptual object does important work in the *De Anima*'s treatment of sense perception. The *De Anima* defines the capacity of sense perception by its correlate *objects*, the perceptual forms (*DA* 415<sup>a</sup>14-22). But it is crucial that he defines these objects not by their phenomenal qualities but by their *causal powers* to initiate qualitative changes (*alloiōseis*) in their environment that (everything going well) will eventually lead to their perception. The content of perception does also not figure in the individuation of the senses and Aristotle is careful not to mention phenomenal qualities in that context. Color, e.g., is defined as that which is capable of moving the surrounding transparent bodies in a way such that the perceptible motion of the sense organ results (*DA* 418<sup>a</sup>26-<sup>b</sup>2, 419<sup>a</sup>13-15). Sound is defined as a motion of the surrounding air such that an acoustic sensation results (420<sup>a</sup>3-4), and similarly with

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<sup>8</sup> In the case of sound, which is *produced* by the striking of two solid objects against each other, the causal story seems slightly more complex.

<sup>9</sup> Aristotle nowhere says how these two functions of the perceptual object are supposed to relate to each other (apart from saying that the one is a perceptual object potentially and the other actually). Silverman suggests accounting for them in terms of essential features and *per se* accidents (1989, 272).

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the other sense modalities.<sup>10</sup> Although it is true that he sometimes talks of the differences (*diaphorai*) and 'kinds' (*eidê*) of color, sound, smell, taste and touch,<sup>11</sup> we should not think of this as a treatment of their phenomenal qualities. Aristotle nowhere *defines* these kinds previously to the definition of sense perception as the capacity to take on perceptual forms without their matter in *De Anima* II 12 (424<sup>a</sup>17-24). As will turn out later in that chapter, Aristotle thinks of the phenomenal qualities of perception in terms of proportions (*logoi*, 424<sup>a</sup>24-31). Previously to that passage there is no word of proportions and hence also no treatment of the phenomenal qualities of perception *qua* such.<sup>12</sup> This is important because it saves his definition from circularity: had the *De Anima* defined the perceptual objects with reference to their phenomenal content, it would have defined the capacity of sense perception with reference to the actuality of that very capacity.<sup>13</sup>

Accordingly, the bulk of the treatment of sense perception in *De Anima* book II 7-11 is concerned with the causal ancestry of sense perception. The chapters describe how the perceptible motions set up by the external sense objects transmit perceptual qualities to the perceptual apparatus of the perceiver.<sup>14</sup> Here, Aristotle's idea is that of a continuous and uninterrupted causal chain of qualitative change stretching from the perceptual object as *terminus a quo* to the actualization of the perceptual capacity as *terminus ad quem*. The perceptible change

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<sup>10</sup> In this connection Aristotle typically uses terms like *kinêtikon* ('capable of setting up motion') or *poiêtikon* ('capable of bringing about') or sometimes both (426<sup>a</sup>4-5). For color, see 418<sup>a</sup>31-b2, 419<sup>a</sup>3, <sup>a</sup>9-11, <sup>a</sup>13-15; for sound: 419<sup>a</sup>25-27, 420<sup>a</sup>3-5; smell: 419<sup>a</sup>25-27; taste: 422<sup>a</sup>17-19, <sup>b</sup>2-3, <sup>b</sup>16-17; touch: 423<sup>b</sup>12-20, <sup>b</sup>31-424<sup>a</sup>2.

<sup>11</sup> Forms of sound: 420<sup>a</sup>26-b5; of taste: 422<sup>b</sup>10-15; of smell: 421<sup>a</sup>26-b8, of haptic qualities: 423<sup>b</sup>26-29, and – extremely superficially – the forms of color in 422<sup>b</sup>24.

<sup>12</sup> The distinction between the causal and the phenomenal aspect of the object of perception is made explicit in the case of the object of sight in *DA* 418<sup>a</sup>30-31. It is only much later, in his works on the actions and affections common to body and soul, that Aristotle will discuss the phenomenal qualities of the perceptual objects in a more systematic fashion (the discussion in *DA* III 2, 426<sup>a</sup>17sq. is very brief). This is confirmed by the beginning of *De Sensu* 3 where the principles of the division of labor between *De Sensu* and *De Anima* are set out: "Of the objects of perception corresponding to each sensory organ, viz. colour, sound, odour, savour, touch, we have treated in *On the Soul* in general terms, having there determined what their function is, i.e. what their actuality in relation to each of the perceptual *organs* is. We must next consider what account we are to give of any one of them; what, for example, we should say colour is, or sound, or odour, or savour; and so also respecting [the object of] touch. We begin with colour." (*DS* 439<sup>a</sup>6-12 transl. Beare, modified). Here, Aristotle describes his general account of the perceptual objects in the *De Anima* as specifying merely the causal effect that they have on the sense *organs* (*ti to ergon autôn kai ti to energein kath' hekaston tôn aisthêtêrion*), to then going on to announce his account of their essence (*ti de pote dei legein hotioun autôn, hoion ti khrôma ê ti psophon ê ti osmên ê khumon, homoiôs de kai peri haphês, episkepton*). That account of the essence of the perceptual objects will be in terms of *logoi*. See below.

<sup>13</sup> Recall: above statement (i) makes the actuality of the perceptual object dependent on their perception. That the kind of circularity at issue is not likely to have escaped Aristotle's notice is clear from passages such as *Met.* 1021<sup>a</sup>26-b3 and 1049<sup>b</sup>4sq. See also Silverman (1989), 272, and Johansen (2002), 171-172.

<sup>14</sup> Sometimes addressed as the perceptual organ (*aisthêtêrion*), sometimes as the sense itself (*aisthêsis*).

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productive of actual sound, e.g., consists of air struck in a certain way such that the air is carried to the acoustic capacity. The bodies in which these perceptible changes happen prior to reaching their endpoint are called 'media' (*ta metaxu*). The media that extend from the external sense object to the peripheral sense organs are external to the perceiving animal. But since the peripheral sense organs are said to consist of the same kinds of bodies as the external media, the further transmission of the perceptible motion inside the animal body should, at least at first, be very similar to that of the external media. The visible motion set up by color, e.g., is transmitted in transparent stuff (water or air) as its external medium, and then continues in the inside medium, which is the (likewise watery) eye. From there onwards they are further transmitted inside of the body until they reach the central perceptual organ which is the seat of the perceptual capacity. Again: Aristotle clearly thinks that there is a continuous and uninterrupted causal chain extending from the external perceptual object down to the perceptual capacity. But in the *De Anima* he does not tell us much about the further processing of the incoming perceptual motions once they have reached the peripheral sense organs. Indeed, the *De Anima* says almost nothing about the inner bodily phase of the causal history of perception. So, in spite of the fact that the account in *DA II* is mostly concerned with the causal ancestry of sense perception, it does not give us the whole causal history.<sup>15</sup> But that does not mean that Aristotle did not believe that there *was* such a further, and equally gapless, transmission of perceptible motions inside the body.<sup>16</sup> From other of his writings we know that he thought that there are channels (*poroi*) that run from the peripheral sense organs to the center of the perceptual system (*PA* 656<sup>b</sup>16-18, *GA* 743<sup>b</sup>35-744<sup>a</sup>5). This center, where the incoming perceptible motions arrive, is the heart (*Somn.* 455<sup>a</sup>33-4, *Juv.* 467<sup>b</sup>28-30). The heart is the place where the bodily conditions are suitable for the final processing of the perceptible input and where the perceptual capacity is located (*PA* 647<sup>a</sup>24-31, 665<sup>a</sup>10-15, 666<sup>b</sup>32sq., 672<sup>b</sup>16-19).<sup>17</sup> However, the many details in connection with the transmission of perceptible motions are of secondary importance for our present concern. They are part of the causal ancestry of perception, comparable to what for us is the transportation of the neural impulses to the brain. All we need to know for now is that at the end of the process a

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<sup>15</sup> Although there *is* a description of the whole process in a summary fashion in *DA* 434<sup>b</sup>27-435<sup>a</sup>10.

<sup>16</sup> *Phys.* VII 2, e.g., which will be discussed below, even offers a proof for the gaplessness of that chain by way of an inductive argument (244<sup>b</sup>2-245<sup>a</sup>11). For the continuity of that causal chain, see also *DA* 419<sup>a</sup>14, 434<sup>b</sup>27-435<sup>a</sup>10; *Insomn.* 2, 459<sup>b</sup>1-7.

<sup>17</sup> For more details, see Gregoric (2007) and Corcilius / Gregoric 2013, 57-60.

perceptible qualitative motion ('sensory input' in what follows) reaches the place in the heart where the soul is located and the final processing of the input takes place.

What is the output of this final processing? That is the phenomenal content, or, in Aristotle's words, the actually perceived forms. As mentioned above, Aristotle thinks of perceptual forms in terms of proportions (*logoi*).<sup>18</sup> Each sense modality is correlated with a range of values on a continuous scale of perceptible qualities. Each scale is demarcated by the contrariety between the extreme positions on the relevant range. In the case of vision, e.g., that contrariety is constituted by the extremes of the range of color variation, light and dark. All the other colors occupy positions in between light and dark on that scale and are *defined by their relative position to both*. Red, e.g., is a determinate proportion consisting of a portion of light plus a certain portion of dark. Analogously with the other kinds of perceptible qualities: each is defined by a proportion (*logos*) of the extreme values on the relevant scale of perceptible values, in the case of the color red, e.g.,<sup>19</sup> the proportion is between a certain portion of light plus a certain portion of dark. Aristotle says that these qualities, when actually perceived, are separated from matter. This, I take it, means that physically speaking, and in the moment of their actual perception in the central organ, the perceived forms are *not* the qualities of a given material substrate in which they inhere as in their proximate matter: they are separated from their matter and in this sense *isolated qualities*.<sup>20</sup> As such they are *fully* determined by their formal features. That is to say that a single actually perceived color, red, e.g., is *nothing but* a determinate proportion of the extreme values on the scale of visible qualities: a determine portion of light plus a determinate portion of dark.<sup>21</sup> There is no proximate underlying matter or motion *of* which it is an inherent quality.

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<sup>18</sup> See *DA* 424<sup>a</sup>17-24, 426<sup>b</sup>3-8 and *DS* 440<sup>b</sup>18-25, cp. 445<sup>b</sup>20sqq.

<sup>19</sup> Color is a relatively simple case since it seems to involve only one contrariety. Other sense modalities, especially the sense of touch, can be multi-dimensional (*DA* 423a23-33).

<sup>20</sup> See also the definition of the perceptual capacity of the soul in 424<sup>a</sup>17-24 (quoted below) as "that which can receive perceptible forms *without their matter*" and "in so far as they are things of a certain sort and in accordance with the proportion (*logos*)."

<sup>21</sup> See the discussion in Sorabji (1972); in the case of color, there is an important question as to what these values are (light and dark or white and black), see *De Sensu* 3, and the discussion in Sorabji (1972); the discussion in *Met.* X 7 seems relevant here (1057<sup>b</sup>4sqq.). But the issue should not affect the present argument. Interpreters agree that the content of perception is defined by proportions (*logos*) of the extreme values on the relevant scales of perceptible values.

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

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

The receiving of the perceptible form without its matter, I take it, is the perceptual awareness of that form.<sup>22</sup> But receiving the form without its matter presupposes that the form be separated from the matter. This separation, I shall now argue, is the job of perceptual discrimination. If this is correct, perceptual discrimination is a crucial ingredient in Aristotle's theory of sense perception:<sup>23</sup> it accounts for the final bit of internal processing by means of which the affection of the sensory apparatus by sensory input transforms into phenomenal content.<sup>24</sup>

## 2. Perceptual Discrimination

I have suggested that perceptual discrimination is what accounts for the transformation of perceptible input into phenomenal content. But what *is* perceptual discrimination and how does it work? In this section I will discuss an important suggestion that has been made in the literature. It offers an account of perceptual discrimination in Aristotle that is widely accepted by scholars.

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<sup>22</sup> *Phys.* VII 2 makes that point by saying that unlike other kinds of alteration perceptual alteration "does not escape notice" (*ou lanthanei*, 244<sup>b</sup>12-245<sup>a</sup>1, Ross). For another interpretation of the above *DA*-passage, see below, fn. \*\*.

<sup>23</sup> This is presumably why Aristotle classifies perception – along with the intellect – as capacities that are 'capable of discriminating' (*kritikon*, *DA* 427<sup>a</sup>17-21; 429<sup>b</sup>12-18; 432<sup>a</sup>15-16; *MA* 700<sup>b</sup>20; *Anal. Post.* 99<sup>b</sup>35). This classification seems to me to attach great weight to discrimination as an essential feature of cognition.

<sup>24</sup> Some scholars even think that perceptual discrimination and awareness ('receiving') of the perceptual form are one and the same event, see de Haas (2005), 336. See fn. \*\* below.



This is Theo Ebert's treatment of the issue in his 1983 paper 'Aristotle on what is done in perceiving'.<sup>25</sup> Here, we find the following account:

'To discriminate' is a three-place predicate and if we take 'S discriminates x from y' as the canonical formula, the relation expressed by this predicate is symmetrical as to the second and third place: clearly if someone discriminates *a* from *b*, then it is true to say that he discriminates *b* from *a* as well. In the above formula 'S' is a variable ranging over subjects of cognitive activity, 'x' and 'y' are variables ranging over objects of such activities. (193)

The claim that 'to discriminate' is a three-place predicate expressing a relation which is symmetrical as to the second and third place seems very plausible. But I should note already at this point that this is so only if we think of the activity of discriminating on a personal level (cp. Ebert's formulation 'clearly if *someone* discriminates *a* from *b*'). If we *as persons* discriminate *a* from *b*, then it seems right to say that this entails our awareness of both, of *a* and of *b*. And this easily explains why we thereby also discriminate *b* from *a*. For if we are aware of both, *a* and *b*, it seems that it makes no difference whether we say that we discriminate *a* from *b* or *b* from *a*. This, in many cases, will presumably lead to our becoming aware of the *difference* between *a* and *b* as their difference as well. In such cases, 'discrimination' comes very close to 'comparing', although this is not implied by Ebert's account. But what his account does seem to imply is that we can, e.g., *decide* to discriminate *a* from *b*. That would make perceptual discrimination something that we intentionally do. But it is far from certain whether basic perceptual discrimination is something we do on an intentional level. To me it is even doubtful whether we *can* decide to perceptually discriminate basic sensory input like 'red' or 'sweet'. It is also uncertain whether the logical three-place structure suggested by Ebert applies to *all* forms of discrimination, including its subpersonal forms. One might find this too complex a mental operation for it adequately to capture more basic forms of perceptual discrimination as they occur, in, e.g., sea anemones. In short: Ebert's account seems to focus on cognitively more demanding usages of 'to discriminate'.<sup>26</sup>

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<sup>25</sup> *Zeitschrift für philosophische Forschung* 37/2, 1983, 181-198. One of the merits of this excellent paper is to have argued conclusively against the old habit of translating *krinein* with 'to judge'.

<sup>26</sup> It is in line with this tendency that his article does not discuss what seems the most basic account of perceptual *krinein* in *DA* 424<sup>a</sup>5-6.

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

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

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

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432<sup>b</sup>26-29), and these basic physical qualities are in turn defined in terms of the basic haptic qualities (*GC* 329<sup>b</sup>6sq., cp. *Meteor.* 382<sup>a</sup>17-21). For Aristotle, basic cognitive objects such as *a* and *b*, therefore, simply *have* to correlate with some cognitive capacity, and sense perception is the only candidate for this. So even if it is true that Ebert's account of discrimination captures many of our everyday perceptions and judgments, there must be some more basic form of perceptual discrimination in Aristotle that is not captured by his account. It is this form of basic discrimination I am here interested in.<sup>27</sup>

### 3. Interpretation of *De Anima* II 11, 424<sup>a</sup>2–10

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

Here is the passage that contains Aristotle's basic account of perceptual discrimination (*DA* II 11, 423<sup>b</sup>31-424<sup>a</sup>10):

For perceiving is a form of being affected; hence, that which acts makes that part, which is potentially as it is, such as it is itself actually. [1] For this reason we do not perceive anything which is equally as hot or cold, or hard or soft, but rather excesses of these, [2] perception (*hê aisthêsis*) being a sort of mean of the opposition present in objects of perception. [3] And that is why it can discriminate (*krinei*) the objects of perception. For the mean is capable of discriminating (*to gar meson kritikon*); for it becomes (*ginetai*) relative to each extreme in turn the other extreme (*akron*). [4] And just as that which is to perceive white and black must be neither of them actually, although both potentially (and similarly too for the other sense-modalities), so in

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<sup>27</sup> That interpretation of discrimination is by no means unique to Ebert. Rather, Ebert's account represents a whole family of interpretations: see, e.g., Polansky 2007 ('comparative assessment', 343), de Haas 2005 ('compare', 336, and many others). The language of 'picking out' one among the many possible sense qualities which sometimes can be found in the literature does not settle the issue (see e.g. Bynum 1987, 175). W. Bernard's study (1988), which argues against empiricist readings of Aristotle by emphasizing the active nature of *krinein* as an 'active distinguishing' ('aktives Unterscheiden') does not give us the details of the workings of discrimination. If I am not wrong Bernard seems largely to follow Ebert's lead (whom he approvingly cites along with A. Schmitt's similarly broad characterization 'to distinguish one definite entity from another', 268). Welsch (1987) who pursues a similar argumentative goal, offers no detailed account of the act of *krinein* in *DA* II 11 as well. The other family of interpretations is *causal* interpretations of perceptual discrimination. As far as I can see, that family is represented solely by Johansen (2002).

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the case of touch that which is to perceive such must be neither hot nor cold. (transl. Hamlyn, modified)

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

[1] we perceive only those values of perceptible qualities that are both: within the range of perceptible values of a given sense modality (not exceeding the range), and also different from the value of the relevant sense-organ (*qualified difference thesis*).

[2] the capacity of perception is a sort of mean between the opposition in the objects of perception, i.e. for each sense-modality the capacity of perception occupies an intermediate position between the extreme positions on the relevant scale of perceptible qualities (*mean thesis*).

[3] the perceptual mean is responsible for discrimination by providing a corresponding extreme for each perceptual quality (*discrimination thesis*).

[4] the intermediate position on the scale of perceptual qualities is perceptually *neutral*. The capacity of hearing sounds, e.g., is neither sharp nor flat in pitch and therefore soundless, the capacity of seeing is neither dark nor bright and therefore colorless etc. (*neutrality thesis*)

Before I turn to an interpretation of the discrimination thesis in [3], a few explanations are in place. [1] formulates the famous 'blind spot' thesis according to which sensory input with perceptible values that match the values occupied by the perceptible capacity is not perceived, the underlying idea being that like is not affected by like. In my above interpretation I go slightly beyond what the text explicitly says by adding a thesis made a little later in the text (434<sup>a</sup>28-32) and according to which sensory input which exceeds the extreme limits of perceptible values is also not perceptible (it will either fail to meet the relevant threshold values or lead to a temporary disabling of the sense organ, or even to its destruction). [2] situates the perceptual capacity, i.e. the soul, on the middle position on the scale of perceptible values. There are thus *two* items that occupy that middle position: the perceptual soul and the sense organs mentioned in [1]. This might or might not be a loose way of speaking, since Aristotle might be identifying the middle position of the perceptual capacity with that of the sense organ. Below I will offer an interpretation on which he is not speaking loosely here. The neutrality thesis in [4] is not to be

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confounded with a nullity thesis to the effect that the neutral position of a sensory organ within a given range of perceptible qualities has no quality at all; it suffices that the neutral position be a non-perceptible quality in virtue of the fact that like cannot be affected by like. That means that if the intermediate position would change (presumably, within certain limits), what previously was a neutral position would now correspond to a perceptible value.<sup>28</sup>

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

This already allows us an interpretation of the discrimination thesis in [3]: unlike the inner medium, the perceptual capacity itself cannot change, given that the perceptual capacity is a part of the soul and the soul is not a possible subject of change.<sup>29</sup> It therefore will not assimilate and remain in state  $Q_0$ . So when the motion that carries  $Q_I$  meets  $Q_0$  (for an interpretation of what 'meeting' here means, see below),  $Q_0$  provides a value or a standard sufficiently different from  $Q_I$  to generate a *contrast*, or, as Aristotle puts it in [3], 'it becomes relative to each extreme in turn the other extreme', which is to say that it becomes a *contrary opposite* of the incoming motion's value.<sup>30</sup> Now this contrast should be equivalent to a *manifestation of the difference* between  $Q_0$  and  $Q_I$ . This is so because Aristotle defines the actual sense objects as proportions of opposed values on a given qualitative scale. Actual sense objects, the phenomenal colors, sounds etc., as we have seen, are actual qualities that just *are* such proportions. Each actual color, e.g. is defined by its position in relation to both of the extreme values on the spectrum of colors, light and dark. It is fully determined by a certain portion of light plus a certain portion of dark. The

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<sup>28</sup> Johansen makes the interesting suggestion that we should understand the neutrality of the intermediate position as that position on the scale on which the extreme values 'cancel each other out' (181).

<sup>29</sup> A point Aristotle insists upon in *DA* I 3 and 4 (405<sup>b</sup>31-407<sup>b</sup>11; 408<sup>a</sup>30-409<sup>b</sup>18).

<sup>30</sup> See *Met.* X 8, 1058<sup>a</sup>6-17 for an argument as to why different positions on perceptual scales are best characterized as contrary opposites.

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presence of opposed perceptual values in the central organ thus should be *sufficient* for the production of actual sense objects – only that in this case the contrast is not with the other extreme on the scale of possible values but with the perceptual mean which, as Aristotle says, ‘becomes’ the other extreme. In effect, the contrast of the perceptual soul’s neutral value with the incoming value generates a proportion of two perceptible values the presence of which is the manifestation of the difference between  $Q_0$  and  $Q_1$  and that should *be* an actual sense quality.

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

On the present picture, then, basic perceptual discrimination is the separation of the perceptible form from its matter. This separation is equivalent to the production of an actual phenomenal quality in the organism. Three items are involved in this process:  $Q_0$ , the neutral perceptual value of the perceptual capacity, the sensory input carrying the perceptible value  $Q_1$ , and the contrast between these two values, the actually discriminated quality  $Q_1$ . And this would to some extent vindicate Ebert’s remark about cognitive capacities as being generally correlated to differences between cognitive objects. But it would be inadequate to understand this in terms of his canonical formula ‘*S* discriminates *x* from *y*’ because, on the proposed interpretation, there is no entity that would correspond to Ebert’s neutral subject of discrimination, *S*. Rather, what happens is that  $Q_0$ , *by somehow being met by, or juxtaposed with*, an input carrying  $Q_1$ , generates a manifestation of  $Q_1$  which is isolated from its matter. In the language of Ebert’s formula that would correspond to something like ‘*x*, by being met by perceptible input, is made to discriminate *y* from itself’. The point is that *x* is not a cognitive subject of discrimination; it discriminates *y*, but it is not aware of *y*. It is also not an object of perception, given that the neutral value of  $Q_0$  is not perceived.<sup>31</sup> In short, the main difference from Ebert’s account is that perceptual

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<sup>31</sup> At that moment, that is;  $Q_0$  remains of course a *perceptible* quality. The above analysis bears some resemblance to what Aristotle says about discrimination elsewhere (*DA* 411<sup>a</sup>4-6): ‘(...) it suffices when one of the two parts of the contrary opposition discriminates itself and the opposite as well. For it is also with the straight that we discriminate

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discrimination is here understood on a subpersonal and largely, but not entirely, *causal* level:<sup>32</sup> Aristotle says that the perceptual mean is capable of discriminating because it *becomes* (*ginetai*, 424<sup>a</sup>6), relative to each extreme in turn, the other extreme.<sup>33</sup> Above, this was interpreted *causally* as saying that  $Q_I$  becomes manifest only for the time, and to the extent, in which the motion carrying  $Q_I$  meets the perceptual capacity's neutral value.

#### 4. Meeting the Soul?

What could this 'meeting' of the perceptible input with the soul's neutral position be? From an Aristotelian perspective the following worries immediately spring to one's mind. The first is that the idea of a motion that meets the soul goes diametrically against Aristotle's exclusion of the possibility of a physical affection of the soul (*DA* 405<sup>b</sup>31ssq.). The second is that an alternative, somehow non-physical ('spiritual') affection of the soul wouldn't do better, since that goes against Aristotle's explicit denial that the soul is a subject of mental episodes in *DA* 408<sup>b</sup>5-29 (including perceptions, 408<sup>b</sup>3; the passage is careful to make the hylomorphic compound, the 'man', the subject of mental episodes, not the soul).<sup>34</sup> But this dilemmatic construal does of course not exhaust the options. To say that *A* and *B* meet implies nothing as to whether *A* and *B* affect each other, be it physically or not. All it implies is their *juxtaposition*. Indeed, the above

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itself and the bent. The rule is the judge (*kritês*) of both, whereas the bent is (a judge) neither of itself nor of the straight.' In this passage, the subject of discrimination is not a neutral subject and outside beholder of an external object, viz. of a difference between a plurality of objects, but itself on a par with the object it discriminates and (in this case) even itself a possible object of discrimination. This is of course different from our case where  $x$  is perceptually discriminating  $y$  from itself, but without being an object of perception:  $Q_o$ , although a value on the perceptual scale, is not perceptible (at least not in that moment).

<sup>32</sup> Johansen suggests that we should understand it as a passive process *tout court* (2002), 180-181 (comparing it to the motions of a thermostat). That only works if the concept of discrimination is not meant to be addressing 'hard' questions about perception, which I think it is meant to address in Aristotle. He also suggests to understand Aristotle's repeated observations according to which the mean states of our sense organs can adapt to different conditions, of, e.g., light etc. ('range shifting'), as a point about the mean state of the perceptual capacity (2002, 182-85). On the current interpretation, by contrast, 'mean state' is ambiguous between the intermediate state of the medium in the sense organ and the mean state of the perceptual capacity: while the former would be capable of adjusting to different environmental conditions, the latter would not.

<sup>33</sup> This point is emphasized by Johansen (2002), 180.

<sup>34</sup> The passage is discussed below. Aristotle sometimes talks as if the soul was a subject of change (e.g. *Somn.* 454<sup>a</sup>8-10) but he also uses the language of quasi-affection ('the soul is somehow, *pôs*, affected', *Phys.* 244<sup>b</sup>10-13). Heinaman (1990), 85-88, and Menn (2002), 86-91, give chronological explanations: by the time he wrote *Physics* VII and like passages Aristotle was still on his way to his mature position in the *De Anima* (or even still in the grip of the Platonic analysis of sense perception). For an attempt at assessing that language on the basis of two different kinds of affections ('destructive' and 'quasi alterations'), see Lorenz (2007), 214-216. I hope my interpretation will to some extent mitigate these inconsistencies. See also fn. \*\* below.

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interpretation of perceptual discrimination even *requires* that both,  $Q_0$  and  $Q_1$ , remain unaffected by their juxtaposition, since it is precisely their co-presence that generates the contrast between the two. Any affection would result in assimilation and hence destroy the contrast.

To be sure, Aristotle nowhere spells out in any detail how the juxtaposition of  $Q_1$  and  $Q_0$  is supposed to take place in the organism. And I have no substantial suggestion to make that would resolve that difficult issue of Aristotle's physiology of sense perception. Presumably, to determine that question for him would have to involve empirical research. So instead of attacking directly a question for which, I think, Aristotle doesn't give us an answer because he doesn't have one, I shall stick to what he explicitly says. For that, I shall argue, will on its own terms suffice to back the above interpretation of perceptual discrimination. For Aristotle explicitly claims that (i) the perceptual soul is localized in the body, that (ii) there is a juxtaposition of sensory input with the perceptual soul, that (iii) the juxtaposition of the soul with sensory input does not involve an affection of the soul. And this is all we need to attribute the above interpretation to him.<sup>35</sup>

*Localization of the perceptual soul.* That Aristotle localizes the perceptual soul in the heart in a non-metaphorical way is clear from passages like *MA* 703<sup>a</sup>2-3, a passage extremely hard to interpret metaphorically since Aristotle there not only localizes the soul in the heart but does so by distinguishing it from the body, and by assigning it an active function as the mover of the body (but see also 702<sup>b</sup>20-5 and *PA* 647<sup>a</sup>28, 665<sup>a</sup>10-15). So the local presence of the soul in the heart, which is the central perceptual organ and the place where perceptual awareness happens, is well secured by the texts.<sup>36</sup> *Juxtaposition with sensory input and unaffectedness of the perceptual soul.* Regarding the juxtaposition of the soul with sensory input, the perhaps most important passage is *De Anima* I 4, 408<sup>b</sup>5-18, where Aristotle points out that the soul, although the center of incoming and outgoing motions<sup>37</sup> (an assumption he shares with Plato and many

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<sup>35</sup> Historically speaking, assumptions (i) and (ii) should be default positions for Aristotle anyway, given that many of his predecessors, including Plato, agreed on both of them (in the stronger version of an *affection* of the soul by the sensory input). The point of disagreement where Aristotle stands against the tradition is (iii). This point has been made by Menn (2002).

<sup>36</sup> Cp., for instance, *PA* 647<sup>a</sup>25sq. There are, of course, many issues here; e.g., even though he undoubtedly localizes the soul (assigns it a certain location), Aristotle cannot consistently think that the soul *has* a place (*topos*), given that his definition of place is tied to the notion of extended bodies (*Phys.* 212<sup>a</sup>5-7). So the soul seems to be somewhere in the sense of being *in something* but without this implying that it has a place. On that distinction, see Morison (2002), 15-20.

<sup>37</sup> A consequence of the location of the soul in the heart is that the heart is also the place where perceptions (*holôs pasês aisthêseôs*) arrive (*pros tautên perainousai*) and motor reactions (*kinêseis tôn hedeôn kai tôn luperôn*) originate (*enteuthen archomenai*), *PA* 666<sup>a</sup>11-13.



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

We may fully admit that being pained or pleased, or thinking, are motions, and that each of them consists in being moved, but this being moved occurs due to the soul, e.g. anger or fear consists in the heart being moved in such and such a way, and thinking consists perhaps in this [being moved] or something else; of these modifications some arise when certain parts are moved locally, others [when certain parts are] altered (what sort of parts and how, belongs to another discussion). Yet to say that the soul is angry is similar to saying that the soul weaves or builds. Perhaps it is better to avoid saying that the soul pities or learns or thinks, and rather to say that the man [does all that] with the soul. This does not imply that motion is in the soul, but rather that sometimes it proceeds to the soul and sometimes from it, e.g. perception [proceeds] from these [peripheral sense organs to the soul], whereas recollection [proceeds] from the soul to the motions or traces in the sense organs. (*DA* 408<sup>b</sup>5-18)<sup>38</sup>

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

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<sup>38</sup> Cp. *MA* 703<sup>b</sup>26-35. For an analysis of this passage, see Corcilius / Gregoric (2013), 84-86.

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soul (*ap' ekeinês*),<sup>39</sup> the soul being literally the endpoint of incoming sensory input and literally the starting point of sensorimotor processes but without being a part of either.<sup>40</sup> On the other hand, Aristotle insists on the traditional notion of the soul as responsible for cognition and motor processes. Now within the Aristotelian framework, this can only be made sense of if it implies the *contiguity* of the soul with the incoming and the outgoing motions, since without contiguity there would be something in between the soul and these motions. And if that were the case the soul could not make a difference to these motions (there is no *actio per distans* in Aristotle), let alone function as their end- viz. starting point. This strongly suggests that he is thinking here of the soul as being contiguous with the incoming and outgoing motions in a way that does not imply the affection of the soul. And in the case of the outgoing motions (motor processes), we do have good evidence that Aristotle thinks of them as being contiguous with the soul. He even goes into considerable detail as to how the soul is capable of moving the body without itself being affected. There is no room for discussing this matter here, but it is clear that in the context of his explanation of animal locomotion Aristotle accepts the idea of there even being a sort of *contact* between body and soul (but, in line with the above *De Anima* passage, not *vice versa*).<sup>41</sup>

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<sup>39</sup> Note that the exclusion regards the soul only as a *subject* of motion: while denying motion to the soul, Aristotle affirms the soul's active role perceiving and in originating motor processes (in this case an episode of recollection). The soul, in spite of being unmoved, is *both* responsible for sensory receptivity and causally spontaneous. This (rather bold) claim requires at least three qualifications. First, Aristotle does not say that the soul is responsible for receptivity and causally spontaneous in *the same respect*. Rather, as we will see, there are different contexts in which the soul can play these roles. Second, the passage does not say that the soul is the subject of intentional states. Aristotle is careful to exclude this option by stating that the subject of intentional states is not the soul, but the 'man', i.e. the soul/body compound. Third, the soul is not declared to be capable of initiating motor processes by itself, see below fn. \*\*.

<sup>40</sup> This bears directly on our initial question regarding activity and passivity of sense perception. The passage shows that either/or versions of our initial question ('is the act of perception active or passive?') are somewhat ill posed. The role of the perceptual soul as the unmoved terminus of incoming and outgoing motions suggests that it is somehow *both and neither*. For a discussion of the role of the soul in that context, see Corcilius / Gregoric (2013).

<sup>41</sup> Since for Aristotle efficient causation requires contact (*haphê*) and ordinary cases of contact are reciprocal, the idea of the soul being the unmoved mover of the animal body is based on a conception of contact that does not imply a reciprocal affection of the soul. Aristotle offers such a *non-reciprocal* conception of contact. On that conception, there are cases of contact in which only the patient (the body) is affected, not the agent (the soul) (cp. *GC* I 6, cp. *Phys.* 198<sup>a</sup>35-b1). Aristotle's example is this: 'for we say sometimes that the man who grieves us 'touches' us, but not that we "touch" him' (*GC* 323<sup>a</sup>32-33), the point being that *a* moves *b* in virtue of the fact that *b* stands to *a* in a non-reciprocal relation such that *a* changes because of *b* without this having an effect on *a*; *a* causes the process, but is not a part of it. How is this supposed to work in the concrete case? Presumably, the soul 'touches' the living body by providing a cognitive content that, given the right circumstances, affects the animal body, i.e. phenomenal content provided by the actuality of the soul efficiently causes (triggers) motor responses in the animal body and it does so in virtue of the fact that the *body* relates to it in certain ways; the content remains unaffected thereby. This is also what I take to be the gist of the pronouncement in *DA* 407<sup>b</sup>17-19: 'It is because of the communion (of soul and body) that the one acts and the other is affected and the one is moved and the other sets into motion'. For an account of efficient causation of animal locomotion by the soul in Aristotle, see Corcilius (2008), section I, (2011), and Corcilius / Gregoric (2013), 60-67; for other recent accounts, see Buddensiek (2009), and Morel (2010).

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Unfortunately, there is no such explicit discussion of the reverse case of incoming perceptual input and how it relates to the perceptual soul. We do, however, find the explicit claim *that* there is contiguity between the soul and the incoming perceptible motions. This is in a passage in *Physics* VII 2. The passage makes this very clear by saying that the perceptible input is 'together' (or 'adjacent', *hama*) with the 'senses themselves' in precisely the sense that there is nothing in between the two (*metaxu, ana meson*, *Phys.* 243<sup>a</sup>33-35). And that juxtaposition of the senses with the sensory input is stated not only in a summary fashion but specifically for each of the five senses:<sup>42</sup>

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

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<sup>42</sup> Unlike the others, the sense of touch is not mentioned explicitly, but haptic qualities are mentioned towards the beginning in 244<sup>b</sup>7-8.

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intermediate (*metaxu*) between that which undergoes and that which causes alteration. (*Phys.* 244<sup>b</sup>2-245<sup>a</sup>11, transl. Hardie/Gaye, modified)

Here we have the explicit statement that the incoming perceptual input reaches the sense capacity in precisely the sense that there is nothing in between the soul and the sensory input. So, even though we don't know how *exactly* Aristotle thought of the meeting of the soul's neutral value with the sensory input, we do have sufficient evidence for attributing to him the view that there is such a juxtaposition.<sup>43</sup> And that is enough to support the interpretation of perceptual discrimination suggested above.

The following picture results: perceptual discrimination – the separation of the perceptible form from its matter – is the production of an actual object of perception in the organism. It happens exactly in the moment at which a perceptible input reaches the endpoint of its motion towards the perceptual center of the animal (located somewhere in the heart), and before it passes that point and, perhaps, reverses into a different region of the body:<sup>44</sup> the point at which the motions literally stop moving in direction of the perceptual center of the animal is where the perceptual soul's neutral value is actualized. The resulting juxtaposition of the incoming perceptible value with the soul's neutral value generates a contrast and this contrast is the actual sense object.

Is there more to be said about this neutral position of the perceptual soul? Whatever else he thought of it, it seems that the perceptual soul's neutral position is a metaphysical given for Aristotle. As other perceptible qualities as well it consists in a certain proportion of extreme values on a scale of perceptible values. It is the proportion according to which living bodies are, as it were, 'tuned' in order to be capable of engaging in episodes of perception. As such it is the

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<sup>43</sup> The language of the sense being directly affected by the incoming sensory motion (alteration) in *Physics* VII 2 cannot easily be done away with as a reflection of a supposed earlier stage in Aristotle's thinking about sense perception, since we do find the same language also inside of the *De Anima*, e.g. in the (largely parallel) passage in 434<sup>b</sup>27-435<sup>a</sup>10 (*tên opsin kinei*, see also 422<sup>b</sup>3, *paschei gar ti hê geusis*, 426<sup>b</sup>31-427<sup>a</sup>1, *kinei tên aisthêsion*). This, I think, suggests that Aristotle thinks of the affection of the perceptual capacity in a way that is compatible with his hylomorphic claim of the immobility of the soul. So I suggest that 'the sense is affected in a certain way' in *Phys.* 244<sup>b</sup>10-11 and other like passages points to the actualization of the soul's neutral value by the sensory input such as proposed above, and not, as 'spiritualist' interpretations have it, to a cognitive act of the soul itself.

<sup>44</sup> Presumably, as a *phantasma*, cp. *DA* 428<sup>b</sup>10sq. The point at which the sensory input's motion towards the perceptual soul stops is described as a limit in *DA* 435<sup>a</sup>8-10: "[it is better to say that] (...) the air, so long as it remains one, is affected by the shape and color [...], hence it is that it in turn sets the sight in motion, just as if the impression on the wax were transmitted to the limit (*hôsper an ei to en tôi kêrôî sêmeion diedidoto mekhri tou peratos*)."

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essence of percipient living bodies that explains why they are able to do what is essential for them, namely perceiving.<sup>45</sup> But the perceptual soul is more than just a value on a scale of perceptual values according to which the animal body is structured. If I am correct, its actuality also plays a causal role in the production of phenomenal content.

## 6. Perceptual Discrimination, Activity and Awareness

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

If I am correct, Aristotle manages to explain how perceptual discrimination turns physical events – incoming sensory input – into something non-physical, namely phenomenal content *about* the physical world,<sup>46</sup> with a bare minimum of metaphysical assumptions about the role of the soul. What I here mean by ‘non-physical’ is that Aristotelian phenomenal content is unlike his standard (hylomorphic) physical objects and events in that it is form without proximate matter; it is a contrast, or, as Aristotle says, a proportion (*logos*). Note that the non-physicality regards only the content *as such*. It is still true on the current proposal that there is neither perception nor phenomenal content in the world without simultaneous qualitative change in the same respect (as Aristotle says in *MA* 701<sup>b</sup>17-18, 702<sup>b</sup>21-22, *PA* 641<sup>b</sup>6, cp. *DA* 429<sup>b</sup>4-5). Perception necessarily

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<sup>45</sup> Cp. the discussion of the perceptual capacity in *DA* III 2, 425<sup>b</sup>26sq. The existence and nature of the perceptual capacity is a foundational assumption for the science of living beings (see Corcilius / Gregoric 2010).

<sup>46</sup> From this point onwards we can ask whether things (*pragmata*) are adequately presented by their appearance (*phantasia*) and whether these appearances are true or false (cp. *Met.* 1024<sup>b</sup>21-26). The perception of special objects of perception, Aristotle says, is for the most part true (*DA* 438<sup>b</sup>18-19). Presumably, he says this because (i) its content more or less coincides with the causal effect of the sensory input and (ii) special objects are simple, i.e. they do not involve a combination of a plurality of appearances, as higher forms of perceptual cognition seems to do.

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involves such changes because it requires the affection of the perceptual apparatus by incoming perceptible motions.

Note also that, on the current interpretation, perceptual discrimination in its simplest form can be called 'cognitive' only with some limitation. We are talking about the most basic cognitive achievement at the point on the *scala naturae* at which animals differ from plants *minimally*. Accordingly, the account of perceptual discrimination offered here is meant to account only for the bare presence of the most basic objects of perception (= the manifestation of the contrast between simple sense qualities  $Q_1$  and  $Q_0$ ). This is a far cry from what we would call ordinary objects of perception. But even with regard to these simple objects, it is not clear whether their mere presence can fully account for the *awareness* of them. It seems to me that it does not. For awareness to take place there would also need to be a capacity to *receive* that content. This is of course what Aristotle adds a little later in the text when he defines the perceptual capacity as the capacity of taking on the perceptual forms without their matter (424<sup>a</sup>17-24, quoted above). Without going into any detail, I would like to remark that that definition gives us no reason to think that the *soul* is the subject of that reception / awareness. Aristotle nowhere says or implies that the soul is *homunculus* inside the living being that perceives the discriminated content like a spectator would. Such a view of the perceptual soul, (apart from not even suggesting an *explanation* as to what perception is or does) would, I think, conflict with Aristotle's claim that the soul is not a subject of perceptual episodes. Perceiving, as is clearly implied in the passage above quoted (DA 408<sup>b</sup>16-18, cp. 408<sup>b</sup>3), is an activity not of the soul itself, but of the *living body* ('the man'). We should therefore not conceive of the perceptual capacity as a capacity *of* the soul alone either (as I think is ultimately done by those who say that the *soul* is affected by the perceptual object, whatever the nature of that affection is); instead, Aristotle gives us all sorts of reasons for thinking that the perceptual soul *is* this capacity, and that it is a capacity *of* a certain type of living body (DA 412<sup>a</sup>19-413<sup>a</sup>10, 413<sup>b</sup>11-414<sup>a</sup>28).<sup>47</sup> Receiving perceptual forms without their matter is what *animals* do when their perceptual systems are affected in appropriate ways: they discriminate and become aware of the discriminated content. Once this is granted, there is no good reason think that the *soul* should do anything over and above what it already does in the process of discrimination. I thus suggest that perceptual

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<sup>47</sup> Hence, it is a capacity *of* the soul only in the sense that it is a part of the soul, and this part of the soul is a capacity of the living body. On parts and capacities of the soul in Aristotle, see Corcilius / Gregoric (2010).

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awareness – the reception of the perceptible object without its matter – is what *living bodies* do as an immediate consequence of that actuality of their souls: once generated by the process of discrimination, the phenomenal content is present in the organism (its presence lasting for exactly as long as the sensory input acts on the sensory system); to *receive* this content without its matter then may only point to the capacity of the animal's body to be affected by that content *as phenomenal content*. What I mean by this is that the phenomenal content determines issuing motor reactions in the animal's organism in ways that are *informed by* that content such as to make these reactions intelligible in terms of the received content.<sup>48</sup> This, I think, is all 'reception of the form without the matter' *need* mean. If this is right, there is no necessity to postulate a further actuality of the soul apart from the one involved in sensory discrimination to account for that reception. Discrimination – the production of phenomenal content in the animal – plus the animal body's reaction to it *as* phenomenal content seems all that Aristotle's account of basic perceptual awareness requires.<sup>49</sup>

## 7. Conclusion: Activity and Higher Forms of Perceptual Discrimination

I have offered a model for understanding Aristotle's account of basic perceptual discrimination as based on his hylomorphic conception of nature, his cardiocentrism, and the localization of the perceptual soul. I argued that the juxtaposition of the soul's neutral value with the value of the

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<sup>48</sup> The animal body being by its nature designed to do precisely that, see *MA* 703<sup>a</sup>29-<sup>b</sup>2 (for further discussion of what this means, see Corcilius / Gregoric 2013, 78sq.).

<sup>49</sup> Hence, one may say that discrimination and awareness are one and the same event, but different in being (as was suggested by de Haas, see fn. \*\* above, even though his interpretation of 'reception' differs from the one offered here), the one being the act of discrimination, the other the reaction of the animal body to the discriminated content. Caston argues that Aristotle's wax analogy in 424<sup>a</sup>19-21 shows that 'taking on the perceptible form without the matter' is only a necessary, not a sufficient condition of perception on the grounds that this process does not require consciousness or even life (2004, 307, fn. 121, citing Philoponus' comments on a later passage in the same chapter where Aristotle discusses the difference between air that carries a certain scent and the actual perception of that scent, *DA* 424<sup>b</sup>16-18, *In De an.* 444,17-20. - It should be noted, however, that Philoponus does identify sufficient conditions of perception in the relevant passage in *DA* 424<sup>a</sup>17-24, including the wax analogy, *In De an.* 437,4–438,23). On the interpretation I am suggesting 'taking on the form without the matter' means something different from what Caston takes it to mean, namely being aware of phenomenal content previously isolated (discriminated) from a given sensory input. This is something signet rings, or any other non-perceptive being, cannot do. It follows that on my reading the signet ring analogy cannot be understood as an 'example' of taking on the form (Caston), for the trivial reason that animals are capable of perceiving and wax is not. I do not think that this is necessarily to the detriment of that interpretation, though. If perception is the receiving of the isolated form, as I think it is for Aristotle, then there *could* be no other non-cognitive example for this. The point of the analogy is rather to provide a necessarily somewhat inadequate illustration of what it is to receive cognitive content without its matter. For the view that the soul is a 'receptacle' of the perceptual forms that itself undergoes non-standard kinds of change, see Lorenz (2007), 204. For the (in that respect similar) view that the soul is affected by ratios, see Ward (1988), 221.

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sensory input is sufficient for generating basic phenomenal content in the central organ of the animal. I further suggested that the presence of that phenomenal content is not sufficient for perceptual awareness and that for Aristotle perceptual awareness additionally requires the reception of that content. Finally, I proposed an understanding of that reception as a natural reaction of the animal body to the discriminated content. Naturally, this should raise many questions, which I am unable to address adequately in the little space remaining. But I think the general model should be clear by now. In spite of Aristotle's rather archaically sounding talk of incoming motions reaching the soul, his account can address the 'hard' philosophical question of phenomenal experience, at least in the most basic form in which it occurs in nature. Aristotle presents us with a very simple (if not crude) but also powerful account of perceptual discrimination that has the remarkable feature of actually *explaining* the production of basic phenomenal content in the animal without making the soul the subject of mental episodes.

I would like to conclude by again emphasizing that my interpretation focused on the simplest achievement of perceptual discrimination, the production of special *per se* objects of perception, single colors, sounds and so on. This is only the very first beginning of cognitive achievements on the *scala naturae*.<sup>50</sup> And it is only for this basic form of perceptual discrimination that I suggested how it can be regarded as an active doing, namely in the weak sense of a subpersonal activity of the living body that is neither quite a doing nor quite a passive affection. Higher forms of perceptual discrimination may well involve much more of the animal's own activity. I would maintain that for Aristotle they even *have to*, but there is no room to argue for this here.<sup>51</sup>

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<sup>50</sup> This is, as said above, the point at which animals differ from plants *minimally*. The reason why plants do not perceive, even though they are affected with the same kind of perceptible input as animals are, is precisely that they have no perceptual mean – and hence are incapable of discriminating – nor a principle capable of receiving the perceptual forms without their matter (DA 424<sup>a</sup>32-b3).

<sup>51</sup> See above, p. \*\*. Aristotle speaks of discrimination (*krinein*) with regard to *all* forms of cognition, perceptual and intellectual (e.g. DA 404<sup>b</sup>25-27). Since the content of higher forms of perceptual cognition may not be exhausted by what causally affects the perceptual system of the animal (cp. DA 418<sup>a</sup>23-24), it seems that there are different ways in which perceptual discrimination can work: basic discrimination seems to be exactly *about* what causally affects the perceptual system at a given point of time (which is why it does not seem to be representational), whereas higher forms of perceptual cognition may be not (and hence may perhaps be regarded representational). I believe that the production of the objects of higher objects of perceptual cognition involves a great deal of active 'construction' by the perceptual system and I am also inclined to think that the efficient cause of this 'constructing' is the animal itself. But in spite of this active involvement of the animal in the production of perceptual objects it seems that for Aristotle all forms of perceptual discrimination do *involve* affections and that he also thinks that this feature is their common essential characteristic. This is different in the case of intellectual discrimination. Aristotle insists that intellectual



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thinking is not itself an affection – although it does *involve* a great deal of affection as necessary conditions (see e.g. *De Mem.* 449<sup>b</sup>31-450<sup>a</sup>1; *DA* 403<sup>a</sup>9; 427<sup>b</sup>15; 431<sup>a</sup>17, <sup>b</sup>2; 432<sup>a</sup>8-10). From this it seems to follow that the notion of intellectual discrimination is not the same as that of perceptual discrimination. This, it seems to me, is as it should be, given that thinking and perceiving are supposed to be two different *kinds* of cognitive activity.

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