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Perceptual Experience: Assembling a Medieval Puzzle

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1. Introduction

A simple explanation of sense perception might go as follows: perception is conscious reception of perceptual qualities of an external object. When I see a duck or hear a chime of the bell, the color and shape of the duck, or the vibration of air that the bell causes, act upon my senses and I become aware of these qualities. However, sense perception is rarely such a simple process, since we do not perceive isolated qualities. Sounds that we hear and colors that we see are moving or at rest, and they have certain intensity or size and a location in relation to us and to other objects. Moreover, our perceptions require that we pay attention to our surroundings, and often we make various kinds of judgements and react emotionally to things that we perceive, and so forth.

Medieval philosophers acknowledged both aspects of the perceptual process. They analyzed the reception of perceptual qualities and the more complex psychological processes that are related to perception, and they did so by using a theoretical framework which is commonly referred to as 'faculty psychology.' The core of this approach was to make fine grained distinctions between various faculties (or powers) of the soul and attribute different elements of the complex perceptual process to them. This way of doing cognitive psychology can be compared to a jigsaw puzzle. A detailed and philosophically rigorous explanation of psychological operations was reached by dividing them into simpler sub-processes—just like a picture can be divided into small pieces—and concentrating on analyzing these sub-processes one by one.

This method was analytical and it enabled a systematic analysis of the details of limited and well-defined processes that form a part of human (and animal) psychology. On the downside, this method leads to a kind of modular picture, in which perception appears to be a distinct process from, say, memory, estimation and intellectual operations. Due to this, modern scholars tend to discuss medieval theories of perception in isolation from medieval theories of higher cognitive functions. Of course there is nothing wrong in dividing the subject matter along the medieval divisions, but this approach obscures the fact that we can understand medieval psychology of perception in a wide sense only by considering also the higher cognitive activities of the soul—the functions of the so-called internal senses and perhaps even intellectual powers—insofar as they contribute to perception. In other words, we need to assemble the whole puzzle in order to see the picture, which represents what may be called *perceptual experience*: the experience that the complex perceptual process, involving all the relevant cognitive powers of the soul, yields for the percipient.

The aim of the present essay is to propose a new perspective in which the complete picture is as important as the individual pieces. I shall begin by presenting the pieces of the medieval jigsaw puzzle of faculty psychology and their basic functions. Then I shall assemble the pieces back

together, thereby showing what medieval philosophers had in mind when they undertook the task of explaining human (and animal) cognitive psychology. The main emphasis will be on psychological issues, and I shall leave physiological and metaphysical questions largely aside—although it is clear that in order to say anything intelligible about medieval psychology, we need to know quite a bit of metaphysical aspects as well.

Thus, my central claim is that the starting point of medieval discussions was a complex and holistic perceptual experience, and that we may appreciate the sophisticated elements that were included in this experience, if only we realize that *all* the pieces of the psychological jigsaw puzzle contribute to it. A historically rigorous study would of course need to analyze medieval authors and their views concerning perceptual experience one by one, and point out the differences and similarities between their different theories, but this kind of detailed presentation cannot be accomplished in a short essay for the obvious reasons.[1]

2. The Pieces and their Functions

Medieval theories of perception were heavily influenced by Aristotle's psychological works after they were translated into Latin in the twelfth and thirteenth centuries, but two other traditions were in many respects equally important. Arabic natural philosophy and early Latin discussions on the soul and its functions, both of which were deeply rooted in Ancient Greek philosophy, contributed to medieval theories and in many cases affected the way Aristotle's ideas were understood and adapted.[2] Especially important was the idea that psychological processes can be analyzed as functions of more or less independent powers of the soul. Just as the apprehension of different sensory qualities (color, sound, etc.) was attributed to the five external senses, more complex psychological operations were associated with distinct powers of the soul.

Medieval philosophers used several criteria to divide and organize these pieces of the psychological puzzle. One of the most fundamental divisions was made between rational and irrational powers of the soul. The rationale for this division was the idea that rational powers enable thinking of universal concepts and understanding the essences of things, whereas irrational powers can comprehend only particular objects and qualities. From a practical perspective, however, the rational powers of the soul were thought to differ from the sensory ones for the simple reason that some cognitive subjects have only the latter whereas others have both. Human beings and other animals have the sensory powers, which give them the ability to move and perceive, but only human beings are endowed with the intellect, which enables psychological processes that go beyond individual and particular objects.

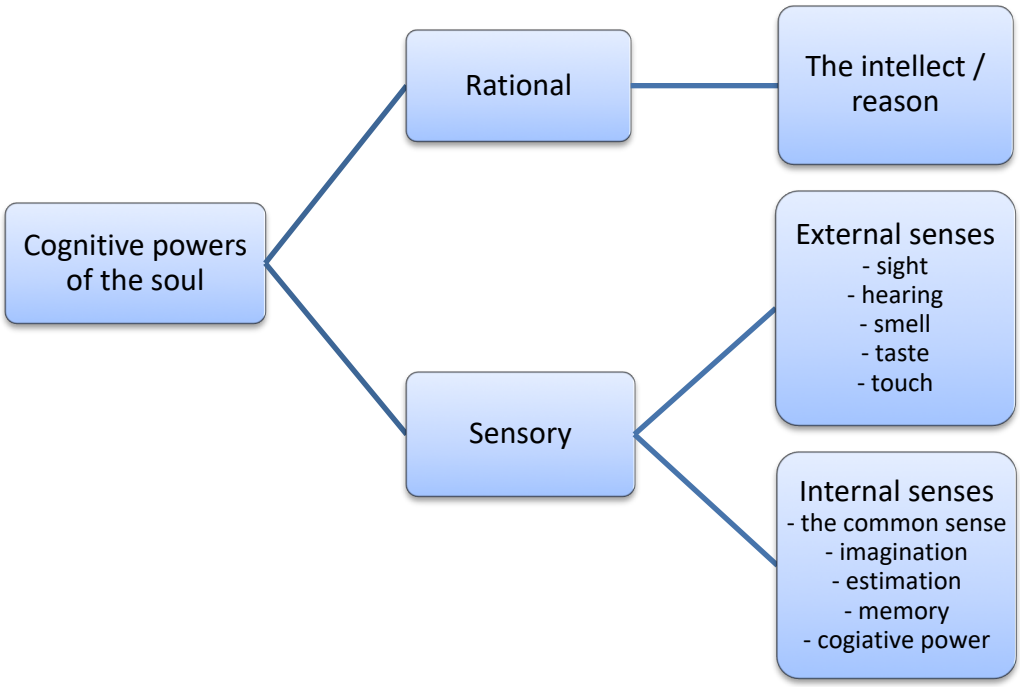
This view was calcified in Aristotle's influential division into three different kinds of souls—the vegetative, the sensory, and the rational. Due to their rationality, human beings are capable of understanding the definitions of things and to place them into a systematic taxonomy of species and genera. Thirteenth century authors usually thought that the sensory powers are necessary for intellectual understanding, because abstracting universal essences from particular objects rests upon sense perception. However, sometimes the influence was thought to go also to the other direction. Some medieval authors claim that human rationality changes the way in which some of the sensory powers operate—for instance, we are capable of actively searching from our memory

things that we have forgotten whereas irrational animals are more passive with respect to their memories[3]. Due to this overflow from the rational soul, the intellectual operations may have an effect on our perceptual experience, at least in some cases[4]. This means that the perceptual experience may be different in the case of human beings and in the case of non-human animals even when the circumstances are otherwise similar, just because the psychological puzzle contains more pieces in the first case. The human ability to use language, for example, may change the way external particular objects appear in our experience: one might say that when I see a duck, I never see it without having some kind semantic content that qualifies my perception. It is important to note, however, that it is not clear to what extent medieval philosophers accepted the idea that the rational powers permeate the lower cognitive functions. It is quite obvious that there were different opinions, and therefore all kinds of generalizations should be avoided.

Moving downward on the scale of cognitive powers, we encounter the sensory powers of the soul. These powers are divided into two groups. First there are the five familiar external senses—sight, hearing, smell, taste and touch. The primary function of the senses is the apprehension of various perceptual qualities of external objects. The other group of sensory powers includes the so-called 'internal senses'. Medieval philosophers disagreed on the number of these powers and the details of their functions, and sometimes they used different names for them, and therefore there was no single theory of the internal senses. Yet, there were certain generally accepted ideas, especially concerning the criteria by which internal senses were distinguished from each other. One criterion was that powers that pertain to different kinds of objects are distinct; the second distinguished receptive powers from retentive ones. By using these two criteria, medieval philosophers arrived at a well-known fourfold division: the common sense receives the sensible species and imagination retains them; the estimative power receives the so-called intentions (*intentiones*) and the memory retains them. Intentions were considered either as insensible properties that enter the soul of the percipient together with sensible species, or else as relations between the percipient and the object. The main function of intentions and the estimative power was to explain how the percipient is able to make evaluative judgments that lead to an emotional reaction. The famous Avicennian remark that a sheep flees a wolf is a prime example of this process.[5] When a sheep perceives a wolf, its estimative power enables it to apprehend the wolf as dangerous and harmful, and this kind of estimative perception causes the emotion of fear and the flight. Some authors added a third criterion by which active imagination was separated from the other powers, which were considered to be passive, but this addition was not generally accepted.[6]

These five powers were thought to explain various complex elements of cognitive processes. Some of their functions are related directly to external objects during perception, while some of them are post-sensory, which means that they enable processes that do not involve perceiving an external object at the moment (for instance imagination and memory). With this general framework, medieval philosophers were able to analyze both the simple reception of a perceptual quality and the more complex aspects of sense perception as functions of these powers.

The pieces of the psychological jigsaw puzzle can be systematized in a diagram as follows:



Animal species differ from each other with respect to the number of pieces their psychological puzzle contains.[7] Simple animals, such as worms, have only the sense of touch and perhaps the common sense. Higher animals have all the external and internal senses, and on top of that, human beings have the intellectual powers. This difference between various species brings a further complication to our endeavor to assemble the medieval puzzle: the complete perceptual experience is different in the case of simple animals, higher animals, and human beings. I shall leave the simple animals aside for brevity's sake, but it is good to remember that the following discussion applies to human beings and higher animals. If we want to know how worms and the like perceive their environment, we need to leave out the more complex psychological functions that will be discussed below.

A great deal of medieval psychology is related to these psychological powers. Philosophers discussed their physiological aspects and their relation to the bodily organs, the metaphysics and the functions of the pieces, the "mechanics" of the functions, and so forth. Questions were raised, for instance, on the mutual relations of the powers of the soul (Are senses distinct powers or functions of one sensory power? What are the criteria for distinguishing various powers from each other?), the mechanism of sense perception (How perceptual qualities actualize the senses? What does it mean that the sight is the most spiritual of the external senses?), the anatomical location of the powers, as well as the relation between cognitive acts and physiological changes. All these aspects are important if we want to understand the details of any medieval theory of perception, but I shall provide here only a general outline of the most important aspects of the discussions, because mostly they are not relevant for our purposes—the metaphysical and other similar details of theories of perception are but a foundation, which sets the stage for analyzing their psychological aspects.

Philosophical discussions concerning the mechanics of perception were important in the natural philosophy of the thirteenth century. As I already mentioned, medieval Latin authors combined elements from Aristotle's philosophy and the Arabic tradition. Moreover, they interpreted Aristotle's

texts in light of the new innovations that Arabic philosophers had made. Two of these innovations are especially important. First, the so-called perspectivist theories of perception that focus on analyzing the rectilinear propagation of light and vision led medieval Latin authors, such as Roger Bacon (ca. 1214–ca. 1292), Vitello (ca. 1230–before 1314), and John Peckham (ca. 1230-1292), into detailed discussions concerning the nature of sensible species and optics.[8] Second, Avicenna's theory of the internal senses, which incorporated elements from Galenic anatomy and physiology, played a crucial role in the development of Latin cognitive psychology, including theories of perception. Within the framework set by these two traditions, scholastic authors presented an array of theories that differed in many details.

Generally the process of perception was explained by using a technical term *species*, which accounted for the connection between a perceived object and the perceiving subject or, to be more precise, her perceptual powers. There was no consensus, however, how exactly the perceptual species are supposed to bridge the gap between the percipient and the object. In fact, medieval authors did not even agree upon the exact nature of sensible species. Some authors understood them as forms—as spiritual actualizations of the medium and the organs of sense (Thomas Aquinas (1225–274), for instance)—while others argued that they are material or physical entities, which explain natural changes in general (Roger Bacon). Yet, despite of these differences, the general approach was to consider perception as a complex process that begins from the material object and turns into an immaterial or spiritual reception of the intentional object of perception[9]. The reception of the species in the medium is the first step, and in the next stage the species is received by the external senses. Most authors agreed that the species is abstracted from its materiality in the sense powers, if not before, but not of its particularity, as the sensory powers cannot grasp universal objects.

Another distinction that can be used to classify medieval theories of perception is related to the direction of influence. Many authors accepted Aristotle's position that external objects cause changes in the organs and/or in the powers of the soul and bring about perceptual acts by actualizing potency to perceive that is in the senses.[10] By contrast, there were authors who were inspired by Augustine's Neoplatonist ideas concerning the ontological superiority of the soul with respect to material objects. Although Augustine's suggestions that seem to defend a visual ray theory were not usually regarded true, many medieval authors tended to emphasize the active elements in perceptual process – for instance, some of them built on the fact that we perceive only those things to which we pay attention. On this basis, they argued that perception is not passive reception of external stimuli but an active process.[11] Of course the difference between active and passive theories of perception is gradual, and many authors combined both elements, and there were also several different strategies to emphasize the active nature of the soul. Some authors accepted the Augustinian formulation that the soul pays attention to the changes in the body, while others argued for a more radical version according to which the soul pays attention directly to the external objects.[12] As Aristotle's natural philosophy was an important source of philosophical vocabulary and insights into the process of perception, even those who accepted the most radical versions of the ontological superiority of the soul and rejected Aristotle's theory of perception on this basis usually expressed their own views in Aristotelian terminology.

Despite their differences, all these theories shared a common feature. Medieval authors were unanimous that the action of the external senses alone does not account for complete perceptual experience. We do not have a full account of sense perception when the connection between an external object and the external senses is explained, since some elements of perception can be explained only by the activity of the internal senses. Thus, Alexander of Hales (ca. 1185–1245) argues that:

[...] a particular sense is perfected by the common sense. Because the organs of the particular senses are bipartite [...], as is the case in two eyes and two ears, and still the sensible object does not appear to be two but one, it is necessary that it is conveyed to one internal organ. Because the species is thus simultaneously in the external and internal organs, the perfection of a particular sense is done by the common sense, when it is perfected in the internal organ. This applies to all the senses.[13]

Alexander expresses here a common view that perception is completed only with the common sense. The simple reception of perceptual qualities by the external senses is imperfect, and the common sense makes various kinds of additions to it. The core of Alexander's argument is that the object *appears* to the percipient as one, even though it is received via two different channels and two acts (in the case of seeing, the two eyes and their acts). In other words, he thinks that perceptual experience comes about as a collaboration of the external senses and the common sense: without the eyes and the power of sight, the object could not be seen in the first place, but in order to explain the experiential fact that we see one object and not two images of it, we have to appeal to the common sense[14]. All three acts—two acts in two eyes and one in the common sense—are necessary for the complete perceptual experience of the external object.

The general twist of Alexander's argument suggests that a unified perceptual experience results from the co-operation of various powers of the soul—not only from the external senses and the common sense, but from all powers that function together. Even though medieval philosophers discussed the functions of the powers of the soul one by one, it seems that their understanding of psychological activity was holistic. The division into separate powers was a result of an analytical process of dividing complex mental operations into narrower sub-processes, and when medieval philosophers made fine grained divisions between various psychological functions that are related to sensory cognition, they were in fact analyzing different components of a complex but singular perceptual process.

A strong support for this kind of reading comes from the fact that they often tried to explain how experiential unity comes about. Avicenna addresses this problem by pointing out that we experience different kinds of acts of the soul in such a way that they belong to one and the same subject: "Moreover, we sometimes say 'When I perceived such-and-such, I became angry.' Since this is a true statement, it is one thing that perceived and then became angry."[15] This experience is either due to the fact that various powers belong to one soul, or because one of the powers of the soul somehow brings about the unitary experience (for instance by apprehending the acts of other powers),[16] but for our purposes the details of the explanations that various medieval authors gave for this experience are less important than the fact that they felt the need to address it in the first place. They took the experiential unity as granted, and the central philosophical problem was to explain it. It was a problem precisely because faculty psychology distinguishes the powers of the soul and

attributes precise functions to them. When the pieces of the psychological puzzle are taken apart and considered separately, it is far from clear from where the unitary experience comes.[17]

Before expounding on the various kinds of additions that the powers of the soul make to perception, there is one difficulty that needs to be dealt with. Namely, a typical way of understanding medieval theories of internal senses is to see them as information processing models[18]. According to this model, the external senses receive information from the object, which is then gathered and compiled by the common sense. This information then proceeds to the next power in the hierarchy of the internal senses, which processes the information further before handing it over to the next power, and so forth. A new psychological operation takes place in each of these successive stages, and there may even be a temporal order between the acts (in addition to the rather obvious logical order). The rudimentary physiological models that medieval philosophers used to locate the internal senses in the chambers of the brain support this interpretation, since one reason for localizing the powers was that damage in a certain area of the brain destroys some functions but leaves others intact. If two processes are really distinct from each other and take place in different places, it makes sense to think that they are separate from each other. One might argue that if this is the correct description of medieval views, their starting point was not a holistic perceptual experience.

However, there are reasons to believe that at least some medieval authors understood the cognitive operation of the soul more as a complex but unified process, in which the subject is not necessarily aware of the process itself, but only of the result of the combined action of several of the powers of the soul. Take Avicenna for example. Even though he locates the estimative power into the back of the middle ventricle of the brain,[19] he occasionally argues that functionally it resides in the entire brain and that one of its tasks is to govern the whole cognitive process of the sensory soul, from the initial sense perception to various kinds of judgments that are related to the process of perception.[20] On this basis it may be justified to say that the result of the complex mental process is primary, and the analytical division into various powers and sub-processes is but a way of trying to understand and explain it.

At the outset it is difficult to say whether medieval authors considered these as two incompatible models—and if they did, which one they accepted. For our purposes it suffices to note, however, that these models are not necessarily different when it comes to the psychological experience that the internal senses were meant to explain. The information processing model may also be understood as resulting in a unified experience that includes the various additions, caused by the whole process that unfolds through the action of successive powers, and the subject need not be aware of the processing of the information. To repeat the Avicennian example, a sheep does not first perceive a wolf and then have a separate experience of judging that the wolf is dangerous. Rather, it has an instantaneous and complex experience of seeing the wolf *as* dangerous. Similarly, when I see a red object and recognize it as an apple, I do not experience seeing the color and recognizing it as an apple as two distinct steps in a process. Even less do I feel them as two distinct acts. I just have a complex experience of seeing a red apple. After having this experience, I may analyze it into more basic elements (an act of seeing a color, and an act of judging that this instantiation of red is an apple), but the experience is primary and the analysis comes only after that. Even though medieval philosophers attributed these two acts to two distinct powers and often discussed them in

separation from each other, it can be argued that their idea was to analyze a complex experience without claiming that these elements would be distinguished in our experience.

This experiential unity was sometimes used to make a metaphysical claim that the internal senses are not distinct from each other. Peter Olivi (ca. 1248–1298), for instance, points out that: "Certainly, when we do this [viz. exercise different psychological functions], we do not perceive ourselves as operating now with one power and then with another. Rather, we perceive that the act and the attention (*aspectus*) of one and the same power vary in many ways."[21] Olivi argues that there is no need to suppose that we have more than one internal sense, the common sense, If we had, our phenomenological experience would be different. Most medieval authors did not make such metaphysical claims, but they seem to have accepted the experience.

If this is on the right track, then we may think that a typical case of sense perception involves the whole psychological apparatus, ranging from the external senses all the way to the highest cognitive powers of the sensory soul, and possibly even to the intellectual powers in the case of human beings. Of course, some of the functions that were attributed to the internal senses are not directly related to perception. For instance, the contents of the mental acts of imagining an absent object or remembering a thing that happened in the past do not come from sense perception, and it is possible to see an instance of red color without reacting emotionally to it. Yet, all the internal senses affect the perceptual contents in some cases. When a person perceives an object that she has seen before and recognizes it as familiar, the recognition is an addition made by the memory, but it is an addition to the perception. Even imagination may alter the perceptual experience, at least in the case of a person who suffers from a mental disorder and sees fictional objects created by his imagination around him[22]. When the powers act simultaneously or their acts are part of one unified process, the resulting perceptual experience is affected by all of them. Thus, even though perception proper closes with the common sense, the acts of other powers of the soul are nevertheless part of perceptual experience in a wide sense, and their results cannot be distinguished from perception in the phenomenal experience of the subject.

The approach of looking at medieval discussions on cognitive psychology from the viewpoint of perceptual experience is neutral with respect to the metaphysical views concerning the relations of the powers of the soul. Even if they are considered distinct from each other—as distinct forms that together constitute the soul or, more typically, as distinct properties or potencies of the soul[23]—they still function together and are causally connected to each other. And if the powers are considered to be identical in such a way that they are only different functions of one cognitive power,[24] then it is obvious that they come together to form a unified experience. In both cases the complex experience is, in principle, the same.

3. Assembling the Puzzle: Perceptual Experience

Even though the functions of the powers of the soul were analyzed separately, it is clear that the powers were thought to operate together. As I already mentioned, the principle that two powers can be considered distinct from each other if one of them can act without the other (or if we find animals that can do one thing but not the other) means that the powers are in some sense distinct

from each other and do not necessarily and always work together. However, many operations of the internal senses can be understood as adding new cognitive elements to the mere perception of proper sensibles, and by looking at cases in which they *do* work together, we can see what kind of contents perceptual experience may yield.

Let us begin with the first power in the ascending hierarchy of the internal senses, the common sense. One of the fundamental additions to the perception of a single property is related to the idea that I mentioned above, namely that the common sense accounts for the unity of perception. We see through two eyes, and if perceptual experience were a result of the acts of the power of vision that is divided into two eyes, we should see two objects instead of one. In addition to this kind of unity, medieval philosophers discussed intersensory unity: the proper objects of the five external senses are united in our experience, when they belong to one object. When I see a duck and hear its quacking, I am aware that these two qualities (the color and the sound) are different from each other and yet belong to the same external object, the duck. The fact that we have both of these abilities—we can distinguish the sensory qualities perceived via two external senses and apprehend them as belonging to the same object—was one of the main arguments that were used to prove the very existence of the common sense as the unifying power behind all the external senses. As Averroes puts it:

If the final percipient were in the eyes, or in the case of taste in the tongue, then it would be necessary to judge by two different [powers] when we judge sweet to be different from white. [...] For if it were possible to judge these two to be different through two different powers, each of which individually apprehends one of those two, then it would be necessary that when I would sense that a thing is sweet and you that it is white, and I did not sense what you sensed nor you what I sensed, that I apprehend my sensible to be different from yours, although I do not sense yours [...] This is clearly impossible.[25]

We are aware of both sweetness and whiteness because both of these qualities are transmitted from the external senses to the common sense. There must be one power that apprehends both of them, because otherwise they cannot be compared to each other, as one external sense is incapable of cognizing the objects of the other senses. Thus, the common sense functions as a "first percipient", the task of which is to unify the information coming from various senses. Averroes, like many of the medieval Latin philosophers, concentrates on explaining how the common sense is required for distinguishing sensible qualities from each other, but it was commonly agreed that this ability rests on the unity that the common sense provides. When it receives different sensory qualities that happen to belong to one object, it combines them and thereby allows us to perceive them as such. Albertus Magnus (ca. 1200–1280) presents this side of the idea with particular clarity:

The proper sensibles are united in the common sense. For, if there was nothing in us where whiteness and sound were united, we would not know that the thing, the sound of which we hear, is white. The unity of whiteness and sound is apprehended neither by the eyes nor by the ears, but by the common sense.[26]

Again, the starting point seems to have been a unitary experience of a perceived object, and the philosophical problem was to explain how the unity and the distinctions between various aspects of the experience come about, given the framework of faculty psychology.

In addition to the proper sensibles of the external senses, medieval authors acknowledged the perception of the so-called common sensibles, which are properties that can be apprehended by several senses. Upon seeing a color, hearing a sound, or perceiving any of the proper sensibles of an object, we simultaneously perceive its location, magnitude, figure, unity, and movement. Different lists of the common sensibles were presented—Roger Bacon argues that there are a total of twenty nine of them[27]—and there was a controversy whether they are perceived by the external senses or by the common sense. Some authors even seem to reject that the common sensibles form a unified group of perceptual properties, pointing out that the common sensibles that are related to an object of one of the external senses are numerically distinct from those of another sense. Thus, the magnitude of a color and that of a sound are not the same magnitude, and therefore they are not common in the relevant sense. Without going into details, we may note that apprehending common sensibles was considered as an integral part of the perceptual process. We cannot perceive external objects without perceiving them in a certain place, as having a certain magnitude, and so forth. In our perceptual experience all these elements are united and appear in connection to the perception of an external object, regardless of the number of powers of the soul that are involved in the complex process of perception. Thus, when I perceive a quacking duck, I perceive it as one thing which is in a certain place and distance in relation to myself, as stationary, as having a certain size, and so forth.

Further, if I were a fox, I would perceive the duck as delicious. A fox does not even need to taste the duck in order to apprehend its flavor, because of an ability that medieval philosophers called, following Aristotle, 'accidental perception':

Note, therefore that there are per se *sensible and accidentally sensible things. The accidentally sensible things are when an object of one sense is said to be perceived by another, as when it is said that sweetness of an apple is seen. This is accidental perception, because the sweetness is an object of the sense of taste. It is said to be seen accidentally, that is, through another (namely, through the red color of the apple); the sweetness is perceived* per se *and properly only by the sense of taste.*[28]

Accidental perception can be thought of as a way of becoming aware of a perceptual quality that is not actually perceived at the moment. When a fox sees a duck from a distance, it does not sense the flavor of its flesh, but it is still aware that the duck is tasty. It is clear that in some cases the ability to perceive an accidental quality is acquired through learning and experience, but the crucial point is that accidental perception forms an integral part of the perceptual experience after it has been acquired. Thus, when Dominicus Gundissalinus argues that: "if these [qualities] were not connected in the imagination of animals (which lack the intellectual power), they would not desire to eat a thing which has a certain shape and is sweet when they see it, although they are inclined by their own desire to sweetness,"[29] his central point is that the taste of an object figures in its perception, and that the shape and sweetness are apprehended as properties of the same object. If animals just imagined sweetness without perceiving it as a property of the object they are seeing, they would not know to eat that object when they desire sweet food. Now, regardless of the philosophical problems

that may lie behind this view, one thing should be clear: the visible qualities of the sweet object and its sweetness are connected in the perceptual experience of the animal.

A closely related addition that the estimative piece of the psychological jigsaw puzzle makes to perceptual experience is the apprehension of intentions (*intentiones*). I already mentioned that these were considered either as relations or as insensible qualities that enter the soul of the percipient together with the sensible species and affect the estimative power directly. The main reason to argue that the external senses or the common sense cannot perceive intentions was that they cannot be reduced to sensory qualities. A sheep does not run away from a wolf because the wolf is ugly (or grey, big, furry, moving etc.), but because it is dangerous and harmful, and harmfulness as such cannot be seen. An important presumption behind this line of reasoning is that the same sheep does not fear dogs even when they appear similar to wolves. To use another example, which Latin philosophers took from Avicenna's *De anima*, a sheep cares about its own offspring, not because it looks different from all other lambs, but because the sheep recognizes it by apprehending a special intention in it.[30]

Certain medieval philosophers thought that estimative judgement requires that the substance of the perceived object affects the estimative power. After explaining how estimation takes place, Roger Bacon concludes that: "the claim that substances are not perceived by sense is to be understood with reference to a particular sense and the common sense and imagination; but it can easily be perceived by the estimation, which, although it is not called a sense, belongs none the less to the sensitive soul."[31] Bacon's idea is that the sheep has to be aware of the wolf as a harmful substance in addition to perceiving its sensory qualities, because the perception of the sensory qualities alone does not explain the reaction of the sheep. Interestingly, he seems to think that animals perceive things around them as certain kinds of substances, and that perception conveys information that goes way beyond the proper objects of the senses. He does not say it explicitly in this connection, but it seems that already animals perceive the world as divided into distinct substances to which the sensory qualities belong.

Later this kind of conception of the estimative function was criticized by John Duns Scotus, who famously argues that intentions can be ditched completely, because learned or instinctual reactions to certain constellations of sensory qualities sufficiently explain the behavior of animals. If a sheep miraculously has all the perceptual qualities of a wolf, other sheep flee from it.[32] Before Scotus it was commonly agreed that the act of the estimative power is not a part of perception proper. However, by claiming that an intention enters the soul *with* a sense perception, medieval authors wanted to say that it is not possible to apprehend an intention without perceiving an external object to which the intention belongs.[33] Thus, the estimative judgment "*X* is harmful" or "*X* is something that I need to take care of" presupposes the perception of *X*. The estimative judgement was not considered to be a part of the elementary perception of an external object, but when the percipient does receive the intention alongside the perceived object, it clearly forms an integral part of the perceptual experience: the wolf is perceived *as* harmful, and the only way to distinguish the awareness of harmfulness from the perception of the wolf is by a philosophical analysis of the complex experience. Human beings are rational and can therefore apprehend harmfulness as an abstract property, whereas irrational animals only perceive material objects as harmful. According to Alexander of Hales, "rational estimation apprehends also intentions that are abstracted from matter,

but the sensory estimation apprehends them in connection to sensible forms, which is not beyond matter."[34]

In many cases estimative perception is innate, but medieval authors acknowledged that animals may also learn to perceive external objects as harmful or useful. John of la Rochelle (ca. 1200–1245) expresses a typical idea when he argues that there are three kinds of estimative judgements, one of which

is through experience, as happens when an animal suffers pain from or takes pleasure in a thing, the form of which is registered in the formative power or imagination, and the intention of usefulness or harmfulness is registered in the memory. Immediately when that thing appears outside, the wickedness or harmfulness is in the estimation. This the reason why dogs fear sticks and stones, because they estimate that they are harmful, and they are attracted by bones, because they estimate them pleasurably.[35]

It is easy to see the connections between this type of estimative judgement and accidental perception that was mentioned above. A dog learns that sticks and stones cause pain through experience, and afterwards it becomes afraid upon seeing a stick or a stone.

One interesting aspect of this idea is that it seems to require that dogs are capable of making generalizations. A dog that has been beaten with a stick will fear any stick, not only the one that was used in the first beating. This phenomenon was not often discussed, perhaps because medieval authors do not seem to notice any philosophical problem in it. This is somewhat puzzling, as they were so adamant that only rational beings are capable of apprehending universal concepts, and that sensory powers deal only with particular individuals. One might think that this division of labor between the powers of the soul would rule out the possibility that animals are able to generalize, but there are reasons to think that this was not the case. The idea that irrational animals can make generalizations appears every now and then, without ever (to the best of my knowledge) turning into a detailed philosophical analysis of how this takes place.[36] One of the most striking defenses of this idea is the following passage from Roger Bacon's *Perspectiva*:

But it is clear that a dog recognizes a man, whom it has seen before, and that apes and many other animals also do this. And they distinguish between things they have seen of which they have memories, and they recognize one universal from another—as man from dog or wood—and they distinguish different individuals of the same species. Thus, this cognition [...] belongs to brute animals as well as to humans, and therefore it happens by a power of the sensory soul.[37]

It has been argued that for Bacon, recognizing that the thing perceived is a human being rather than a dog would be an intellectual process,[38] but on the basis of this passage it seems clear that animals are capable of distinguishing one universal from another. Moreover, he attributes this ability to the sensory powers of the soul also in another place.[39] It is nevertheless quite obvious that even though he uses the term *universale*, he does not mean that animals would be capable of cognizing a real universal concept. Rather, his idea seems to be that animals perceive natural kinds. If two objects belong to the same species, animals perceive their mutual similarity as well as their difference to the members of any other species without understanding the definitions or essences of these things.[40]

One might think that this kind of ability to perceive natural kinds is a necessary precondition for forming a universal concept that applies to all members of the species, because that would neatly explain why universals are abstracted from a certain group of individuals or individual properties. Medieval philosophers did not think (not before the fourteenth century at any rate) that concept formation is an arbitrary process. It reflects the objective hierarchical structure of the world, which is divided into a descending order of genera and species. Human beings are capable of grasping this hierarchy and placing each species in its proper place—in other words, humans are capable of scientific understanding—but as all knowledge is abstracted from sense perceptions,[41] it seems that there has to be a mechanism that explains the ability to recognize which particular objects are similar to each other before the universal concept is formed. Bacon and other medieval authors may think that the ability to perceive natural kinds is meant to be such a mechanism, but unfortunately he does not provide any explicit consideration of the matter.

Yet, even if this manner of recognizing natural kinds were an intellectual process—and it is likely that for most medieval authors it was—it would play a crucial role in modifying at least the way human beings perceive external objects. If the classification and comparison are done by intellectual powers, they still are part of our perceptual experience. The direct consequence of this remark is that if we want to understand medieval conceptions of perceptual experience, we must be prepared to take into consideration the operations that lay beyond the initial stages of the complex cognitive process that is related to the objects around us. It is not obvious that this necessarily leads us all the way to the intellectual powers, but when it does, we must take also them into account and accept that there are two kinds of perceptual experience, one for irrational animals and other for rational human beings.[42]

Until now we have considered various aspects of perceptual experience that originate in the perceived object, but the cognitive powers of the soul also add contents that are not really there. Even if we leave out imaginary visions caused by mental disorders, medieval philosophers recognized several cases in which we see things that do not exist in reality. Sensory illusions and other similar appearances are good examples of these kinds of additions to perceptual experience. The general idea was that the internal senses participate in the process and alter the way objects appear to us. Peter Olivi summarizes his view as follows:

Moreover, the common sense perceives so intimately the objects of the external senses in their places that many acts of the common sense appear as acts of the external senses. This is clear because it seems to us that the pictures of diverse clothes and members in a painting have different thicknesses and are placed over each other, as if the colors of the painting were solid bodies. They appear to us in this way because the estimation of the interior sense has shown this to be the case in human beings who are depicted in the paintings. Likewise, when a burning branch is whirled in a circle, it appears as if we were seeing a kind of a circle of fire. And yet [the power of] vision does not see the circle in any instant—neither when it is made nor after it has been made—but it sees only one part of it after another and never the two at the same time. But the interior sense apprehends the circle through the memory which preserves past things and offers things that have recently been done or seen as if they took place now and were seen now. There are numerous other things that are apprehended or

estimated only by the interior sense, and yet they are ascribed to the external senses because of the intimacy of the interior sense with the external senses.[43]

One the most important ideas that this passage conveys is that all the various additions that the common sense makes to perception appear as if they were acts of the external senses. This confirms that the complex perceptual experience is a result of the collaboration of several powers of the soul. We see the flat surface of a painting as a three-dimensional image and this *is* the content of our perceptual experience regardless of the fact that it is brought about by several acts that belong to different powers. Even those powers that do not contribute directly to the simple perception of an external quality may have a crucial role in forming the overall experience.

The idea that the common sense accounts for those aspects of perception that are not instantaneous shows that unitary perceptual experience may have an extension in time. The temporal sequence of instantaneous images of a whirling torch appears in our experience as a circle of fire. Another similar example that medieval philosophers repeated is a falling raindrop. The sense of sight sees single static images one after another, but the common sense adds a temporal dimension to our perceptual experience, and it appears to us as if we were *seeing* a line.[44] The content of our perception is constituted of acts that take place over time. This temporal flexibility may have an important consequence for the information processing model of the internal senses, because it opens up the possibility to overcome a temporal order between the functions of the internal senses. For instance, when we perceive a thing that we have seen before and recognize it almost immediately and without difficulty, there may be a short interval between the perception and the recognition, but we are not necessarily aware of it.[45]

Finally, certain functions of the internal senses are related to the perceiving subject instead of the perceived object. One of these functions, the perception of perception, was discussed extensively in medieval philosophical psychology: when someone perceives an external object, she is immediately aware that she perceives that object. The second-order awareness was considered as an integral part of all sensory acts, and the only disagreement concerned the metaphysical and psychological explanations that were given to it.[46] This inherent reflexivity enables the percipient to be aware of the way in which the object is perceived. Upon hearing a sound or seeing a color, we are aware that we are *hearing* the sound or *seeing* the color. It is obvious that we do not normally confuse sense modalities and have an experience of, say, seeing a sound. However, the fact that we distinguish things that we see from things that we imagine seeing calls for an explanation, and second-order perception was used as such. Mentally ill and sleeping persons lose the ability to distinguish whether the content of their minds comes from without or from the imagination, but ordinarily the common sense apprehends whether the senses are functioning or not, and thereby provides awareness of the modality of perception.[47] Thus, one of the additions that the common sense brings to perception is a kind of awareness of the activity of one's own senses.

What about the percipient herself? Is it possible that perceptual experience involves some kind of self-awareness, in the sense that in every act of perception the perceiving subject is somehow present as a part of the experience? This question is philosophically difficult and highly controversial, but there are reasons to think that at least some medieval philosophers answer in the affirmative. They claim that every cognitive act is necessarily accompanied by what might be called 'implicit self-

awareness', in distinction to 'explicit self-awareness' where one's cognitive activity is directed to herself as an object. An example of explicit self-awareness is when one thinks about herself as a subject who is seeing an external object. By contrast, implicit self-awareness does not require that the cognitive act of the subject is directed at herself. Rather, the subject is explicitly aware of the external object and nothing else, but she nevertheless experiences the seeing as something that happens to her: there is a kind of feeling of ownness involved in the act of seeing.[48] It is possible to argue that implicit self-awareness is a necessary condition for being able to refocus one's attention and cognize herself in the explicit manner, but we can leave this aspect of medieval discussions aside, and concentrate on the implicit self-awareness as a part of all perceptual activity.

One of the most striking texts that convey the idea that we are necessarily aware of ourselves when we perceive things around us is presented by Peter Olivi:

For, I never apprehend my acts (namely, the acts of seeing, speaking, and so forth) in any other way than by apprehending myself seeing, hearing, cognizing, and so forth. And this apprehension seems to be naturally preceded by an apprehension of the subject (suppositum) *[...] We apprehend our acts only as being predicated or attributed to us—also when we apprehend our acts by an internal sense, and when we, as it were, experientially distinguish the substance from which they are derived and in which they exist from the acts themselves. This is why we sensibly perceive that these acts are derived from, and dependent on, the substance and not the other way around, and that the substance is fixed and permanent in itself, whereas the acts are continuously in the making.*[49]

The core of Olivi's argument is that in order to apprehend a cognitive act as one's own, the subject must be aware of herself prior to being aware of the cognitive act, at least logically if not temporarily. The subject figures in every cognitive act as the necessary subject-pole and as the experiential owner of the cognitive act. Olivi seems to suggest that the ability to apprehend our acts, and distinguish between the subject and the act, belongs to the internal sense (that is, to the common sense), and this indicates that this kind of implicit self-awareness may be attributed also to non-human animals.[50] However, even if self-awareness turns out to be an intellectual addition to perceptual experience—medieval philosophers often thought that only intellectual powers of the soul are genuinely self-reflexive—it does not change the fact that it *is* such an addition in the case of human beings. We simply must be open to the possibility that the perceptual experience of human beings differs from that of irrational animals in this respect, and that the additional intellectual piece of the puzzle changes the overall picture.

Even so, it is important to remember that it is not clear to what extent the picture is altered by the addition of the intellectual piece. Some medieval authors argue that all the pieces of the human puzzle differ from their counterparts in animals, because the intellectual piece transforms them[51]. However, at least in some cases the intellectual level falls short of being able to alter the perceptual experience completely:

We say, therefore, that the estimation is the more excellent judge in animals. It judges according to the invention of the imagination when it is not certain, just like when a human being thinks that honey is foul because it is similar to excrement. For, the estimation judges that it is so, and the soul follows the estimation even though the intellect disapproves.[52]

In this case we cannot help but have an aversion to eating honey, even though we *know* that it is honey and tastes sweet. Sometimes our perceptual experience goes against the better judgement of the intellectual piece of our psychological puzzle.

4. Conclusion

When I see a red apple, my sense of sight is mainly responsible of conveying the color red to my mind. However, if we consider all the additions that the various pieces of my psychological puzzle provides, we may formulate a rough description of my complex perceptual experience as follows: "I am seeing there this one red, sweet and silent object, which is stationary and an apple, and I want to have it, as it is good for me." All the elements in this description may be emphasized, depending on which part of my complex experience I turn my attention to. I may underline that *I* am the one who sees, or that I am *seeing* instead of imagining the apple. Then again, my perception conveys additional information of the *taste* or the lack of *movement* of the apple, and even that I perceive the similarity between this apple and other apples. And so forth for all the elements in the description.

It is important to note that understanding this description requires the ability to use conceptual language and make analytical divisions with respect to the contents of perceptual experience. Human beings are rational and thus capable of this kind of processing of the raw experience and of understanding the various elements in the description in an abstract manner. We can think about harmfulness as such and make a distinction between a substance and its qualities. By contrast, irrational animals can only perceive a harmful object with its qualities, without being able to distinguish these elements from each other. Moreover, some of the elements in the description of the complex perceptual experience may be different for a rational being. For instance, the experience of oneself as a perceiving subject may be richer for a human being, who is aware of herself in a more explicit manner than animals. Moreover, the evaluative element "is good for me" involves normative aspects in the case of rational beings. The most important difference, however, is that humans are able to distinguish the various elements within the unified perceptual experience, the pieces that constitute the puzzle.

By adopting a wider perspective that involves the whole psychological apparatus, medieval theories of perception may be seen in a new light, which also opens up the way for investigating the influence of rational powers on perceptual experience. The picture that I have presented above is but a scratch on the surface, and it is built from pieces that are taken from various authors, who were not in complete agreement about the psychological pieces and their functions. The description of the complex perceptual experience may not represent the view of any medieval philosopher faithfully, but the aim of this essay has not been to offer a detailed view of any single medieval jigsaw puzzle, but rather to argue that assembling medieval puzzles is a profitable hobby. One finds interesting pictures by adopting this approach to medieval theories of perception.[53]

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[1] There is a great deal of common ground in medieval views, but at the same time, the most sophisticated psychological elements were also contested and opinions varies. To continue with the simile, medieval

philosophers disagreed on the exact forms and sizes of the pieces of the puzzle, on their mutual relations, and even on the existence of some of them. In the present essay, I shall take various ideas and philosophically interesting positions from different medieval authors without claiming that these ideas would have been accepted by all or even most of them. In doing this, my aim is to suggest a novel perspective from which medieval theories of perception and cognitive psychology in general may be approached.

[2] For a general overview of medieval theories of perception, see Knuuttila 2008; A. Mark Smith, "Perception," in *The Cambridge History of Medieval Philosophy*, ed. R. Pasnau & C. van Dyke (Cambridge: Cambridge UP), vol. 1, 334–45.

[3] See, e.g., Thomas Aquinas, *Summa Theologiae* (hereafter *ST*) 1.78.4; David Bloch, *Aristotle on Memory and Recollection: Text, Translation, Interpretation, and Reception in Western Scholasticism* (Leiden: Brill, 2007), 137–228.

[4] See, e.g., Albertus Magnus, *De anima*, ed. A. Borgnet, Alberti Magni Opera Omnia 5 (Paris: Vivès, 1890), 3.1.3, 318–19.

[5] See Knuuttila 2004, 218–26; Perler 2012.

[6] Avicenna uses this criterion in his taxonomy. Many Latin authors thought that active imagination is superfluous, because the passive imagination can combine several images when it is guided by the intellect. See, e.g., *ST* 1.78.4.

[7] On medieval conceptions of animals, see De Leemans and Klemm 2007, 153–177.

[8] For a discussion, see Lindberg 1976.

[9] Although it is not completely clear what medieval authors meant by the concept of 'spirituality' in this connection, they thought that acts of perception take place in material organs. For a controversial interpretation of Aquinas' view, see Myles Burnyeat, "Aquinas on 'Spiritual Change' in Perception," in *Ancient and Medieval Theories of Intentionality*, ed. D. Perler, 129–53.

[10] Knuuttila 2008.

[11] See Silva and Yrjönsuuri 2014.

[12] José Filipe Silva & Juhana Toivanen, "The Active Nature of the Soul in Sense Perception: Robert Kilwardby and Peter Olivi," *Vivarium* 48 (2010): 245–278.

[13] Alexander of Hales, *Summa Theologica* (Florence: Collegium S. Bonaventurae, 1928), II-1.4, tract. 1, sect. 2, q. 2.1.2, c. 4, 437.

[14] The common sense was not always considered necessary for the unity of the sense of sight, as many authors argued that the power of vision is primarily located behind the eyes, where the visual nerves coming from the two eyes meet.

[15] See Avicenna, *Avicenna's Psychology: An English Translation of Kitāb al-najāt, Book II, Chapter VI with Historico-philosophical Notes and Textual Improvements on the Cairo Edition*, trans. F. Rahman (London: Oxford UP, 1952), 15, 65–66; Avicenna, *Avicenna latinus: Liber de anima seu Sextus de naturalibus*, 2 vols., ed. S. van Riet (Louvain/Leiden: Éditions orientalistes/Peeters/Brill, 1968-72) (hereafter *De anima.*), 5.7, 158–60.

[16] Avicenna's stance is ambiguous because sometimes he attributes the unifying function to one of the powers of the soul, namely, to the estimative power (Avicenna, *De anima* 4.1, 11 & 4.3, 35). See Deborah Black, "Imagination and Estimation: Arabic Paradigms and Western Transformations," *Topoi* 19 (2000): 60–61. Albertus Magnus thinks that it belongs to *phantasia* (see *De anima* 2.4.7, 303–304).

[17] Averroes' formulation goes as follows: "He [Aristotle] meant this when he said: 'Hence it is necessary that, as we speak, so we act and we sense. That is, hence it is necessary that as the one who says this to be different from that is the same person, so too that which senses and understands this to be different from that is the same power." (Averroes, *Long Commentary on the* De anima *of Aristotle*, trans. R.C. Taylor (New Haven: Yale UP, 2009), 2.146, 268; I have amended the translation slightly.) Peter Olivi explains that in the case of human beings, the unity comes from the intellect: "I concede that there is one power by which we say within ourselves that: 'The same I who understands, also wills and sees,' namely, the intellectual power. It can say this as it apprehends its own subject (*suppositum*) and its own acts, as well as the acts of other powers." (Peter Olivi, *Quaestiones in secundum librum Sententiarum*, ed. B. Jansen (Florence: Collegium S. Bonaventurae, 1922–26) (hereafter Summa II), q. 54, 280.)

[18] E.g., Kemp, S. & Fletcher, G. "The Medieval Theory of the Internal Senses." *The American Journal of Psychology*, 106:4 (1993): 568.

[19] Avicenna, *De anima* 1.5.

[20] Jari Kaukua, "The Problem of Intentionality in Avicenna," *Documenti e studi sulla tradizione filosofica medievale* 25 (2014): 236. For Avicenna, see *De anima* 5.8; 1.5; 4.2; 4.3-4. Albertus Magnus suggests that phantasy plays a similar role (*De anima* 3.1.3, 318).

[21] Peter Olivi, Summa II q. 66, 614. For a discussion, see Juhana Toivanen, *Perception and the Internal Senses: Peter of John Olivi on the Cognitive Functions of the Sensitive Soul* (Leiden: Brill, 2013), 258–65.
[22] *ST* 1.111.3.
[23] Respectively, Peter Olivi, Summa II q. 54, 253; and Thomas Aquinas, *Quaestiones disputatae de anima*, ed. B.-C. Bazán, *Sancti Thomae de Aquino Opera omnia iussu Leonis XIII P.M. edita* 24.1 (Rome/Paris: Commissio Leonina/Les Éditions du Cerf, 1996) q. 12.
[24] William of Auvergne, *De anima,* in *Opera omnia,* vol. 2, ed. F. Hotot (Orléans-Paris, 1674; reprint Frankfurt am Main, 1963), 3.6, p. 91–93.
[25] Averroes, *Long Commentary on the Soul* 2.146, 267–68. I have amended the translation slightly.
[26] Albertus Magnus, *De homine,* in B. Alberti Magni Opera Omnia 35, ed. Borgnet (Paris: 1896), q. 35, a. 2, 310.
[27] Roger Bacon, *Perspectiva*, in *Roger Bacon and the Origins of* Perspectiva *in the Middle Ages*, ed. D.C. Lindberg (Oxford: Clarendon Press, 1996) 1.1.3, p. 9–10. See Rega Wood, "Imagination and Experience in the Sensory Soul and Beyond: Richard Rufus, Roger Bacon & Their Contemporaries," in *Forming the Mind: Essays on the Internal Senses and the Mind/Body Problem from Avicenna to the Medical Enlightenment*, ed. H. Lagerlund (Dordrecht: Springer, 2007), 35–36.
[28] John of la Rochelle, *Summa de anima*, ed. J.G. Bougerol (Paris: Vrin, 1995), 2.94, p. 237.
[29] Dominicus Gundissalinus, *Tractatus de anima*, in "The Treatise *De Anima* of Dominicus Gundissalinus," ed. J.T. Muckle, *Mediaeval Studies* 2 (1940): c. 9, p. 72.
[30] Sometimes the animal in the example changes, but the overall idea remains the same: "[...] and a wolf would never feel compassion for its offspring, unless it cognized [1] that particular individual, and [2] that this individual is its offspring." (Albertus Magnus, *De anima* 3.1.2, p. 317.)
[31] Roger Bacon, *Perspectiva* 1.1.4, p. 13–15. The translations of Bacon's work are by Lindberg, although I have occasionally amended them.
[32] John Duns Scotus, *Ordinatio* 1.3.1.1-2, n. 62, in *Sourcebook for the History of the Philosophy of Mind*, ed. S. Knuuttila & J. Sihvola (Dordrecht: Springer, 2014), 144.
[33] The only case in which intention may be apprehended without perceiving an object is when one imagines or remembers an object with an intention.
[34] Alexander of Hales, *Summa Theologica* II-1.4, tract.1, sect. 2, q. 2.1.2, c. 3, p. 436.
[35] John of la Rochelle, *Summa de anima* 2.101, p. 248.
[36] A useful discussion and references can be found in Oelze 2018.
[37] Roger Bacon, *Perspectiva*, 2.3.9, p. 246–47. Albertus Magnus seems to presuppose a similar ability, when he explains what kind of abstraction the estimative power makes. (Albertus Magnus, *De anima* 2.3.4, p. 237.)
[38] Smith, "Perception," 342.
[39] Roger Bacon, *Perspectiva*, 1.10.3, p. 159.
[40] Another often repeated example was perception of yellow wax-like substance *as* honey. See, e.g., Dominicus Gundissalinus, *Tractatus de anima*, c. 9, p. 73.
[41] For an overview, see Joseph Owens, "Faith, Ideas, Illumination, and Experience," in *The Cambridge History of Later Medieval Philosophy*, ed. N. Kretzmann, A. Kenny & J. Pinborg (Cambridge: Cambridge UP, 1982), 440–59; Dag Nikolaus Hasse, "The Soul's Faculties," in *The Cambridge History of Medieval Philosophy*, vol. 1, 318–19.
[42] Thomas Aquinas, *Sentencia libri De anima*, 2.13, 121b–122b.
[43] Peter Olivi, Summa II q. 73, 99.
[44] Avicenna, *De anima* 1.5, p. 88–89; John of la Rochelle, *Summa de anima* 2.97, p. 241.
[45] This interpretation is tentative and requires further research. We may note, however, that Albertus Magnus argues that judgements such as "this white is sweet" take place in an instant, because they belong to the common sense (*De anima* 2.4.10, 309–10).
[46] For a discussion, see Mikko Yrjönsuuri, "The Structure of Self-Consciousness: A Fourteenth-Century Debate," in *Consciousness: From Perception to Reflection in the History of Philosophy*, ed. S. Heinämaa, V. Lähteenmäki & P. Remes (Dordrecht: Springer, 2007) , 141–152.
[47] See, e.g., Peter Olivi, Summa II q. 59, 553–54 & q. 63, 599–600.
[48] Therese Scarpelli Cory, *Aquinas on Human Self-Knowledge* (Cambridge: Cambridge UP, 2013), 134 – 37.
[49] Peter Olivi, "Impugnatio quorundam articulorum Arnaldi Galliardi, articulus 19," ed. S. Piron, in *Pierre de Jean Olivi – Philosophe et théologien,* ed. C. König-Pralong, O. Ribordy & T. Suarez-Nani (Berlin: De Gruyter, 2010), 457-58.
[50] For Olivi's complex theory of self-reflexivity, see Toivanen, *Perception and the Internal Senses*, 281–92.
[51] See, e.g., Albertus Magnus, *De anima* 3.1.3, p. 318–19. Matthew Boyle 2016 dubs this the transformative model of rationality.

[52] Dominicus Gundissalinus, *Tractatus de anima*, c. 9, p. 77.

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