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Editor in Chief: Cristina D'Ancona (cristina.dancona@unipi.it)

Mailing address: Dipartimento di Civiltà e Forme del Sapere, via Pasquale Paoli 15, 56126 Pisa, Italia.

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Università di Pisa

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P. IVA 00286820501 · Codice Fiscale 80003670504

Tel. +39 050 2212056 · Fax +39 050 2212945

E-mail press@unipi.it · PEC cidic@pec.unipi.it

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Intentional Objects in Conscious Activity and Other Contexts: An Inter-cultural History

Richard Sorabji

Abstract

The idea of intentional objects of consciousness, which Brentano made the mark of the mental, goes back to the ancient Greek commentators on Aristotle of 200 - 600 CE, especially Philoponus, who in turn influenced Islamic Philosophy, which in its turn influenced Philosophy in medieval Latin.

I am going to talk about Representation and Reality by looking at the history of the idea of intentional objects, not the conceptual objects of the intellect, but rather the intentional objects of the senses, memory, imagination and various kinds of thought. This will include an extensive update of a paper I wrote in 1991,¹ in the light of further thinking and reading and of new findings by others, including important contributions by Tim Crane, Victor Caston and Rotraud Hansberger. The argument for such intentional objects that is most popular today turns in various ways on the point that in many cases there is no external object of our attention. If I hope for a fortune, or believe I have acquired one, the fortune does not have to *exist* in order to be the object of my hope or belief. But my hope or belief does require such an object, where this is understood as one that may or may *not* correspond to an actually *existent*, or actually *present* object. This can be called an *intentional object*. In my 1991 paper I ascribed the kind of argument most popular in modern times to the 19th century German philosopher Franz Brentano.² I now want to retract this, and ascribe it to Brentano's pupil, Anton Marty.

But the belief in intentional objects has a much longer history, and in 1991 I tried to trace it back not indeed back to Aristotle, but back to the ancient Greek commentators on Aristotle, and then after them to medieval Islamic philosophers and after them again to the Latin-writing medieval Christians to whom Brentano referred as scholastics.

However, talk of intentional objects has not meant the same thing through the ages. Brentano may have founded the modern view of intentional objects as the objects which are the characteristic reference points to which all the various mental phenomena are directed, and many people nowadays may well agree with that conception. But in a 9th century Arabic text from the circle of al-Kindī, to be discussed below, the reason why the form received without matter by the senses is described as becoming a *ma'na* (literally a meaning, Latin

¹ R. Sorabji, "From Aristotle to Brentano: the development of the concept of intentionality", in H. Blumenthal – H. Robinson (eds.), *Oxford Studies in Ancient Philosophy, supplementary volume 1991, Aristotle and the Later Tradition, in Honour of A. C. Lloyd*, Clarendon Press, Oxford 1991 (repr. in R. Sorabji, *Perception, Conscience and Will in Ancient Philosophy*, Routledge, Ashgate 2013, pp. 227-59).

² I thank Alex Greenberg for pointing out my mistake to me. One possible source of the error has already been pointed out against other writers by Tim Crane in a paper to be mentioned below.

intentio) seems to be that it has been purified by successive faculties to something still *less material* than the form initially received by the sense organs without its original matter. Similarly, we shall see below that according to Roger Bacon, what some people call a form and others a species is called an *intention* by the multitude of naturalists precisely because of the *weakness of its being* in comparison to the thing itself. In both cases, intentionality is connected with reduced materiality, and in the example from Bacon, the context is not even confined to consciousness, but concerns a general theory of causation.

Judging from these examples, the continuity in the history of intentional objects of consciousness did not reside in any sameness of meaning, but in a history of re-interpreting what predecessors had said.

But this raises a question: if my interest, like Brentano's, is in intentional objects of such forms of consciousness as the senses, memory, imagination and thought, why not trace just the history of these, and ignore the history of things called intentional merely on the ground of their reduced materiality, or for other reasons? There are at least two reasons. First, the distinction between different types of intentionality is not always clear, because intentionality may sometimes be ascribed to an object *both* because of its reduced materiality and because of its being an object of psychological attention. Secondly, the different senses of intentionality cannot be studied separately if we want to trace the origin of later concepts. This is because, for example, the ancient Greek commentators' interest in the comparative immateriality of Aristotle's forms *received* in the sense organs, but *not perceived*, inspired the Latin philosophers' use of the term *intentiones*, which in turn gave rise in some instances to the idea of intentional objects as objects of conscious perception. In this case, the latter conception may interest us more. But this conception more central to our interest may have *originated* in the other conception mentioned, of less central interest.

Franz Brentano on intentional objects from the Aristotelian tradition as the mark of the mental

I shall start again from Franz Brentano, because he sought to recover for modern philosophy the idea of intentional objects, even though he did not use the argument from the possibility of non-existent external objects. Indeed, rather than seeking an argument for intentional objects, he took them as a datum from the Aristotelian tradition, but used them to distinguish mental from physical phenomena. The title of his great work of 1874, has been translated from German into English as *Psychology from an Empirical Standpoint*. Book II of this work is entitled "The distinction between mental and physical phenomena" and it is here that Brentano defined mental, as opposed to physical phenomena. He re-published a relevant part of Book II in 1911 under a title translated as "On the Classification of Mental Phenomena", coupled with an extensive appendix. After Brentano's death in 1917, his follower, Oskar Kraus published a second edition of *Psychology* in 1924, expanded with Brentano's 1911 appendix and with other unpublished essays of Brentano, and with Kraus' own footnotes as well as those of Brentano. In my 1991 article, I used the 1973 English translation of the 1924 edition of Brentano's work organised by Linda McAlister with Antos Rancurello and D.B. Terrell and published by Routledge. Routledge has reproduced this in a number of English editions, the one used here being of 2014 and having a *Foreword* by Tim Crane.

In section 5 of Book II, at p. 92 of the Routledge 2014 edition, Brentano is translated as saying: "Every mental phenomenon is characterized by what the Scholastics of the Middle

Agnes called the intentional (or mental) inexistence³ of an object, and what we might call, though not wholly unambiguously, reference to a content, direction towards an object (which is not to be understood here as meaning a thing), or immanent objectivity. Every mental phenomenon includes something as object within itself, although they do not all do so in the same way. In presentation something is presented, in judgement something is affirmed or denied, in love loved, in hate hated, in desire desired and so on". I may in 1991 have interpreted Brentano's words "not to be understood here as meaning a thing" as introducing the modern idea of the object referred to not necessarily existing or being present in external reality. But I now think the situation is more complicated, because, as we shall see, Kraus reports that Brentano came to distinguish thinghood from existence and to require thinghood for objects of thought, but to deny that they required existence.

Brentano's *Psychology* continues: "This *intentional in-existence* is characteristic exclusively of mental phenomena. No physical phenomenon exhibits anything like it. We can therefore define mental phenomena by saying that they are those phenomena which contain an object intentionally within themselves".

Summing up Book II in section 9, p. 92, Brentano says, "Further we found that the intentional in-existence, the reference to something as an object, is a distinguishing characteristic of all mental phenomena. No physical phenomenon exhibits anything similar. ... The feature which best characterizes mental phenomena is undoubtedly their intentional in-existence. By means of this and the other characteristics listed above, we may now consider mental phenomena to have been clearly differentiated from physical phenomena".

In an earlier work on Aristotle's Psychology, *Die Psychologie des Aristoteles*,⁴ Brentano sought to derive his definition not only, as here, from the medieval Scholastics following Aristotle's tradition in Latin, but from Aristotle himself. He interpreted Aristotle's doctrine that the five senses receive *form without matter*, as implying that the objects of the senses, colour for example, are present in the observer not physically, but present as an object (*objectiv*), that is as an object of sense.

So far Brentano has said nothing about attention to *non-existent* objects, although I believe he does so at another point, and I shall come to that shortly. But first I must mention a different route to misunderstanding Brentano, which Tim Crane has ascribed to a number of analytic philosophers.⁵ On this view, Brentano's 'inexistence' means non-existence, and the reference is to the fact that, as in the example given above, my hopes and beliefs do not have to be matched by an existing external object. But Brentano does not discuss non-existence here in the famous passages quoted. His in-existence is not non-existence, but the *inherence* within the mental phenomenon of the object to which it is directed.

Later, when Brentano became unhappy with the idea of mental in-existence, he *did* discuss non-existence, in the 1911 appendix to his "On the classification of mental phenomena". In the introduction by Kraus to his 1924 edition of Brentano, there is a section entitled "The historical development of Brentano's theory of mental reference". At pp. 388-93 in the 2014 edition of the English translation, Brentano is said to have criticised himself for having

³ Omission of the hyphen here seems accidental.

⁴ Franz Kirchheim, Mainz 1867.

⁵ T. Crane, "Intentionality as the mark of the mental", in A. O'Hear (ed.), *Contemporary Issues in the Philosophy of Mind*, Cambridge U.P., Cambridge 1988, pp. 229-51, at p. 232, n. 11 ascribes the mistake to Daniel C. Dennett and Michael Tye.

thought that consciousness is a relation between two terms, partly because the Roman god Jupiter need not *exist* if I think of him and partly also because Brentano decided the mental object could not be thought of as existing within consciousness.

The argument from possibly non-existent external objects for intentional objects of consciousness in Brentano's pupil, Anton Marty

This new interest in non-existence could have influenced Brentano's pupil and teacher of Kraus, Anton Marty. At any rate, Marty wrote to Husserl that the problem of non-existing objects was the main motivation of the theory he took from Brentano's early work that every mental phenomenon intentionally refers to an object. At that time, he took Brentano to mean that intention, being a proper relation, requires the *existence* of its terms. If the intention exists, so must its intentional object. However, he realised, the actual object of the intentional presenting does not always exist.⁶ In his *Untersuchungen zur Grundlegung der allgemeinen Grammatik und Sprachphilosophie* of 1908, Marty tried to deal with this possible non-existence by substituting a theory of actual *or possible* correspondence to something. This is not exactly the same, but it looks parallel to the later idea that hope for, or belief in, a future fortune requires an intentional object which may or *may not* correspond to any *existent* external object.

Brentano, on the other hand, in a letter to Kraus (at pp. 400-1 of the English translation in its 2014 edition) objected to Marty that, if we are to think of something (A) as non-existent, our thought must correspond with A itself, since A itself must be present to the mind. Thus thought, even a thought about something's non-existence, is always directed to something *real*, or as the translation says a little lower, to a *real thing* or a *thing*. This seems to require the reality or thinghood of something in order for it to be recognised as non-existent. It would presumably apply to the previously discussed example of thought about the non-existence of the Roman god Jupiter: for this thought Jupiter's reality or thinghood is required, his existence is not.

Brentano was still only *allowing* for, not *requiring*, the possible non-existence of intentional objects of thought. But the popular argument for intentional objects, already adumbrated in Marty, based on the non-existence or absence of some objects of thought, makes that a requirement for intentional objects. That is not a universal requirement. We shall see next that the basic idea of intentional objects in Augustine, as in Brentano, makes no such requirement.

Caston on Augustine before the scholastics: stretching of the mind towards its objects as the basic idea of intentionality, not non-existence of objects

Victor Caston has substantially expanded the ancient history, both in recent work and in an earlier article about the influence of Augustine on the idea of intentionality. For one thing, he has argued convincingly that thinking about non-existent things or situations was found problematic among the very first Greek philosophers, the Pre-Socratics. Parmenides, for example, found it baffling how one could think or say what is not, while Gorgias replied to him, and Plato in his *Sophist* avoided treating false statements as saying what is not [the case],

⁶ R. Rollinger – H. Janousek, “Anton Marty”, *Stanford Encyclopedia of Philosophy*, revised January 22nd, 2019 from December 19th, 2008.

by analysing them as stating (positively) that the subject is *other* than it in fact is.⁷ On the other hand, Caston denies that failure of existential commitment can serve as a *criterion* of intentionality,⁸ and instead highlights Augustine's idea in Book 11 of his *On the Trinity*, completed between 416 and 428 CE, and Book 12 of his *Literal Commentary on the Book of Genesis*, produced in 415 CE, of *intentio* (in Latin) as a stretching, that is, *the stretching of the mind* towards an object, a terminology derived from the Greek Stoics (*enteinein*). I imagine, however, that non-existence would still have this much relevance to Augustine's and to Brentano's idea of intentionality as stretching, that in the case of *non-existent* objects any stretching would most obviously have to be *towards*, and could not be from, objects, if they were non-existent.

Aristotle on the physically present objects of sense perception

Brentano himself claimed that his idea of intentional objects went back to Aristotle. Although I do not find it there myself, I would think of Aristotle as particularly interested in some contexts in absent objects of consciousness. This would be less true of his account of sense perception, in which the objects perceived are *present*, not absent, but it would be true of other forms of consciousness.

As regards sense perception, in an article of 1992,⁹ I took Aristotle's basic theory to be that in perception we receive *form without matter*, colour, for example, without the matter in which the perceived colour resides. The five senses receive their own special sense-objects, sight receiving colour, hearing sound, smell odour, taste flavour and touch multiple properties: hot, cold, fluid, dry, hard, soft, heavy, light, rough, smooth. On a *literal* translation of Aristotle *On the Soul* II 11, 424 a 2-10, the various sense organs need to be potentially hot or cold, black or white, etc., i.e. able to undergo the physical process of receiving the relevant qualities, and this is how many of the ancient commentators were at least *tempted* to take it, although, we shall see, some of them re-interpreted it. On this view, the organ of sight, for example takes on colours. I need not address the interesting and popular controversy that arose about that interpretation of Aristotle's reception of form without matter, because my present interest is in why Aristotle's commentators diverged away from any such physicalistic interpretation of Aristotle. But I am grateful for Victor Caston's masterly adjudication of the earlier controversy, which seems, I think, to have satisfied many readers.¹⁰

⁷ V. Caston, "Connecting traditions: Aristotle and the Greeks on intentionality", in D. Perler (ed.), *Intentionality in Ancient Philosophy*, Brill, Leiden 2001, pp. 23-48, at p. 26; "Ancient and Medieval Theories of Intentionality", *Stanford Encyclopedia of Philosophy*, revised 2007; "The Stoics on Mental Representation", in J. Klein – N. Powers (eds.), *The Oxford Handbook in Hellenistic Philosophy* (forthcoming).

⁸ Caston, "Connecting traditions" (above, n. 7), p. 32.

⁹ R. Sorabji, "Intentionality and physiological processes: Aristotle's theory of sense perception", in M.C. Nussbaum – A.R. Rorty (eds.), *Essays on Aristotle's De Anima*, Oxford U.P., Oxford 1992, reprinted in R. Sorabji, *Perception, Conscience and Will in Ancient Philosophy*, Farnham, Ashgate 2013, subsequently Routledge, chapter III (with further argument in chapter V).

¹⁰ Because my present interest is in how and why Aristotle's commentators diverged away from any such physicalistic interpretation of his theory of sense perception, I need not address the interesting and popular controversy that arose about my interpretation of Aristotle's own view of the matter. But I am grateful for Victor Caston's masterly adjudication of that controversy, which seems, I think, to have satisfied many readers. V. Caston, "The

Despite this having been, in my view, Aristotle's main theory of the sensory reception of form without matter, Aristotle himself raised the first warning that it required qualification. If we consider not the outer sense organs, but the central sense *faculty*, which compares the incoming sensory reports of *all* the senses, this comparison at least must be made by something one and indivisible, so it does not have room to be at the same time white and black, and so cannot be affected by the forms of white and black, if (Aristotle says) that is what perception (and thought) is like.¹¹

Aristotle on absent or non-existent objects of other states of mind as requiring mental representation, not intentionality

So much for sense perception, but what does Aristotle say about the absent objects of memory, dreams, imaginings, illusions, hallucinations intellectual thinking? I shall come later to thoughts anticipating pleasure or harm from what is currently present to perception, but even in that case, the pleasure or harm are not yet present. Aristotle's treatment of memory focuses on memory in *absence*, because visual recognition *in presence* comes under a different word in Greek: recognition, *anagnōrēsis*. In the case of memory and other awareness of absent or even non-existent things, the objects of our attention are not properties of things currently being perceived. Here where we would be more inclined to find intentional objects, the objects recognised by Aristotle are not recognised as falling under any such *general* description as intentionality. He focuses instead, I believe, on the *phantasma* (plural *phantasmata*). I argued in *Aristotle on Memory* in 1972 that he construed these representations in his treatment of memory as mental images. Aristotle regarded these images as *indirectly* derived from *earlier* perceptions, but describes the images used in thinking as 'without matter' (*On the Soul* III 8, 432 a 10), because in thinking they are not being produced by currently perceived material objects.

Phantasmata might in principle mean any objects of *phantasia*, and *phantasia* can in principle refer to *any* kind of appearance, that is, to the experience of, or capacity for, having something *appear* to one. Aristotle uses the term *phantasia* especially for imagination, so that *phantasma* could in principle refer to anything imagined. But Aristotle in *On Memory* applies the term *phantasma* even more particularly to a mental image. In *On Memory* chapter 1, he solves the problem about how a present *phantasma* can represent an absent thing remembered, by saying that the *phantasma* is like a sort of picture, the having of which we say is memory, and we can regard it, like a drawing, as something in its own right or as a copy, or reminder, of something else. That is also how illusions and hallucinations can occur: we can make mistakes of wrongly thinking our image to be a copy – or not a copy. In my 1972 book, *Aristotle on Memory*, I argued that in Aristotle's chapter 2, it was essential to how Aristotle's system of mnemonic memory feats worked, that the *phantasma* should again be a mental image of a highly pictorial type. Already in 1883, Francis Galton found, in his *Inquiries into Human Faculty*, that scientists and philosophers tend to have rather feeble images. But pictorial mental images have been very familiar in mnemonic systems like

spirit and the letter: Aristotle on perception", in R. Salles (ed.), *Metaphysics, Soul and Ethics in Ancient Thought: Themes from the Work of Richard Sorabji*, Clarendon Press, Oxford 2005, Ch. 11, pp. 245-320.

¹¹ Arist., *On the Soul* III 2, 426 b 17-20; 427 a 5-9.

Aristotle's both in antiquity and in the Renaissance.¹² Such mental images were also discussed by 20th century psychologists under the name of *eidetic* images, and there are present day mnemonists of this type too. They can actually read information off their memory images, as vividly described by the Russian neuropsychologist A.R. Luria, in his 1968 book, *The Mind of a Mnemonist*.¹³ This mnemonist, Luria assured me, re-invented the same mnemonic system for himself. It is no accident that Aristotle repeatedly speaks of the need to *view* the memory image. Luria's subject was able to recall exactly the numbers written on a board many years earlier, and if he made a mistake, it would never be a mistake of retention, but of scrutinising his image for what had been written. A badly written numeral 3 might be misread as an 8, and if the image was dark, he could clarify it by bringing up a lamp in imagination.

In the first chapter of his *On Memory*, Aristotle repeatedly says that in memory we view (*theōrein*) and perceive (*aisthanesthai*) the *phantasma* in the soul (450 b 18). He says it is like an imprint or drawing in us, (*tupos, graphē* 450 b 15-16), and just as a picture drawn on a board (*en pinaki gegrammenon zōion*), is both a picture and a copy (*eikōn* 450 b 21-2), it can be viewed (*theōrein*) both ways. The first way, it is an object viewed (*theōrēma*), the second way, it is like a copy or reminder (*eikōn, mnēmoneuma*), 450 b 26-7). If the soul perceives (*aisthanesthai*, 450 b 28) it as something in its own right, it appears to come like an object of thought (*noēma*, 450 b 29), but if the soul views (*theōrein*) it as being of something else and as a copy (*eikōn*), as in a drawing (*graphē*, 450 b 30), and as of the man Coriscus without having seen him, the experience of this viewing (*theōria*, 450 b 32) is different from that when the soul views (*theōrein*) it as a drawn picture, and the one comes about in the soul merely as an object of thought (*noēma*, 451 a 1), the other, because it is a copy (*eikōn*), as in that case a reminder (*mnēmoneuma*).

In Chapter 2 of *On Memory*, at 452 b 7-453 a 4, Aristotle also describes how memory might judge time distances into the past. He describes a diagram, which may represent imaged lines or mental movements between images. These differ in length according to ratios that represent distances into the past. The imagery allows for multiplying quantities, to arrive at estimates of ratios.

In his account of memory, Aristotle's mental image is not the same as the *physiological* imprints left behind after perception, although such physiological imprints might play the role of matter to the mental images as form.

Aristotle uses this account of the memory image to explain why, with changes produced by former perception, we are sometimes in doubt whether the changes are in accordance with former perception and whether we have memory, but then we recall that we heard or saw something previously, when we change from viewing something as a thing in itself to viewing it as being of another thing (451 a 7-8). This can explain memory *illusions* and *hallucinations* of various insane people who said that their images had actually happened and that they were remembering, which occurs when someone views a non-copy as a copy (*eikon*, 451 a 11-12).

In his *Poetics* 17, 1455 a 22-6, Aristotle shows similar visual sensitivity, when he recommends avoiding oversights in imagining the staging of a play by placing the setting metaphorically 'before one's eyes'. This phrase is used also about *deliberately* setting an

¹² For the Renaissance, see F. Yates, *The Art of Memory*, Routledge, London 1966; Basic Books, New York 1968; Jonathan Cape, London 1969.

¹³ A.R. Luria, *The Mind of a Mnemonist*, Basic Books, New York 1968; Jonathan Cape, London 1969..

image (*phantasma*) before one's eyes in thinking (*On Memory* 450 a 5; *On the Soul*, 427 b 18), or in dreaming (*On Dreams* 458 b 23), both of which are explicitly compared in this regard with mnemonics.

In his *On Dreams*, he says that a *dream* too is a *phantasma*, 459 a 18-20. At 462 a 18-31, however, he warns that not everything experienced during sleep is a *phantasma*. Moreover, he does not speak of *viewing* the *phantasma*, as he does in the case of memory. But he does, however, speak of *seeing* it (*horān*, 458 b 20; and in one commentator's version 459 a 6), and say that it can be *like* the man Coriscus, even though it is not actually Coriscus (461b22-30).

In *On the Soul* III 7, 431 a 14-17; 431 b 2-12, Aristotle discusses *practical* reasoning, and compares it ('here too') with sense perception. According to the first passage, 'Here too *phantasmata* (mental images) serve the reasoning soul, as sensory objects (*aisthēmata*) serve (the senses), and when the reasoning (*dianoētikē*) soul affirms or denies that something is good or bad, it avoids or pursues it. That is why the soul never thinks (*noei* covers both practical thought and the intellectual thought with which the next passage starts) without an image (*phantasma*). 431 b 2-12 starts by saying, 'The *intellect* (*to noētikon*) thinks intelligible forms in the *phantasmata*'. But it goes on to draw a parallel with *practical* thought based on observation, which anticipates pleasure or pain from what is being observed and deliberates how to pursue or avoid it. 'When one sees a beacon moving, one recognises that it is the enemy's. And comparably with the case of seeing, one calculates and deliberates about the future against the present by one's images (*phantasmata*) or thoughts (*noēmata*). And when one pronounces in the one case what is pleasant or painful, so here one avoids or pursues, and so generally in action. And outside action, the true and the false is in the same class as the good and the bad, though they differ by the former being absolute, the good and bad relative to an individual'.

So far Aristotle has appealed to *phantasmata* as mental images of something absent, in memory, hallucination, imagining, dreams, and thinking, including practical thinking. But what are the *aisthēmata* he appeals to in perception? The '-*ma*' ending in Greek suggests that *aisthēmata*, like *phantasmata*, will be some kind of object of attention, and that they will also be an *aisthēma* of some further object. He does not explain what an *aisthēma* is. But if it too were a mental image, we should get into the difficulty that a mental image in the *presence* of an external object of sight might obscure our view of the external object itself, a problem confronted also by modern 'sense datum' theory.

Is Aristotle's mechanism different for memory and for dreams, imagination, thought?

I am glad that Victor Caston has spotted another mechanism being discussed by Aristotle in two passages.¹⁴ Illusion (being deceived, *diapseusthai*) in dreams is explained by Aristotle in *On Dreams*, 460b23-5, as a result of sense perception being moved by *phantasia*, imagination, *in the same way* as it would be by a perceptible, even though a perceptible is not the current cause. Aristotle gives a parallel example of its appearing that the earth is moving, when it is not something currently perceived that is moving, but something has caused motion in the mechanism of sight. Caston infers from the first example that this mechanism is now

¹⁴ V. Caston, "Aristotle and the problem of intentionality", *Philosophy and Phenomenological Research* 58 (1998), pp. 249-98, at pp. 276-9.

intended to explain the experience of dreaming in general, since it is certainly presupposed by the explanation of dreams that *deceive* us. This is a very interesting possibility. But Aristotle does not appear to be generalising to all dreams. He makes his point only at the end of the second of his three chapters on dreams, and as a point seemingly just about *deceptive dreams*. However, Aristotle does not think that all dreams deceive us, because he gives a rationalistic explanation in *On Prophecy in Sleep* of why some dreams are veridical signs of something, in some examples usefully so (462 b 26-463 a 21). In one such case, our dream about ill health may be due to noticing something in the quiet of sleep, a medical symptom, which we had *not* noticed through sense perception during the distractions of the day. Deception in *On Dreams* is explained in terms of opinion, or the controlling faculty (459 a 7; 462 a 5; 461 b 26-7) failing to tell the dreamer that the dream image is only a likeness. But in the case of a dream which is a veridical symptom of ill health, what is noticed is not a mere likeness.

Caston finds the interesting mechanism which explains *deceptive* dreams also in Aristotle *On the Motion of Animals* VII, 701 b 17-22; 703 b 18-20, where Aristotle speaks of thought and imagination. When the form of what is pleasant or frightening is an object of thought, that form has the same sort of effect as would the pleasant or frightening thing itself, if perceived. Thought and imagination produce these effects because they present the *forms* of the things that can produce these effects in sense perception.

This seems a very promising line of thought for explaining the automatic attraction and fear produced by imagination and thought, despite the absence of the attractive or frightening things. But it does not mean that Aristotle is giving up his stress on the viewing of pictorial images in memory, or of seeing images in dreams. Instead, as Caston points out, Aristotle seems to be offering awareness of images to explain anticipation in the discussion of practical thinking cited above from *On the Soul* III 7, 431 a 14-17; 431 b 2-12. Throughout, he is comparing the effect of thinking with the effect of perceiving, and he compares in particular seeing that the beacon is moving so must be the enemy's. It looks as if Aristotle's very interesting, explanation detected by Caston, is applied only to a particular sort of question: how, in the *absence* of perception and a perceptible, can *other* faculties produce the same sort of attractive or deterrent effect?

Avoiding physical problems in Aristotle's theory of sense perception by dematerialising the forms received: a different rationale for intentional objects in the Greek commentators on Aristotle, 200-600 CE

In my paper of 1991, mentioned above, I traced a different route for the introduction of the idea of intentional objects. It invoked an ancient re-interpretation of Aristotle and its influence over a period of 1000 years. But it started with the Greek commentators on Aristotle 500 years after his death, from the 3rd to 6th century CE, was taken up by philosophers writing in Arabic in the 9th, 11th and 12th centuries, and then in medieval Latin by the Aristotelian tradition of Christian philosophers of the 13th to 14th centuries CE.

It seemed to me surprising that this Aristotelian tradition first started moving towards the need for an intentional object of mental activities not by considering such attitudes as *beliefs* and *hopes*, but by considering difficulties in understanding the variety of physical processes of transmission to the five *senses*. Surely, the senses would not be useful to us unless they were directed by and large to colours, sounds, odours, flavours, and degrees of solidity existing in *external reality*. But although coloration of the sense organ was seen to be

a tempting interpretation of the physical process that Aristotle connected with seeing (along with corresponding processes for the other senses), the reason why the ancient commentators felt they needed to *re-interpret* Aristotle was not that this interpretation didn't fit with his words, but that the physics of that interpretation led to difficulties in *physics* from which his ancient interpreters sought to shield him. One central difficulty was the problem of whether Aristotle's theory would allow sensible qualities to *clash* with each other in the sense organ or in the medium of transmission to the organ. But there were other physical problems as well.

Over five hundred years after Aristotle, in his own *On the Soul* (p. 62 Bruns, *Supplementum aristotelicum* II.1), the commentator Alexander of Aphrodisias in early 3rd century CE Athens, who was Aristotle's greatest defender in the new philosophical environment, extended Aristotle's qualifications about physical processes in the *central sense organ*, and applied analogous doubts to physical processes in the physical *medium* between the observer and the observed. If one person sees black and another white, while looking towards each other, the medium where their gazes coincide cannot be both black and white. He also extended this problem of incompatible black and white to the sense organs more generally, though without discussing the solution that the organ of sight, being extended over an area, might take on *separate* black and white patches. In his commentary on Aristotle *On Sense Perception* (pp. 28, 57 Wendland, *CAG* III.1), Alexander objected to the non-Aristotelian view that vision depends on the travel of bodies that such bodies would be blown about by winds and, rather like his contemporary the great doctor Galen, that the *korê* (pupil of the eye) would be too small to let through bodies to or from the whole scene (p. 31, cf. p. 57).

Alexander's *On the Soul* (p. 48 Bruns) also dematerialised the process of hearing, by saying that sound was transmitted not by a moving block of air, but by a moving shape, which the later commentators Themistius and, in Latin, Boethius, would call a wave.

The commentator Themistius in the 4th century CE, leading civil servant in Constantinople to five Christian emperors and one-time tutor to the emperor Julian the Apostate, stressed the diversity of the senses in his commentary on Aristotle *On the Soul* (pp. 75-77; 79 Heinze, *CAG* V.3). Touch is the only sense whose organ could go hot or cold. The organs of the three long-range senses do not change to match the sensible qualities perceived.

Of two 6th century CE Greek commentators in Alexandria, Ammonius and his pupil Philoponus, Ammonius took Aristotle's *Categories* to say that a particular instance of a quality is individuated by the substance in which it inheres, and so cannot be separated from that substance. How then can the particular fragrance of a particular apple float off separate from that apple towards a perceiver? The answer in Ammonius' commentary on Aristotle's *Categories* is that the apple's fragrance floats off still conjoined with little bits of the apple and that is why one can see the apple actually shrivelling, just as similarly the smoke of incense can actually be seen dispersing (pp. 28-9 Busse, *CAG* IV.4). Philoponus, in his commentary on Aristotle's *Categories* (p. 35 Busse, *CAG* XIII.1) was happy to accept this. But when he made an edition of Ammonius' seminars on Aristotle's *On the Soul*, with critical remarks of his own, Philoponus realised that that could go against Aristotle's view that smell never operates by direct contact of our organ with the thing perceived, the apple, for example. So, after giving Ammonius' arguments, and adding the apparent corroboration of its physicalism that we can waft odours towards us, and that contrary odours mask each other, he responded that masking proves nothing, because the louder sound or brighter colour can also overpower another one. Moreover, physical particles could not reach all the way to vultures, which smell carrion from a huge distance (pp. 391-2 Busse). He concluded that it helps our weak sense if

bits of apple go *some* of the way towards our organ, but after that, it is something less *material*, the odour's *activity* (*energeia*) that is released, and it is the odour's activity, not the odour itself, that passes through the remaining medium as far as our organ (pp. 392, 413, 420).

Philoponus, more than any previous commentators, emphasised the diversity of the five senses, and *dematerialised* to varying degrees his account of how they operate. He dematerialised the account of sight more than the account of smelling, and disagreed with Aristotle's claim that the intervening medium was affected (*paskebei*) by the object of sight. It was *only* the activity (*energeia* again) of colour that the medium received, but this time, it merely let *the activity through* and was *not affected* by it. Aristotle, he said, must believe that what he calls the process (*kinêsis*, rather than activity) of the colour seen is distributed throughout the air, since observers with different vantage points are equally affected. If Aristotle's alleged effect on the air makes it *show* (*emphasis*) the colour seen, we should be able to see an object whatever the direction of our gaze. In fact, however, the activity of colour should rather be compared with what happens when a sunbeam shines through stained glass: the beam throws a pool of colour on the wall opposite, *without* colouring the intervening air. This is only a comparison, however, because the stained glass phenomenon is not the same as that of vision.¹⁵ But, as with the sunbeam, no bodies are transmitted through the medium in seeing either to or from the organ of sight, since (as Alexander had said) the *korê* (pupil) is too small.¹⁶ As for the *organ* of sight, as opposed to the medium, the *korê* for Philoponus was the channel of the optic nerve, and was filled not with liquid, but with *pneuma*, a gas,¹⁷ so was much less suited for taking on colour. Philoponus agreed with Themistius that these long-distance sense organs did not become coloured or odorous at all. He put his view by saying that the five senses receive sensible forms only cognitively (*gnôstikôs*).¹⁸ He also qualified Themistius' account of the corporeality of touch. The organ of touch is the only one of the five sense organs that literally takes on sensible qualities in perceiving them. But it takes on only the four qualities, hot, cold fluid and dry, not heavy and light, viscous and crumbly, rough and smooth. As a *sense*, touch takes on sensible forms, like the other senses, only cognitively. As a *body*, the organ of touch is *also* affected materially, but only by the first four forms mentioned.

Philoponus: Greek influence on ma'nā (Latin intentio) in three Islamic accounts of the senses by Avicenna, al-Gazālī and Averroes and the onward transmission to Latin

The arguments of Philoponus recorded above constituted another route of influence. They were evidently very well known to three Islamic thinkers, the Persians Avicenna and al-Gazālī and in Andalusia Averroes. The philosopher Avicenna (Ibn Sīnā, about 980 to 1037 CE) rematerialized the account of perception.¹⁹ For the material transmission of odours he cited

¹⁵ Philop., *On Aristotle On the Soul, from the seminars of Ammonius, with critical reflections* (= *In De Anima*), pp. 334-6 Hayduck (cf. Ioannis Philoponi in *Aristotelis De Anima libros commentaria*, ed. M. Hayduck, Reimer, Berlin 1897, [CAG XV]).

¹⁶ Philop., *In De Anima*, p. 325 Hayduck.

¹⁷ Philop., *In De Anima*, pp. 366, 368 Hayduck.

¹⁸ Philop., *In De Anima*, pp. 303, 309, 432-3, 437-8 Hayduck.

¹⁹ Avicenna, *Šifā'*, translated into medieval Latin, in *Avicenna Latinus*, ed. S. van Riet, *Liber De Anima*, Brill, Leiden 1972, vol. I, pt. 2, ch. 4, 148.43-154.30.

the apple's shrivelling, and as regards vultures, he claimed that winds could blow particles as far as them. But he also stressed the diversity of the five senses. He made the process in sight less material than that in smell or touch. But even here, in the Latin translation, he took sight to involve the eye receiving a 'replica' (*simulacrum*), just as an illuminated body can tinge (*inficere*) something opposite with its own colour, although the form received is only similar, not identical, to the form in the object seen.²⁰ The form received is also stripped of its original matter, but sight cannot abstract the form it receives from such material '*intentiones*', to quote the Latin translation, as of what quantity, of what quality, whereabouts and posture.²¹ The properties he names here are properties distinguished in Aristotle's logic as constituting different *categories*. But the term he uses for them in the medieval Latin translation, '*intentio*', is the origin of our term 'intentional object'. His own word was *ma'nā*, a meaning. The reason is not obvious, but in my 1991 article I wondered whether it was because of the connexion with *meaning*, when Aristotle presents the categories as corresponding to different *meanings* of the verb 'to be' (*Nicomachean Ethics* I 6, 1096 a 23-4. It is more obvious why *meaning* is an appropriate description of the object of another faculty Avicenna recognises, the estimative faculty, because the *estimative* faculty is described as telling the sheep that something present to it, for example the wolf, is *dangerously hostile*. That would be a salient *meaning* of what was present to the senses. Al-Ġazālī (1056/7-1111) and, as we shall see, in medieval Latin philosophy Roger Bacon (about 1219-1292) inherited the idea of the estimative faculty and gave the example of the wolf.

The philosopher Averroes (Ibn Rušd, about 1126-98 CE) returned to the side of the dematerialisers in his *Epitome* of Aristotle's *Parva Naturalia*, as translated into medieval Latin.²² To avoid contrary forms such as colours clashing in the same place, these forms have a spiritual, not a corporeal, existence in the soul, and even in the medium and sense organ they have an existence either spiritual or intermediate between spiritual and corporeal. In addition, the much cited small size of the eye pupil (*pupilla*, Latin for Greek *korê*), and large size of the cosmic hemisphere which one can see would exclude purely corporeal being. Thus with smell, taste and all the senses, what is comprehended is once again, in Latin translation, the *intentiones* of sense-objects, abstracted from matter.

Averroes, in his *Long Commentary* on Aristotle's *On the Soul*, also argued for diverse degrees of materiality among the senses. The being of odour is less spiritual than that of colour because it is blown about by winds. On the other hand, that does not show odour to be a body, if (like Philoponus) we compare sounds, because sounds are also blown about by winds, and sounds are agreed to be not bodies, but disturbances in a body. Equally, odour can be a disturbance *in* air, but can still be said to have spiritual existence there.²³ Moreover, Averroes continues, odour can be *separated* from the vapour that carries it, as shown by the case of the vultures who smell carrion from a distance too far for vapour to reach: the point made by Avicenna and after him by the theologian al-Ġazālī.²⁴ All the same, Averroes' view

²⁰ Avicenna, *Liber De Anima* I, 3.7, 254-5.

²¹ Avicenna, *Liber De Anima* I, 2.2, 115.73-116.81 (1991 text 14, first of three passages).

²² Averroes, *Epitome of Aristotle's Parva Naturalia*, Medieval Latin translation, ed. E.L. Shields with the assistance of H. Blumberg, as Publication No. 54 of the Mediaeval Academy of America, Cambridge Mass. 1949, pp. 29-32.

²³ Averroes, *Long Commentary on Aristotle's On the Soul*, Medieval Latin Translation ed. F.S. Crawford, as Publication No. 59 of the Mediaeval Academy of America, Cambridge Mass. 1959, Liber II, C97, ll. 277-278.

²⁴ Al-Ġazālī, *Intentions of the Philosophers*, Medieval Latin translation in *Algazel's Metaphysics. A Mediaeval*

on the degree of materiality of odours may have shifted. For in the *Epitome* of Aristotle's *Parva Naturalia* 24, he still says that odours are smoky vapours, even though what is comprehended is *intentiones*.

Averroes was also influenced more directly by Aristotle in his *Long Commentary* on Aristotle's *On the Soul*, in which section 30, addressed the passage from Aristotle at III 7, 431 a 14-17, already discussed, where Aristotle spoke about the images (*phantasmata*) needed for pronouncing something good or bad and pursuing or avoiding it accordingly, and concluded that the soul thinks nothing without an image. What Averroes added was that things thought are *mā'ānī* ('intentions') of the forms in imagination, abstracted from matter.

Avicenna's *K. al-Nafs (On the Soul)* from his *Šifā'* (*The Healing*) was already translated into Latin by Avendauth and Dominicus Gundissalinus during the archbishopric of John of Castelmoron of Toledo (1152-1166),²⁵ and, according to D.N. Hasse,²⁶ Averroes' *Long Commentary* on Aristotle's *On the Soul* by Michael Scot (1175 - about 1235).

Avicenna's estimative faculty for danger: intentional objects required even for the animal estimative faculty. The estimative faculty accepted al-Gazālī, Thomas Aquinas, Roger Bacon, but rejected by Averroes.

In my 1991 paper, I translated from the medieval Latin version three closely neighbouring passages of the *On the Soul* of Avicenna from his compendious *Šifā'* (*The Healing*), which is only one of the contexts in which Avicenna speaks of *ma'nā*. He starts by discussing those of Aristotle's *categories* which belong to human beings merely as accidents, in that they do not have to be the same for all human beings, and picks out quantity, quality (including colour and shape), whereabouts and posture. In the Latin version, these categories are called *intentiones*. The reason here is not obvious. I wondered in 1991 if it might be because of the connexion with *meaning*, when Aristotle presents the categories as corresponding to different *meanings* of the verb 'to be' (*Nicomachean Ethics* I 6, 1096 a 23-4).

But things are clearer when Avicenna moves on to his special *estimative* faculty. He says, as with Aristotle's accidental categories, that sight does not abstract from matter, at least it does not here do so *completely*, because one central function of the *estimative* faculty is illustrated by the sheep's perceiving the wolf as *dangerous*, the lamb as needing care, and the first *ma'nā* or meaning of *hostility* is perceived in the wolf's shape, colour and posture.

Avicenna is one of two Islamic philosophers who, in designating certain properties as *intentions (mā'ānī)* gives a certain priority to properties which can be judged by sense perception only with the aid of some extra thought beyond perception. The *dangerousness* of the wolf is not perceived perceptually as straightforwardly as the sharpness of its teeth. We shall see below that al-Hayṭam in calling some properties intentions, also gives priority to a class of properties which require a little more inference to identify.

I will re-translate my text 14 from the medieval Latin version of Avicenna's Arabic, to indicate some of the differences between the Latin and the original Arabic.²⁷

Translation, ed. J.T. Muckle, St. Michale's College, Toronto, p. 165.26-31.

²⁵ I thank Charles Burnett for this information.

²⁶ D.N. Hasse, *Latin Averroes Translations of the First Half of the Thirteenth Century*, Olms, Hildesheim 2010.

²⁷ For pointing out these differences and other matters of Arabic terminology, I am very grateful to Marwan Rashed.

My 1991 Text 14, revised:²⁸ Avicenna, *Šifā'* (*The Healing*), in *Avicenna Latinus, Liber de Anima (On the Soul)*, vol. I, pt. 2, ch. 2, (corresponding to Arabic *K. al-Nafs* II 2, pp. 115.73-116.81; 116.84-7; 118.6-10 Rahman)

If human nature, by virtue of what it is, had this or that fixed mode of quantity, quality, whereabouts, or posture (*quanti et qualis et ubi et situs*), then by virtue of what human nature is, each man ought to be like every other in these *intentions* (*intentiones*). And if human nature, by virtue of what it is, had some other mode of quantity, quality, whereabouts, or posture, then all humans should be alike in that mode. So the human form does not need in its essence to have those accidents (*accidentia*) which are its regular accidents, but this form is possessed (by humans), on account of matter, in company with those accidents.

Sight needs these accidents when it apprehends form because it does not abstract form from matter with a true abstraction. Matter must be present if this form is to be apprehended in the matter.

But the *estimative* faculty somewhat transcends this level of abstraction, since it apprehends material *intentions* which are not in their essence material (so Arabic; Latin 'in matter') even if it accidentally happens to them that they are in matter, because shape, colour, posture (Latin: *figura et color et situs*) and suchlike are things that can be possessed only by corporeal matter

Later in his *De Anima (On the Soul)*,²⁹ Avicenna gives his own theory of the estimative faculty more fully, in a form that enables it to be compared with two contexts to which I shall come below.³⁰ Where Aristotle talks of mental images based on material imprints in the organs, Avicenna stresses only the material imprints, and, unlike Aristotle (before the discovery of the nerves) locates the imprints in the brain. Avicenna *K. al-Nafs* IV 3, pp. 163.12-164.7 is here translated from a French translation of the Arabic supplied to me by Marwan Rashed, and with key terms italicised. It uses the example of a stick seen as dangerous by a dog.

Avicenna, *K. al-Nafs*, IV 3, pp. 163.12-164.7 Rahman

Another type is produced by something like experience. Thus when pain or pleasure affects the animal, or when some *useful or noxious* perceptible [property] reaches it, conjoined in each case to a *perceptible form*, then there is imprinted in its *formative faculty* the form both of the thing and of that [property] with which the thing is *conjoined*. And [imprinted] in its memory is the *intention* (*ma'nā*) of the relation between those two and the judgement on them both. Indeed, *memory* by its essence and nature participates in that. And when the *form* which is the same as the one already *stored in the formative faculty* appears from without to the *imaginative faculty via the senses*, then the form already stored starts being *activated in the formative faculty*, and with it is activated what is *conjoined with that form*, for example, *useful or noxious intentions*, in other words, the *intention* (*ma'nā*) which is

²⁸ With thanks to Marwan Rashed for elucidations from the Arabic version.

²⁹ *Avicenna's De Anima (Arabic text) Being the psychological part of Kitāb al-Šifā'*, ed. F. Rahman, Oxford U.P., London 1959.

³⁰ Rotraud Hansberger's 9th century Arabic adaptation of Aristotle and Greek Stoic treatments of animal awareness of hostility cf. "Representation of Which Reality? 'Spiritual Forms' and *ma'ānī* in the Arabic Adaptation of Aristotle's *Parva naturalia*", in B. Bydén – F. Radovic (eds.), *The Parva naturalia in Greek, Arabic and Latin Aristotelianism*, Springer, Berlin 2018 (Studies in the History of Philosophy of Mind, 17), pp. 99-121.

within memory. The activation follows a process of transference and presentation which is *within the nature of the imaginative faculty*.

Thus the *estimative* [faculty] perceives the whole of that at the same time as seeing the *intention* (*ma'nā*) [conjoined] with that form, and it does so in accordance with a process which resembles getting experience. That is why dogs are afraid of a clod of earth or a piece of wood.³¹ Other *judgements*, by a process of assimilation, can also *reach the estimative* [faculty], insofar as a thing has a form which is conjoined with an *estimative intention* within certain perceptible things, while it is not [however] always and in its totality conjoined. The thing then provides added attention to the form's *intention* (*ma'nā*) alongside the existence of this form, even though [the intention] can have some difference from [the form].

After Avicenna, Averroes quotes the theologian al-Ġazālī's *Incoherence of the Philosophers*, in which Ġazālī (about 1056 to 1111) addresses especially the philosophers al-Fārābī and Avicenna, and Averroes replies to Ġazālī in his own *Incoherence of the Incoherence*. The *Second Discussion* about the *Natural Sciences* (pp. 333-6 in Van Den Bergh's 1978 translation)³² takes on the subject of up to five apprehensive faculties of animals. Al-Ġazālī, like Avicenna before him, gives different locations in the brain to different faculties. First, the formative faculty receives the forms impressed by things perceived by all five senses, and is therefore called the common sense, common to all five senses, enabling us e.g. to judge flavour by seeing colour. (Aristotle *On the Soul* had called this accidental perception, III 1, 425 a 30-1, and had given the name 'common sense' to two other functions of the central sense faculty).³³ The second faculty is the *estimative*, which is concerned with intentional objects, of which, unlike forms, only some are attached to matter, e.g. the hostility of the wolf. The third faculty is called imaginative in animals and cogitative in humans, and it combines forms with each other and with intentions. Combination permits imagining a horse that flies or is a centaur (half horse, half human). Some philosophers recognise a fourth faculty which retains the forms impressed by the senses, and a fifth which retains the intentions.

Averroes here not only quotes al-Ġazālī's response to Avicenna, but also criticises Avicenna, commenting that the estimative faculty which recognises the wolf's hostility was introduced by him, although the ancients (he refers shortly after to Aristotle) subsumed it under the imaginative faculty, and it is indeed superfluous to add it. In fact, animals derive some of their special skills from nature, not (like Avicenna's estimative) through sense perception. Moreover, the imaginative faculty is adequate even for some of the work that in humans would be done by their cogitative faculty, since it is intermediate between sense and intellect. Elsewhere, however, Averroes did without demur list the estimative faculty along with the others.³⁴

³¹ Sc. after the experience of having been hit by such things.

³² *Averroes' Tabafut al-Tabafut (The Incoherence of the Incoherence)*, translated from the Arabic with Introduction and Notes by S. Van den Bergh, I-II, M. Luzac, London 1954 (E.J.W. Gibb Memorial Series, N.S., 19); reprinted as one volume Cambridge U.P. 1969, 1978, 1987, 2016.

³³ First, III 1, 425 a 27, the ability to perceive properties perceptible to more than one sense – motion, rest, shape, size, number – and at III 7, 431 b 5, according to the commentators Philoponus and Simplicius, to the function of recognising a beacon seen moving as hostile.

³⁴ Averroes, *Epitome of Aristotle's Parva Naturalia*, Medieval Latin Translation, Book II, chapter 1, ed. Shields – Blumberg.

Nonetheless, Thomas Aquinas in the 13th century (1224/5-1274) and his teacher, Albert the Great (about 1220-1280) retain an estimative faculty and Thomas reports that medicine does so as well, giving it a location in the head.³⁵ But Thomas restricts the estimative faculty to animals, saying that humans instead use a cogitative power called particular reason, which, unlike intellect, considers particulars, not universals.³⁶ The estimative faculty was accepted also by Roger Bacon,³⁷ but rejected by Duns Scotus (about 1266-1308).

Aristotle and the Stoics on the ability to estimate danger

We noticed above Aristotle already discussing thinking about the danger implied by seeing a moving beacon, but he did not postulate a separate faculty for this inference. However, the influence of his successors in the Greek *Stoic* school on the idea of intentional objects has been noticed by others.³⁸ The school opened in Athens in 300 BCE, 22 years after Aristotle's death. And at one point I think it *possible* that Stoic interests may have filtered through to influence the early 11th century innovation of Avicenna in Arabic of postulating an animal 'estimative' faculty with its own intentional object of the dangerous or pleasurable character of what an animal perceives. The closest ancient Stoic approach to the function played by Avicenna's estimative faculty is the claim of the Stoic Seneca³⁹ in the first century CE, that animals have a sense of their own constitution (*constitutionis suae sensus*) natural, not learnt, by which the hen fears the hawk, but not the peacock or goose. There are also later claims of this kind by thinkers influenced by the Stoics.⁴⁰

Stoic sayables as intentional objects

Against a prevalent view, I argued in my book on animals of 1993,⁴¹ that the Stoics not only allowed *phantasia* (perceptual appearance) to animals, but allowed animal *phantasia* to be directed to 'sayables' (*lekta*) as objects. Stoic sayables are objects that have the characteristics often nowadays ascribed to intentional objects, since the sayable may or may not be the case. Since what can be said may be false, it will in this way be like an intentional object. The Stoics

³⁵ *Summa Theol.*, 1, q. 78, a. 4.

³⁶ Thomas Aquinas, *Summa Theol.*, 1, q. 78, a. 4 respondeo.

³⁷ Roger Bacon, *On the Multiplication of Species*, Part I, chapter 2, lines 76-81, ed. Lindberg, Roger Bacon's *Philosophy of Nature*.

³⁸ E.g. by V. Caston, "Intentionality in Ancient Philosophy" (above, n. 7); "The Stoics on Mental Representation" (above, n. 7). There is a hypothetical suggestion in a brief note in Simon Van Den Bergh (cf. Averroes' *Tahafut Al-Tahafut* [above, n. 32, repr. 1978], note 3 to p. 334, on p. 188 of the notes) of Stoic influence on Averroes' appeal to *ma'nā* when he (Averroes) replied to the defence of theology, *The Incoherence of the Philosophers*, by his predecessor al-Gazālī. But no exact route was offered in that note; only the general point, which is true, that the earlier Islamic theologians before al-Gazālī, the *Mutakallimūn*, had been influenced by the Stoics.

³⁹ Seneca, *Letter* 121, 19-24.

⁴⁰ In the second century CE, the doctor-philosopher Galen, who knew the Stoics well, but was also following Aristotle, with apologies for supplementing Aristotle's *On the Parts of Animals*, wrote *On the usefulness of parts of the body*. He regarded the knowledge shown by animals from the start of the function of the parts of their bodies as a naturally inherited ability. The third century CE Christian thinker Origen, steeped in pagan Greek philosophy, including the Stoics, says that it is by *natural phantasia* that spiders are led to weave their webs and bees to build the cells of their hives.

⁴¹ R. Sorabji, *Animal Minds and Human Morals: The Origins of the Western Debate*, Duckworth – Cornell U.P., London – Ithaca 1993 (Cornell Studies in Classical Philology, 54) 1993, pp. 20-28, cf. pp. 63-4; 86-7.

themselves classify it by a similar criterion: it is one of four incorporeal kinds of thing, so for the Stoics *lacks full being*. It merely subsists (*huphistasthai*), and is a something (*ti*), rather than a being (*on*).⁴²

The *phantasia* allowed to animals by the Stoics was not the rational *phantasia* of humans. But the second head of the Stoic school, Chrysippus, produced an example which later impressed King James I of England, of a hunting dog which performs the analogue of a syllogism at the crossroads where its quarry may have gone in any of three directions. The dog sniffs the first two, perceives no scent, and takes the third road *without* sniffing. Chrysippus did not propose to admit that the dog was actually reasoning, or forming beliefs (*doxai*). It was only doing something analogous. But how could there be any analogy, if its sense perception allowed it only to grasp a scent? If its behaviour is to be explicable, it must apprehend the absence of a scent, and apprehend it as pertaining to one direction rather than another, all of which involves predication, even negative predication. I think therefore that the Stoics did allow predicational content to the perceptual appearance of animals, even though it denied them concepts (*ennoiai*). A much later Stoic, Hierocles (about 100 CE), gave the example of a kind of frog. When this frog comes to a ditch, it blows itself up into a puffball, raises its little feet above its head for a soft landing, and, says Hierocles, has self-conscious awareness (*sunaiasthanetai*) of how far it will have to drop.⁴³ We might put this by saying that the frog perceives the drop *as* so much, and the dog perceives that *as* the direction to go.

Dogs and frogs cannot say anything, but, as I argued, this fits with what the Stoics say, because they emphasise again and again that a sayable is not necessarily said, let alone said by the very being which entertains the sayable. With humans, a sayable is not put into words until thinking (*dianoia*) has been applied.⁴⁴ It is something in accordance with which *we* (humans) are *able* to say (*eipein ekhomen*) that a white object is acting on us,⁴⁵ which is not to say that we always do say it. Again, a true or false perceptual appearance is one about which it is *possible* (*esti*) to make, not one which itself makes, a true or false assertion (*katēgoria*), for example, the false assertion that the oar under water is bent.⁴⁶ Again, things perceived (*aisthēta*) are true not directly (*ex eutheias*), but by reference to parallel (*parakeimena*) things thought (*noēta*).⁴⁷ Similarly, a sayable (*lekton*), here a rational human one, subsists (*huphistatai*), rather than exists, in accordance with a rational (i.e. human) perceptual appearance, and a rational perceptual appearance is one in accordance with which it is possible (*esti*) to present in words what appears.⁴⁸ The implication of all this is that the perceptual appearances of animals are such as can be (but need not be) put into

⁴² Plutarch, *On Common Notions against the Stoics* 1073E; Proclus, *Commentary on Plato's Timaeus*, III, p. 95.10-14 Diehl. (Cf. 'subsists' in Sextus 8.71).

⁴³ Hierocles, *Ethische Elementarlehre (Papyrus 9780) Nebst den bei Stobäus erhaltenen Ethischen Exzerpten aus Hierokles*, ed. H. von Arnim, Weidmann, Berlin 1906 (Berliner Klassikertexte, 4), 1.39-5.7, new edition by A.A. Long, *Corpus dei Papiri Filosofici Greci e Latini (CPF): testi e lessico nei papiri di cultura greca e latina. Parte I: Autori noti*, Leo S. Olschki, Firenze 1992, full text at pp. 300-26.

⁴⁴ Diogenes Laertius, *Lives of Eminent Philosophers* 7.49.

⁴⁵ Aëtius, 4.12.1 cf. *Doxographici Graeci* 401; *Stoicorum Veterum Fragmenta (SVF)* 2.54.

⁴⁶ Sextus Empiricus, *Against the mathematicians* 7. 244.

⁴⁷ Sextus Empiricus, *Against the mathematicians* 8.10 (SVF 2. 195).

⁴⁸ Sextus Empiricus, *Against the mathematicians* 8. 70 (SVF 2.187).

words by *us*, not by them. Moreover, the sayables to which animal perceptual appearances are directed are not the only ones which may not necessarily get put into words. For all effects such as being cut or burnt are classed by the Stoics as sayables,⁴⁹ whether or not any human gets around to actually expressing them.

Return to early Arabic references to intentional objects: (1) Al-Kindī, a 9th century Arabic text from his circle ascribing intentional objects to Aristotle

We have seen that Philoponus' dematerialisation, for reasons of physics, of Aristotle's account of sense perception had a very strong influence both on the later Arabic introduction of intentional objects and on the later discussions in Latin. But another influence on the Arabic from the Aristotelian tradition has been brought to light since my 1991 paper, although this other influence does not seem to have continued on into the Latin tradition. For Rotraud Hansberger has drawn attention to an extremely loose Arabic adaptation of Aristotle's *Parva Naturalia*, possibly from as early as the 9th century CE and from the circle of al-Kindī in Baghdad (801-873 CE).⁵⁰ The text is said to be influenced by Greek *medicine*, which may be one part of the reason why it diverges from Aristotle's own thought. The Arabic text adapts Aristotle by specifying a series of mental faculties, the sense faculty, the formative faculty (which is found in al-Kindī, but not in Aristotle, though overlapping in role with Aristotle's faculty of imagination) and the thinking faculty, which successively purify the *form* received from the object sensed and eventually turn it into a *ma'nā*, or meaning, Latin *intentio*, of the form. The *ma'nā* is said to be more *spiritual* than the original form received. In Greek, the word for spirit would have been *pneuma*, Latin *spiritus*, and the original meaning was a physical breath or other light gas, although in early Greek Christianity⁵¹ it became immaterial. English retains the material meaning in its talk of pneumonia, pneumatic tyres, and in calling alcohol a vaporising spirit. The Arabic adaptor uses the concept in the un-Aristotelian, *immaterial*, sense. According to the Arabic text, when we wish to bring our memory to mind, the formative faculty will restore to us the image it has stored of the *ma'nā*, so that we can access the *ma'nā* itself which is stored in our memory.⁵² The motivation for introducing *ma'nā* in the 9th century adaptation of Aristotle appears to be the greater spirituality, that is, degree of *immateriality*, of *ma'ānī* as compared with the forms received by sense perception.

⁴⁹ Sextus Empiricus, *Against the mathematicians* 9.211.

⁵⁰ Hansberger, "Representation of which reality?" (above, n. 30).

⁵¹ G. Verbeke, *L'évolution de la doctrine du pneuma du stoïcisme à saint Augustin. Étude philosophique*, Desclée De Brouwer – Éd. de l'Institut supérieur de philosophie, Paris – Louvain 1945 (Bibliothèque de l'Institut supérieur de Philosophie).

⁵² It is not entirely clear from the text whether the Arabic formative faculty, in addition to its purifying activity, creates the image of the form, as well as storing that image. But this seems unlikely, because creating images was a role that Aristotle had given to the imagination, and Avicenna, in 11th century Arabic, was to keep the formative faculty distinct from the imaginative faculty. The slightly confusing 9th century story in Arabic was in the 12th century to be sorted out more clearly by Averroes in his own *Epitome of Aristotle's Parva Naturalia*. In H. Blumberg's 1972 version of the Arabic, on p. 39, the *ma'ānī* are *ma'ānī* of images.

But al-Kindī On the Essence of Sleep and Dreams and its 12th cent. CE Latin ‘translation’ by Gerard of Cremona, On Sleep and Vision, omit each other’s brief references to intentionality

Another text of al-Kindī which refers briefly to *ma‘nā*, *On the Essence of Sleep and Dreams*, was known in Latin. Marwan Rashed has drawn my attention to a 12th century Latin ‘translation’ by Gerard of Cremona (about 1114 to 1187 CE), which Gerard calls *On Sleep and Vision*. But the Arabic text, at least as we now have it, and the ‘translation’ do not match each other in their respective references to intentionality. I found only one reference to intentionality in Gerard and only one in al-Kindī, and each seems to ignore the other’s reference. In Gerard I found the use of the Latin ‘*intentiones*’, in Albino Nagy’s edition, on p. 21, lines 22-4, where Gerard has been explaining such things as how vision and, more significantly, dreams may go beyond what one might expect and may predict the future. Gerard explains this prediction by reference to the soul containing much information, accessible in less material form through imagination in dreams, than in wakeful vision. He says, “these are the *intentiones* (contents of the soul) which make the soul see or intimate (*innuere*) things”.⁵³ Marwan Rashed has pointed me to the Arabic text by al-Kindī, to which Gerard’s Latin corresponds though only roughly. But the standard English translation of that text by Peter Adamson and Peter Pormann⁵⁴ has no lines at pp. 129-130 corresponding to Gerard’s reference to *intentiones*.

Conversely, when al-Kindī’s Arabic text, in its English translation at p. 130, paragraph 6, translates the word *ma‘nā* in discussing dreams, it gives only a low-key rendering of that word, saying of the dreaming soul, “It is in this *sense* (*ma‘nā*) that the soul is forced to use symbols”.⁵⁵ It would be hard to see in this wording any reference to dreams as requiring intentional objects. Moreover, Gerard’s Latin at the corresponding point on its p. 22.13ff. actually omits this passage in which al-Kindī refers to intentionality and the use of symbols. Thus Gerard and al-Kindī each omit the passage in which the other refers to intentionality. So the correspondence between the texts is very loose. Either Gerard’s ‘translation’ was a mere adaptation, or, as Charles Burnett tells me he thinks more likely, the Arabic text we now have of al-Kindī is different from the one used by Gerard.

Even if I have not found a prominent influence from al-Kindī on later discussions of intentional objects, another work of his, *De Radiis* (*On Rays*) certainly did have an influence on Roger Bacon’s later discussion in medieval Latin of something different: the forms which were originally described by Aristotle as *forms received without matter* in the organs of sense perception. Bacon called forms ‘species’ in Latin, and I shall discuss his species below, but only one kind of species is called by him an intention.

⁵³ We shall later come to Avicenna’s different account of how danger or pleasure is predicted for the future through his distinctive estimative faculty.

⁵⁴ P. Adamson – P. Pormann, *The Philosophical Works of al-Kindī*, Oxford U.P., Karachi 2012 (Studies in Islamic Philosophy).

⁵⁵ Adamson-Pormann, *The Philosophical Works of al-Kindī* (above, n. 54), translate this with the words, “It is in this sense that ...”, p. 130, paragraph 6.

Early Arabic intentional objects (2): Ibn al-Hayṭam (Alhazen), 965 CE to about 1040-1, ma'ānī in a different sense, Optics Book 2, sections [44] to [47] and [56], Latin translation, late 12th to early 13th century

A.I. Sabra, who translated the first 3 books of Ibn al-Hayṭam's *Optics* with a commentary in 2 volumes,⁵⁶ records that al-Hayṭam composed the work between 1028 and 1038.⁵⁷ He was influenced by the great 2nd century CE Greek work on Optics by Claudius Ptolemy of Alexandria.⁵⁸ A Latin translation of al-Hayṭam's *Optics*, called *Perspectiva or De aspectibus*, was made by an unknown author in the late 12th to early 13th century, which provided Roger Bacon's principal source for al-Hayṭam's work.⁵⁹ The account of how forms which colour and illuminate those organs are received (not, at least at first, perceived) in the visual organs, and of how visible properties are then *perceived* is given in Ibn al-Hayṭam's *Optics*, Book II, chapter 3, sections [44]-[47] and [56]. Section [44] distinguishes no fewer than 22 particular properties that can be perceived with the aid of sight. These properties are called *ma'ānī*. They became traditional and the 22 are still listed and are called *intentiones* in the Latin of the *Opus Maius* of Roger Bacon part 5.1, dist. 1, chapter 3, ed. Bridges, vol. II: 6, and later in the *Perspectiva communis* of John Peckham (1230-1292), where at Book 1, proposition 55, they are called *intentiones*. Sabra distinguishes the usage in al-Hayṭam from that of Avicenna in later Arabic. He says that al-Hayṭam called these properties *ma'ānī* because they are the properties by which an object *shows itself forth* to the beholder.⁶⁰ To understand how al-Hayṭam thinks they are perceived, we need to distinguish two items from each other. First, the objects of perception called *ma'ānī* were certain perceptible properties. Then *distinct* from these *ma'ānī* there were forms which (as, on one view, Aristotle had said) were received physically in the sense organs from external objects of perception. According to al-Hayṭam, the forms received physically in the sensitive organ of sight could preserve such properties as the *colour* or *luminosity* of what was being seen. Sabra suggests these properties are preserved as so many coloured or luminous points.⁶¹ But the forms received could not preserve so straightforwardly such properties of the external object seen as its distance, shape or position. These latter properties of the object seen had to be mentally interpreted from the array and structure of the point-like, coloured, luminous forms taken as a *whole* before they could become manifest to us. It might be because after the reception of forms in the sensitive organ, further mental interpretation was needed to make these properties manifest that these properties were called *intentional* properties (*ma'ānī*). In that case, al-Hayṭam would be like Avicenna, in prioritising for designation as intentions properties which take a little more than sense perception to identify.

However, this leaves the question why colour and light, the first two intentional properties listed, were also called *ma'ānī*, given that they became manifest simply through

⁵⁶ A.I. Sabra, *The Optics of Ibn al-Haytham, Books I-III, On Direct Vision*, Warburg Institute, London 1989.

⁵⁷ Vol. 2, pp. XIX-XX.

⁵⁸ Vol. 2, pp. XXXII-XXXIII.

⁵⁹ Vol. 2, p. LXXIII.

⁶⁰ *Ibid.*, p. 72.

⁶¹ Sabra, *The Optics of Ibn al-Haytham* (above, n. 56), Vol. II, p. 72, says that, strictly speaking, the form (which he also calls 'image') of an object is made up of point-images of light and colour, but these reveal clues to others of its 22 properties besides colour and illumination. This would include its distance, shape, position and so on.

bringing sensation into play. A different explanation would therefore be preferable. One possibility would be that these two readily sensed properties were called *ma'ānī* because the visual process had made them *less material* than they were in the visible object from which they were received. We shall see that Roger Bacon, who later repeated Al-Hayṭam's list of 22 properties, drew a more general form of that same conclusion, by saying that when the 'species' to which he refers were called *intentions*, this was to mark their falling short of real being.

Al-Hayṭam says at [45] that *ma'ānī* can be perceived only through the forms produced in the eye by the forms of colours and light in the visible objects. Sections [45] to [47] speak of forms of colour and light extending from the surface of the crystalline lens, into the cavity of the common nerve and the nerve itself, preserving the structure, arrangement and order they originally had in the external object perceived, until they are perceived by the last sentient in the organ. In this process, the sentient body, which is a gaseous visual spirit, becomes [47] variously coloured by the forms of colour and illuminated by the forms of light, until every part of the sentient body senses the total form. The faculty of judgement then recognises the properties and the interpretive clues in the forms and in their response to our physical exploration of them.

Christian philosophers from the 13th century and the influence on them of Arabic texts. Robert Grosseteste (1168-1253) and Roger Bacon (about 1219-1292 CE), De multiplicatione specierum

The Arabic texts mentioned were translated into Latin in time to be well known to Christian philosophers of the 13th century CE: I shall start with Robert Grosseteste (1168-1253), Oxford University's first Chancellor in the late 1220s and Roger Bacon (about 1219 to 1292), who worked chiefly in Oxford and Paris. Bacon was influenced directly or indirectly in his *De multiplicatione specierum* (*On the multiplication of species*) by two of the Islamic thinkers just mentioned, al-Hayṭam and al-Kindī.

On Bacon's account in his *On the multiplication of species*, Book I, Part I, Chapter "On senses of the word species", the Latin word *species* is the Latin rendering of Aristotle's Greek term *eidōs*, for the form received without matter by the senses. But, as pointed out in my 1991 paper,⁶² he says that the alternative word *intentio* is used when the interest is in stressing the *species falling short of being a real thing (res)*. Bacon here supplies an example of *species* by repeating Philoponus' phenomenon of coloured glass transmitting colour onto an opaque surface.⁶³ His criterion for being intentional is interestingly more general than the criterion used by his predecessors of being less material, since the latter would constitute only *one* way of falling short of real being.

Bacon also developed an idea already expounded more briefly by an earlier medieval Latin philosopher, Robert Grosseteste. This has been traced by David C. Lindberg, who made a critical edition of this and another work of Bacon, with translation, introduction and notes.⁶⁴ Grosseteste argued that at the beginning of time, God created a point of light and imposed it on

⁶² *Ibid.*, pp. 244-5.

⁶³ Roger Bacon, *On the multiplication of species*, Book I, Part I, Chapter "On senses of the word species", in *Opus maius*, ed. John H. Bridges, Clarendon Press, Oxford 1897-1900, II, pp. 409-10.

⁶⁴ D.C. Lindberg, *Roger Bacon's Philosophy of Nature*, St Augustine's Press, South Bend (Indiana) 1998.

first matter. The light diffused itself in all directions. Being a form, not matter, light could not enlarge itself, but could expand only by multiplying itself in every direction, and in doing so, it drew matter with it until it became the size of the physical universe.⁶⁵ In his *On Lines, Angles and Figures*,⁶⁶ Grosseteste repeated al-Kindī's general view of causation by saying that a natural agent multiplies its power to a recipient, equally whether it is acting on sense or on matter. For example, heat sends the same thing into the *sense* of touch and into a cold *body*. He adds in *On the Nature of Places* that this power is sometimes called species, and that this process of the power's multiplication explains all natural effects.⁶⁷

Bacon in *On the Multiplication of Species* spelled out more fully than Grosseteste that *species* or forms were causes not only of sense perception, but also of the existence of things in the universe, through their multiplying themselves in extending circles. He was again using al-Kindī's theory of causation in *De Radiis (On Rays)*, according to which every created thing in the universe comes into being and exists through rays,⁶⁸ and is also itself a source of radiation,⁶⁹ although the original source of radiation, for al-Kindī, is the stars⁷⁰. Al-Kindī's *De Radiis* was translated into Latin by an anonymous translator by the late 12th or early 13th century.

Bacon, in *On the Multiplication of Species* Book I, chapter 1, lines 42-69, explained that species is the first effect of *any* natural thing. Examples of species for him therefore were not only the sensible qualities colour, sound, odour, flavour and tactile qualities, and the objects of cognitive and estimative powers, the latter 'object' including the familiar dangerousness.⁷¹ All first effects counted as species. So different species can be given different names. They can be called a species with respect to sense and intellect, but also the *image* of the source that generates them, a *reflection* in mirrors, a *phantasm* in the apparition of dreams, a *form* by Alhazen and an *intention* by the multitude of naturalists because of the weakness of its being in comparison to the thing itself.

In the *Prologue* to his revised edition of *On the Multiplication of Species*, Bacon picked out as especially important two never-failing former authors who wrote works called *Optics*, Alhazen (al-Hayṭam) and the ancient Greek Ptolemy on whose work Alhazen built 900 years later. It has been pointed out to me, first by Marwan Rashed and later by Sten Ebbesen and Ahmed Alwishah, that Alhazen speaks of *ma'ānī* in his *Optics* and that this influenced Roger Bacon to speak of *intentiones* in his *Optics*. It is therefore important to see how Bacon's use compares. When Bacon in the passage cited above, *On the Multiplication of Species* Book I, chapter 1, lines 42-6, specifies the sense in which a species can be an *intention*, he thinks of it as an effect that *falls short of being a real thing*. This seems a more general version of the *reduced materiality* which I tentatively attributed to Al-Hayṭam's [Alhazen's?] account of the coloration and light received in the organs. It is, however, almost the opposite

⁶⁵ Grosseteste, *On Light*, translated C.C. Riedl, Marquette U.P., Milwaukee WI 1942, pp. 10-15.

⁶⁶ Lindberg cites *On Lines, Angles and Figures*, in *Grosseteste Philosophical Works*, ed. L. Baur, p. 60 – cf. *Die Philosophischen Werke des Robert Grosseteste*, Aschendorff, Münster 191 (Beiträge zur Geschichte der Philosophie und Theologie des Mittelalters, 9).

⁶⁷ Lindberg cites *On the Nature of Places* in *Grosseteste Philosophical Works* (above, n. 66), pp. 65-6 Baur.

⁶⁸ Al-Kindī, *De Radiis*, ed. M.-Th. d'Alverny and F. Hudry, p. 220.

⁶⁹ Al-Kindī, *De Radiis*, p. 224 d'Alverny-Hudry.

⁷⁰ Al-Kindī, *De Radiis*, pp. 219-221 d'Alverny-Hudry.

⁷¹ Bacon, *On the Multiplication of Species*, 1.2, 30-92.

of Brentano's response to his pupil Marty, cited above, that a thing (like the Roman God Jupiter) has to be *real* even to be thought of as non-existent.

Albert the Great (about 1200-1280)

Albert the Great (about 1200-1280), the teacher of Thomas Aquinas, sought to dematerialise the senses. Already in his early *On Mankind (De Homine)*, which is part of his *On Creatures (De Creaturis)*, he says the eye does not get coloured when seeing, because the air colours nothing, and that the medium too cannot be coloured, for the familiar reason that contrary colours would then clash in the same place.⁷² In both this and a later work, called *On Sense Perception and its Object (De Sensu et Sensato)*, a paraphrase of Aristotle's work of virtually the same name, Albert follows Aristotle in criticising Heraclitus for making odour into a smoky vapour.⁷³ As regards odours, having cited Philoponus' conflicting evidence about shrivelling apples and distant vultures, he allows that sometimes the odiferous body gets mixed with the medium to form a vapour, but insists, like Philoponus, that where the vapour stops, the activity of odour can still transform the air beyond the vapour.⁷⁴

In *On Mankind*, Albert further stresses the diversity of the senses. As regards the three long-range senses, he accepts the position of Averroes' *Epitome*, that the objects of sight, smell and hearing have an intermediate status in the medium. They have material being in the physical object, spiritual being in the sense, but in the medium an intermediate status which he calls sensible being.⁷⁵ The objects of taste and touch are different. They reach the sense organ still in an actual state, but after that acquire spiritual being, and only the 'intention' of heat is drawn off and passed to the brain.⁷⁶

Albert in a third work, *On the Soul (De Anima)*, which paraphrases Aristotle's work of the same name, takes further the theme of the diversity of the senses: *winds*, as in Averroes' *De Anima commentary*, do not have the same effect on odours, sounds and colours. As for touch, the sense objects act on both medium and organ with material being,⁷⁷ except that the central organ of touch within the heart receives only the 'species' with 'intentional' being, these last two terms being used interchangeably.⁷⁸ Albert also continues dematerialisation of the three long distance senses. The eye does not get coloured.⁷⁹ As regards smell, he replaces Heraclitus by Plato and Aristotle as the materialistic proponents of an effluence account of odour, supported by the evidence of shrivelling apples and the need for winds to get odour as far as distant vultures. In his dematerialising reply, Albert cites Averroes, presumably his *De Anima* commentary, in saying that odour is spread through spiritual and

⁷² Albert, *De Creaturis* 2, ed. Borgnet, question 34, article 2, XXXV, 300b; q. 21, a. 5, XXXV, 206a; cf. Arist., *De Sensu* 5, 443 a 21 - b 2.

⁷³ Albert, *De Sensu*, in his *Parva Naturalia*, ed. Borgnet, 2.10, IX, 64b-65a; *De Creaturis* 2, q. 30, XXXV, 269a-b; 270a-b. Cf. Arist., *De Sensu* 5, 443 a 21 - b 2.

⁷⁴ Albert, *De Creaturis* 2, q. 30, XXXV, 269b-270a, 270b-271b.

⁷⁵ Albert, *De Creaturis* 2, q. 34, a. 2, XXXV, 300b.

⁷⁶ Albert, *De Creaturis* 2, q. 34, a. 2, XXXV, 301a.

⁷⁷ Albert, *De Anima* 2.3.6, p. 242b Borgnet.

⁷⁸ Albert, *De Anima* 2.3.34; 2.3.4, p. 290b; 297b Borgnet.

⁷⁹ Albert, *De Anima* 2.3.6, p. 241a Borgnet.

intentional being.⁸⁰ Admittedly, odour can have more than one status in the medium, intentional being when we smell a distant object, and some (*de*) material being when we smell a near object.⁸¹ Unlike Philoponus, Albert allows that sometimes a vapour reaches right up to the organ of smell, but he still insists that in such cases, the odour has intentional being.⁸²

Albert accords to sound too a double status in the medium: material being in the air, but spiritual being through echo (*reflexio*).⁸³ Sounds can actually intersect without interfering with each other (as already mentioned in *On Mankind*), because the circular waves break each other at what is little more than a point, and, moreover, this damage is repaired because the intact parts of the circles produce an echo which fills the gaps. In these places, the sound exists in the air only by way of *intentio*.⁸⁴

Finally, Albert further explicates the notion of *intentio*. Unlike form, which gives being to a compound of matter and form, an *intentio* does not bestow being, but provides a sign (*signum*, *significatio*) of something and a mark (*notitia*) of the whole thing.⁸⁵ The talk of a sign seems not far from the sense of ma'na as meaning in Avicenna, which was translated into Latin as '*intentio*'. But the first point that *intentio* does not bestow being aligns with the tradition of Roger Bacon, whose reference to an effect that falls short of real being offered a generalised version of al-Hayṭam's reference to having reduced materiality.

Thomas Aquinas (1224/5–1274)

Albert's pupil, Thomas Aquinas (1224/5–1274) regards what is received by sense perception as being abstracted from matter, but, since what is perceived is something particular, he regards it as not being free from individuating material conditions,⁸⁶ such as this flesh and these bones.⁸⁷ He stresses more than Albert the variation in degree of materiality of different senses. The sense of touch involves heating and cooling. Odour comes with a smoky vapour and is blown about by winds, as Philoponus had commented.⁸⁸ Contrary odours mask each other, contrary colours do not. Sound creates motion and is blown about by winds. Only seeing involves a purely spiritual change, because two observers can see contrary colours, even when their gazes intersect.⁸⁹

Thomas gives a double status to odour. He repeats Philoponus' argument that a vapour could not reach all the way to the vultures.⁹⁰ But he draws Philoponus' conclusion rather than Albert's, saying that the odour travels some of the way, but never as far as the point of perception, so that beyond that point the medium is affected only spiritually.⁹¹

⁸⁰ Albert, *De Anima* 2.3.25, p. 277a–278b Borgnet.

⁸¹ Albert, *De Anima* 2.4.3, p. 297b Borgnet.

⁸² Albert, *De Anima* 2.3.25, p. 277a–278b Borgnet.

⁸³ Albert, *De Anima* 2.4.3, p. 297b Borgnet.

⁸⁴ Albert, *De Anima* 2.3.19, using the Cologne edition of Stroick, *Opera Omnia* VII 1, 127.87–128.1, which improves a corrupt passage in Borgnet p. 268b.

⁸⁵ Albert, *De Anima* 2.3.4, p. 238a Borgnet.

⁸⁶ Thomas Aquinas, *In De Anima* 494.

⁸⁷ Thomas Aquinas, *Quaestiones de Veritate* 10.4, ad 6.

⁸⁸ Philoponus, *In de Anima*, p. 391.11–21 ed. M. Hayduck (CAG XV).

⁸⁹ Thomas Aquinas, *In de Anima*, 418 and 493.

⁹⁰ Thomas Aquinas, *In de Anima*, 494.

⁹¹ Thomas Aquinas, *In de Anima*, 495.

When Thomas speaks of *intentio*, I take him to be speaking of non-physical information, which, in the case of sense perception, however, may be more or less physically housed in the ways just described.

William of Ockham (about 1285-1349)

William of Ockham, famous for seeking to reduce the number of entities postulated, speaks of Philoponus' stained glass phenomenon and denies that it proves the existence of *species* as well as of colour. What the stained glass phenomenon proves, he claims, is that colour is always in the medium – just too weak normally to see. But it is postulated only because of the evidence of the stained glass, not because it is needed for seeing.⁹²

The extent of Philoponus' influence and the route of his influence on Latin writers.

We have seen by far the greatest influence on the Arabic writers and on subsequent Christian writers coming from the Christian Neoplatonist commentator on Aristotle, John Philoponus. We have noticed the recurrence of the *stained glass* analogy in Bacon and Ockham. It is Philoponus who most of all before Averroes stresses the diversity of the five senses and compares them all in respect of materiality. The influence of Philoponus' discussion of the sense of smell is found in the repetition in Avicenna and later writers of discussion of the distance at which *vultures* can use it. The comparative effect of *winds* on colour, sound and odour is discussed again by Averroes. Albert follows Philoponus in appealing to *shrivelling apples* and repeating the oldest problem about the *clash of contrary colours*. He sounds again like Philoponus when he gives to odour sometimes material being and sometimes *intentional being in the medium*. Thomas Aquinas insists, like Philoponus, that material *vapour carrying odour never reaches all the way to the sense organ, but that the activity of odour can still transform the air beyond the vapour*. Like Philoponus, he infers the corporeal character of odours from their *masking* each other. Philoponus was the first to understand Aristotle's idea that sense organs receive form without matter as meaning that the organ does not take on odour, but receives it only *cognitively*. And this new interpretation, closer to making odour an intentional object, was taken on with variations alongside the other by Albert and Thomas Aquinas. I had first been struck in 1982-3 by Philoponus' influence on *physics*, e.g. by his use of the idea of infinity to answer Aristotle's ideas of a beginningless universe, or of the impossibility of motion through a *vacuum*. But in 1991, I was surprised to find him also the dominant thinker on the foregoing questions about *sense perception*.

What was the mechanism of transmission for Philoponus' ideas to the Latin writers, given that no Arabic translation of his commentary on Aristotle's *on the soul* is recorded, and the Latin translation made for Thomas Aquinas in 1268 by William of Moerbeke covered only Book 3, chapter 4 to 8 on the intellect, not the part on the senses. The answer is not obvious, but I think it must lie in the widespread practice of annotating texts or translations of Aristotle in the margins, with comments drawn from the commentators.

⁹² William of Ockham, *Reportatio or Quaestiones in Sent.*, Bk 3, q. 2, in Guillelmi de Ockham *Opera Theologica*, Vol. VI: *Quaestiones in Tertium Librum Sententiarum. Reportatio*, The Franciscan Institute, St Bonaventure NY, 1982, p. 45, line 16, p. 56, line 8, pp. 59-60, pp. 61, 92-3; Bk 3, q. 4, pp. 141-2.

The marginal comments written by Avicenna himself into his Arabic version of Aristotle's *On the Soul* are said to include ideas drawn from at least five parts of Philoponus' commentary on *On the Soul*. The Latin writers had not only the Arabic texts in Latin translation, but also a Latin translation of Aristotle *On the Soul* made by James of Venice, which was itself equipped with a system of comments. And it has been argued by Sten Ebbesen⁹³ that James had access to comments drawn from certain other works of Philoponus in Constantinople, perhaps through the help of Michael of Ephesus. Michael would have been collecting comments on psychology partly for his own commentary on the psychological books of Aristotle's *Parva Naturalia*. Finally, William of Moerbeke, translated two comments from Philoponus' commentary on Aristotle's *On the Soul*, which he found written in the margins of Themistius' commentary on *On the Soul*, a commentary which he had translated into Latin in 1267. Moreover, William made a Latin translation of *On the Soul* itself for Thomas Aquinas between 1265 and 1268, and would have annotated it, drawing on Greek sources as well as on translations from Arabic.

⁹³ S. Ebbesen, "Philoponus, 'Alexander' and the origins of medieval logic", in R. Sorabji (ed.), *Aristotle Transformed: The Ancient Commentators and their Influence*, London–Ithaca N.Y. 1990, Ch. 19, 2nd edition, Bloomsbury, London 2016.