

## ABSTRACT

Myles Burnyeat has argued that in *De Anima* II.5 Aristotle marks out a refined kind of alteration which is to be distinguished from ordinary alteration, change of quality as defined in *Physics* III.1-3. Aristotle's aim, he says, is to make it clear that perception is an alteration of this refined sort and not an ordinary alteration. Thus, it both supports his own interpretation of Aristotle's view of perception, and refutes the Sorabji interpretation according to which perception is a composite of form and matter where the matter is a material alteration in the body. I argue that Burnyeat's interpretation of II.5 should be rejected for a number of reasons, and offer a new interpretation of the distinctions drawn in the chapter, and the relations between them. I conclude that the chapter provides no evidence against the Sorabji view or for Burnyeat's view. Aristotle's assertion that perception is a refined kind of alteration means that it is the kind of alteration that preserves and is good for the subject of that alteration. There is no inconsistency in the thought that perception is a refined alteration of this sort while it, or its matter, is an ordinary alteration.

### Actuality, Potentiality and *De Anima* II.5

In his paper '*De Anima* II 5', Myles Burnyeat finds evidence to support his interpretation of Aristotle's account of perception while refuting the 'Sorabji' interpretation according to which the composite of form and matter with which Aristotle identifies perception has,

as its matter, an ordinary material change in some bodily organ. He claims that II.5 shows that Aristotle's assertion that perception is an 'alteration' uses that term in a refined sense which refers to something other than ordinary change of quality; and that Aristotle thereby means precisely that perception is *not* an ordinary alteration.<sup>1</sup>

In this paper I will argue that Burnyeat's interpretation of *De Anima* II.5 is mistaken on several important points, and that consequently it neither supports his own interpretation nor presents any difficulties for the Sorabji interpretation. At the same time I will present an alternative interpretation of the chapter which differs from most accounts in two important respects. (1) Twice *De Anima* II.5 distinguishes two kinds of alteration: at 417a31-b2 and at 417b2-16. Most believe that both passages draw the same distinction. I will argue that this is a mistake: 417a31-b2 distinguishes ordinary alterations between qualities and transitions to an activity (in a broad sense) from the absence of that activity; 417b2-16, by contrast, distinguishes between good alterations that preserve and negative alterations that are destructive of the nature of the subject of alteration. (2) Call the preservative kind of alteration 'refined' alteration. In part because of the conflation of the two distinctions, refined alteration is universally understood to be (for example) the *transition to* perceiving or thinking, not thinking or perceiving themselves. I will argue that this too is a mistake, that 417b2-16 classifies the actuality (for example thinking) rather than the transition to the actuality as a refined kind of alteration.

Consequently, I claim, when Aristotle calls perception a refined kind of alteration, he means that it is a preservative rather than a destructive kind of alteration, an assertion which neither says nor implies that perception or its matter is not an ordinary alteration.

I begin by setting out Burnyeat's account of *De Anima* II.5.

*Alteration and Two Kinds of 'Alteration'*

According to Burnyeat, II.5 distinguishes ordinary alteration from two 'refined' forms of alteration, and 'if there are three such alterations, there must be three types of potentiality for the three alterations to be actualities of' (66).<sup>2</sup> So there are three pairs of actuality and potentiality:

Ordinary potentiality – ordinary alteration

First potentiality – first actuality or *unordinary* alteration

Second potentiality – second actuality or *extraordinary* alteration.<sup>3</sup>

According to Burnyeat these three types of alteration differ in the following ways.

*Ordinary or 'Real' Alteration* (417a31-32, b2-3, 15)

'Real' alteration is 'the technical Aristotelian sense "change of quality" presupposing his theory of categories' (34; cf. 36), the type of alteration to which *Physics* III.1-3's definition of change properly applies.<sup>4</sup> It is a 'narrow' sense of 'being affected' (*πάσχειν*) restricted to real change of quality (38). Examples are learning, something cold becoming warm, a green object becoming red.<sup>5</sup>

Ordinary alterations are alterations in qualities accidental to the subject's nature (63). In any change, including ordinary alteration, there is a starting-point, end-point and subject of change. The starting-point is the feature which the subject possesses before the change begins and loses as a result of the change. The end-point is the feature replacing the starting-point when the change is over, and the subject is the object characterised by the features, what changes, say, from red to green. Real alteration is incomplete in virtue of being 'defined by *and* directed toward' this end-point which stands outside of the alteration.<sup>6</sup> In ordinary alteration the starting-point is replaced by the end-point, a quality from the same range as and *contrary to* the starting-point.<sup>7</sup> Hence, in ordinary alteration the termini – the starting-point and end-point – 'are marked by contrary descriptions' (55, 61). For example, somebody who learns thereby alters from ignorance to its contrary knowledge. The result of an ordinary alteration is a temporary condition, a *diathesis*, which, typically, the subject can be expected to lose again (62).

As just noted, 'ordinary alteration' is understood by Burnyeat to be what is specified by the definition of change in *Physics* III.1-3 when this definition applies to change of quality. *Physics* III.1-3 defines change as the actuality of the potential qua potential. In the case of alteration this should be understood to mean that prior to x's change from quality F to contrary quality G, x has the potentiality to *be* G where this potentiality = the quality F. The change to G is the actuality of this potentiality to be G, a potentiality for x to be unlike its present self. When the change to G is complete, F is destroyed, and since F *was* the potentiality to be G, that potentiality – an *ordinary* potentiality – is likewise destroyed, x no longer possesses the potentiality to be G.<sup>8</sup>

Burnyeat calls the refined form of alteration in which he is primarily interested ‘extraordinary’ alteration. Aristotle’s aim in II.5 is to explain (to some extent anyway) what sort of thing perception is, and, on Burnyeat’s account, Aristotle regards perception as a kind of extraordinary alteration, and is above all concerned to make clear that it is not an *ordinary* alteration. To explain extraordinary alteration we should first note Aristotle’s distinction between potentiality 1 (first potentiality) and potentiality 2 (second potentiality). It is not clear whether Burnyeat thinks that the distinction between kinds of potentiality is used to distinguish extraordinary alteration and unordinary alteration (and thus distinguish both from ordinary alteration)<sup>9</sup>; or that the distinction between extraordinary alteration and unordinary alteration is meant to explain the distinction between kinds of potentiality; or both.<sup>10</sup> Whatever he intends, there is a close connection between the refined forms of alteration and their associated types of potentiality.

Aristotle (*De Anima* 417a21-29) explains his distinction between potentiality 1 and potentiality 2 with the example of knowledge. Any normal human being, in virtue of being a human being, has the *first* potentiality for knowledge – the capacity to learn, say, mathematical knowledge. Call this ‘knowledge 1’ and the person possessing it a ‘knower 1’. The actuality of such a potentiality will be knowledge of some specific subject matter. Call such an actuality of a potentiality 1 a first actuality. Call such acquired knowledge ‘knowledge 2’ and the person possessing it a ‘knower 2’. Knowledge 2, though a first actuality, is also a *second* potentiality for its possessor to *think* of what is known 2. The actuality of this second potentiality is thinking of what is known 2, the *second* actuality which can be called ‘knowledge 3’. Call a person with such knowledge 3 a ‘knower 3’ (47-54).

So, using the example of knowledge, the scheme for the different kinds of potentiality and actuality is:

First potentiality: knowledge 1 possessed by a knower 1 – a potentiality for knowledge 2.

Second potentiality/first actuality: knowledge 2 possessed by a knower 2 – an actuality of knowledge 1 which is also a potentiality for knowledge 3.

Second actuality: knowledge 3 possessed by a knower 3 – an actuality of knowledge 2 which consists in thinking of what one knows 2.

*Extraordinary Alteration* (417a32-b2, b3-12)

According to Burnyeat, when Aristotle calls perception *alloiosis tis* he means that it is *not* a real alteration, it is *not* a material process,<sup>11</sup> but can only be called an ‘alteration’ in a sense that stretches the word beyond its proper meaning.

Extraordinary alteration is an actuality not of an ordinary potentiality but of a second potentiality such as knowledge 2. Unlike ordinary potentiality, such a potentiality is not a potentiality to be other than the subject is at present but a disposition for the subject to be a fully developed thing of its kind.<sup>12</sup> Whereas in ordinary alteration one quality is replaced by another, and the termini are marked by contrary descriptions, in extraordinary alteration the termini are marked by the *same* word:

At the end of the process [of the ordinary alteration of learning] the ignorance ... is extinguished and destroyed. It has been replaced by its opposite, knowledge in sense (2).

But it is obvious that knowing in sense (3) is not opposed to knowing in sense (2) as the latter is to ignorance. .... The termini of the transition between (2) and (3) are both marked by the same word 'knows' ... the termini of the transition between (2) and (3) are like each other: both are to be described as knowing, save that one is knowing potentially, the other actually. (55; cf. 56).

This is indicative of the fact that, unlike ordinary alteration which *destroys* the 'altered state' it starts from, extraordinary alteration *preserves* the 'altered state' it starts from, thereby perfecting the nature of the subject of the extraordinary alteration (55, 63). While ordinary alteration is the destruction of the potentiality (the 'altered state') of which it is the actuality, extraordinary alteration preserves the potentiality (the 'altered state') of which it is the actuality.

Rather than a destruction, [extraordinary alteration] is better called a preservation ... of the state it starts from. Whereas learning destroys ignorance, ... knowing in sense (3) preserves the knower's sense (2) potentiality to be someone who knows in sense (3). (55; cf. 31, 66).

The point of II.5 is to show that perception is an extraordinary alteration and therefore not an ordinary alteration.

That is Burnyeat's main argument. He adds, however, that in the course of drawing these distinctions, Aristotle also marks off another refined form of alteration, 'unordinary alteration'.

*Unordinary Alteration* (417b12-16)

The only examples of unordinary alteration mentioned by Burnyeat are learning and the acquisition by a living thing, during its development, of the power of perception. Unordinary alterations, he says, are changes in features not accidental to a thing's nature but 'towards' its nature (63). Each, he claims, is an actuality of a 'first' potentiality, a disposition that is a potentiality grounded in a thing's nature to be a fully developed thing of its kind, capable of exercising the dispositions that perfect its nature (63, 66, 77). Thus, the ignorant person who lacks some knowledge<sup>2</sup> may also be described as a '*knower 1*', where the latter phrase picks out a potentiality possessed by the person because of his nature, in virtue of the fact that he is a human being. Hence, when so considered, when viewed as a knower 1 instead of ignorant, the person's acquisition of knowledge is not an ordinary alteration but the person's development of his nature.<sup>13</sup> 'Such a "change towards nature", "a real advance into itself", is no ordinary alteration' (65). Here again the fact that the 'termini' of the transition are picked out by the same word indicates that the potentiality of which this transition is the actuality is not a destructive, ordinary alteration. While the result of an ordinary alteration is a temporary condition, a *diathesis*, the result of unordinary alteration is a *hexis*, a fixed dispositional state which, in ordinary circumstances, you can expect its subject to retain (62).



So much for the main points of Burnyeat's interpretation that concern me here. The rest of the paper will argue that his account should be rejected.

### *1. The Distinction between Ordinary Potentiality and First Potentiality*

At one point Burnyeat says that '*Metaphysics IX 6* is innocent of the distinction between *first* and *second* potentiality and *so* has no basis for separating (Alt 2) [sc. unordinary alteration (65), the actuality of *first* potentiality] from *ordinary alteration* (Alt 1)' [sc. the actuality of *ordinary* potentiality] (67, my italics). This looks confused since, while unordinary alteration is supposed to be the actuality of a first potentiality, ordinary alteration and *second* potentiality are supposed to have nothing to do with one another. A more charitable interpretation<sup>14</sup> would take him to mean that since *Metaphysics Θ.6* does not distinguish first and second potentiality, it also does not distinguish ordinary potentiality from first potentiality, and therefore does not distinguish their respective actualities, ordinary alteration (Alt 1) and unordinary alteration (Alt 2).

In the same way, the absence of a distinction between ordinary potentiality and first potentiality in *De Anima II.5* would mean that it does not distinguish ordinary alteration from unordinary alteration. And, in fact, a distinction between ordinary potentiality and first potentiality is absent from II.5.

Types of potentiality are distinguished at 417a21-b2:<sup>15</sup>

<sup>21</sup> At the same time, however, distinctions should be made concerning potentiality and actuality. For at the moment we are speaking about them in a simple way. For we can speak of something as knowing

- as when we say that [i] a man is knowing because man is one of the things that knows and has knowledge. But <we can also speak of something as knowing>
- 25 as when we say that [ii] the man with grammatical knowledge knows.
- Each of them is not potential in the same way, but
- [i] the one (ὁ μὲν) because his genus and matter are such, [ii] the other (ὁ δ') because when he wishes he is able to contemplate (δυνατὸς θεωρεῖν) unless something external prevents him. Another is already contemplating, being in actuality and properly knowing this A.
- 30 Both the first two are potentially *knowers*,
- 31 but [i] the former (ὁ μὲν) <is potentially> someone who has been altered through learning, i.e. someone who has repeatedly
- 32 changed from an opposite state, [ii] the latter <is potentially someone who has changed><sup>16</sup> in another way, viz. from having knowledge of arithmetic
- 61 or letters without exercising it to the actual exercise.

According to Burnyeat, 417a31-b2 is where Aristotle first contrasts ordinary alteration with extraordinary alteration. He claims that [i] at 417a31-32 describes ordinary alteration between contraries.<sup>17</sup> The potentiality for such ordinary alteration was supposed to be, on his account, *ordinary* potentiality, the kind of potentiality that is *destroyed* at the end of the ordinary alteration. Therefore this kind of alteration cannot be an actuality of *first* or second potentiality, the sorts of potentiality that are by contrast *developed* and *preserved* by their actualities.<sup>18</sup>

Burnyeat's problem is that 417a31-32 unambiguously describes *ordinary* alteration as an actuality of what he calls *first* potentiality. Throughout 417a21-b2 [i] obviously picks out *first* potentiality, i.e. *knowing 1*, exemplified by any ordinary human being with the potentiality for acquiring knowledge 2 (e.g., grammatical knowledge). And 417a31-32's clear reference (ὁ μὲν) back to the potentiality twice previously marked by [i] in the above text shows Aristotle describing Burnyeat's *ordinary* alteration between contraries *as the*

actuality of Burnyeat's *first* potentiality specified in 417a23-24 and 417a27. The notion of an ordinary potentiality as distinct from first potentiality is nowhere to be seen.

Puzzlingly, a distinction between ordinary potentiality and first potentiality is also largely absent from Burnyeat's own expositions of the chapter. He usually explains 417a21-b2 with no regard for the conflict between the text and his account of it (86):

First the triple scheme [sc. 'three different ways of being a knower'] with its *two types of potentiality* (417a22-9) [sc. *first* potentiality and second potentiality]; then a further articulation ... of *the two potentialities* [sc. *first* potentiality and second potentiality] as potentialities for being the results of two types of alteration [sc. *ordinary* alteration and extraordinary alteration] (417a30-b2); finally an account of the alterations themselves which are the actualities of *these* potentialities (417b2-7).<sup>19</sup>

Burnyeat describes the *ordinary* alteration referred to at 417a31-32, contrasted with 'extraordinary' alteration, *as* the kind of alteration used to clarify *first* potentiality (51):

... there is an important difference between the type of change or alteration [sc. ordinary alteration] involved in passing from (1) [*first* potentiality] to (2) [second potentiality] and the type [sc. extraordinary alteration] involved in passing from (2) to (3) ... The difference between *first* and second potentiality will be spelled out in terms of the difference between passing from (1) to (2) [sc. ordinary alteration] and passing from (2) to (3) [sc. extraordinary alteration].

And Burnyeat then proceeds, in the course of explaining this latter difference, to specify the move from (1) to (2), i.e. the actuality of his *first* potentiality, as an *ordinary* change between contraries.<sup>20</sup>

So Burnyeat says:

‘The positive aim of II 5 is to introduce the distinction between first and second potentiality, each with their [*sic*] own type of actuality. In *both* cases the actuality is an alteration different from ordinary alteration’ (28, my italics; cf. 51, 54, 73).

How, then, can he, without explanation, constantly describe *ordinary* alteration as an actuality of *first* potentiality? While he says that by the time we get to 417b29-418a1 ordinary potentiality has been ‘left behind’ (69), it is as absent from Burnyeat’s exegesis of II.5 (prior to its sudden introduction on p. 66) as it is from Aristotle’s text.

Since there is no basis for Burnyeat’s distinction between ordinary potentiality and first potentiality, there is likewise no basis for his distinction between ordinary alteration and unordinary alteration. There is, of course, a difference between the kind of alteration of which learning is said to be an example at 417a31-32 and the kind of alteration of which learning is also said to be an example at 417b12-16 (see section 5 below), but it is a difference to which Burnyeat’s distinction between ordinary potentiality and first potentiality is irrelevant.

## 2. *Ordinary Alteration, Refined Alteration, Contrariety and Sameness.*

On page 51 Burnyeat sets out the following scheme:

‘(1)	(2)	(3)
first potentiality	second potentiality	
	first actuality	second actuality’.

He explains that, in applying this scheme to the cases of knowledge and perception,

The difference between first and second potentiality will be spelled out in terms of the difference between passing from (1) to (2) and passing from (2) to (3). We shall then know all that II 5 has to tell us about the difference between the actualities corresponding to the two types of potentiality.

So the difference between ordinary alteration and extraordinary alteration is due to the differences between potentialities (1) and (2), and the passages from (1) to (2) and (2) to (3). *Section 1* explained one difficulty with this claim. My next point is that Burnyeat's explanation of Aristotle's refined notion of alteration in terms of a passage between (2) and (3) should also be rejected because it does not distinguish refined alteration from ordinary alteration. For the time being I assume with Burnyeat that Aristotle's refined form of alteration is the *transition* from (2) to (3).

*2(a). Contrariety of Termini, Ordinary Alteration and Extraordinary Alteration*

In contrast with ordinary alteration, it is because the 'termini' of extraordinary alteration are not contraries that it is the distinctive, refined type of alteration it is: 'Just this [sc. the fact that the termini of the transition are not marked by contrary descriptions] was Aristotle's ground for saying that the (2)-(3) transition is either not an alteration or a different kind of alteration.'<sup>21</sup> Thus the move from being a knower 2 to being a knower 3

is one where ‘knowing’ describes both, even if one is knowing potentially, the other actually.

But if it is the fact that the termini of a transition are specified by contraries that makes it an ordinary alteration, then both of Burnyeat’s ‘refined’ forms of alteration turn out to be ordinary alterations, for, like ordinary alteration, each is a transition between contrary ‘termini’. Recall the scheme set out above:

First potentiality: knowledge 1 possessed by a knower 1 – a potentiality for knowledge 2.

Second potentiality/first actuality: knowledge 2 possessed by a knower 2 – an actuality of knowledge 1 which is also a potentiality for knowledge 3.

Second actuality: knowledge 3 possessed by a knower 3 – an actuality of knowledge 2 which consists in thinking of what one knows 2.

What Burnyeat does not take into account is that, for Aristotle, there is a kind of ignorance corresponding to each of these types of knowledge. The *Topics* (114b9-11, 147a17-18) explains that if one defines a contrary such as *knowledge*, one at the same time defines, or implies a definition of, its contrary – in this case *ignorance*. Hence, there are three kinds of ignorance corresponding to our three kinds of knowledge. Nobody could doubt that Aristotle uses ‘ignorance’ to refer to the contrary of knowledge 2 – ignorance 2. More surprisingly, Aristotle also uses ‘ignorance’ to refer to the condition

contrary to knowledge 1.<sup>22</sup> A knower 1 possesses the ability to acquire knowledge 2 while something ignorant 1 lacks that ability.

But most important for the present issue – the distinction between ordinary alteration and extraordinary alteration – is the existence of ignorance 3 contrary to knowledge 3. As knowing 3 is thinking of what one knows 2, so ignorance 3 is (in many cases) not thinking of what one knows 2. Aristotle regularly uses the word *ἄγνοια* in this way.<sup>23</sup> For example, when he defines voluntary action in the *Eudemian Ethics* (1225a37-b16), he distinguishes knowledge 2 from knowledge 3, and explains that the person *with knowledge 2* but without knowledge 3 (*ὁ ἔχων μὴ χρώμενος*) of some feature of the action (1225b2-7) acts in ignorance (*δικαίως <ἄν> ἀγνοῶν λέγοιτο*). Since this person (*ὁ ἔχων*) possesses knowledge 2, his ignorance cannot be ignorance 2 and is obviously ignorance 3, the contrary of knowledge 3. If such a person thinks of what he knows 2, this is a transition from ignorance 3 to knowledge 3, a transition whose ‘termini’ are contraries.

Likewise in his discussion of *akrasia* in *Nicomachean Ethics* VII.3, at 1147b6 Aristotle speaks of the dissolution of the akratic agent’s temporary ignorance of some particular fact, and of his becoming ‘knowing *again*’. The akratic agent is not ignorant 2, he does not, in virtue of being ignorant, lack ‘knowledge 2’. Rather he is in a state which is a *species of knowledge 2* (*ἐν τῷ γὰρ ἔχειν μὲν μὴ χρῆσθαι*) (1147a10-18; 1146b31-35, 1147b11-12; *Phys.* 247b13-16). He is ignorant because he is ignorant 3, he does not or cannot exercise (*θεωρεῖν*<sup>24</sup>, *ἐνεργεῖν*<sup>25</sup>) the knowledge 2 of some particular fact which he possesses. When the akratic recovers, his ‘ignorance [3] is dissolved and he becomes knowing [3] again’ (1147b6): what he thought before he thinks – knows 3 – again. The ‘termini’ of this transition from ignorance 3 to knowledge 3, Burnyeat’s extraordinary

alteration, are contraries. Burnyeat's characterization of extraordinary alteration as opposed to ordinary alteration as essentially *not* involving 'termini' that are contraries does not work.

*2b. Sameness of 'Termini', Ordinary Alteration and Extraordinary Alteration*

On Burnyeat's account, the 'termini' of ordinary alterations cannot be marked by the same word in different but compatible senses. But in fact, that is something Aristotle is quite happy to do.

Recall Burnyeat's scheme (51):

'(1)	(2)	(3)
first potentiality	second potentiality	
	first actuality	second actuality'

This is the general scheme of which knowledge is a specific example (50):

'(1)	(2)	(3)
<i>potentiality</i>	<i>potentiality</i>	<i>actuality</i>
<i>P is a knower</i>	<i>P is a knower</i>	
	<i>P knows</i>	<i>P knows'</i> .



As Burnyeat notes (48-49, 57), the same scheme is used in *Physics* VIII.4 in Aristotle's search for a mover of natural objects that are not self-movers. That chapter repeats the example of knowledge to illustrate the distinctions between kinds of potentiality and actuality, but other examples are also used, including lightness. In virtue of having the potentiality to become air, water has the *first* potentiality to be light (*Phys.* 255b8-10, 18-19). Suppose air has now come to be from water but is prevented from rising to its natural location. Then it has the *second* potentiality for being light (*Phys.* 255b10, 12, 19). What the air lacks, when prevented from rising to its natural place, is the second actuality of being light, an actuality which consists in being somewhere (*Phys.* 255b11, 15-17 – τὸ ποῦ εἶναι καὶ ἄνω; cf. 201a7-8; *De Caelo* 308a29-30). Hence, the same distinctions between potentiality and actuality found in the case of knowledge are found in the case of lightness:

(1)	(2)	(3)
<i>potentiality</i>	<i>potentiality</i>	<i>actuality</i>
this water is light	this air is light	this air is light

According to Burnyeat, in the case of knowledge the termini of the transition from (2)-(3) are not 'marked by contrary descriptions, but by the same word "knower" in different but compatible senses', and *for just that reason*, the transition from (2)-(3) is 'either not an alteration or a different kind of alteration' (61). If Burnyeat were right, it would also be true that in the case of lightness, the transition from (2)-(3) is 'either not a locomotion or a different kind of locomotion'. For there too the 'termini' of the transition from (2)-

(3) are described by the same word – ‘light’ – in different but compatible senses. But it is perfectly obvious that, even if it is a development of air into its nature, air’s rising is an ‘ordinary’ locomotion, a change characterised by all the features Aristotle ascribes to change in the *Physics*: it has a continuous path from starting point to end point, it takes time, it is divisible into different temporal phases, etc. (cf. *De Caelo* 311a1-14).

Hence, ordinary changes can have ‘termini’ specified by the same word in different but compatible senses. Furthermore, Aristotle asserts that the distinctions between kinds of potentiality drawn in the case of knowledge apply to alterations in the strict sense, changes of quality, as well as to changes of quantity (*Phys.* 255b12-13, 21-24). So if it were true, as Burnyeat claims, that ‘all that II 5 has to tell us’ (51) about extraordinary alteration is what, according to him, is peculiar to the transition from (2) to (3) as opposed to ordinary alteration, Aristotle would fail to specify anything distinctive of extraordinary alteration.<sup>26</sup>

To sum up this section: if we consider the scheme

‘(1)	(2)	(3)
<i>potentiality</i>	<i>potentiality</i>	<i>actuality</i>
<i>P</i> is a knower	<i>P</i> is a knower	
	<i>P</i> knows	<i>P</i> knows’,

Burnyeat’s explanation of the difference between the two transitions is that the (1)-(2) transition is between contrary ‘termini’ (ignorance 2, knowledge 2) whereas the (2)-(3) transition is (in an important way) between the same ‘termini’ (knowledge 2, knowledge

3). Thus, he claims, 'rather than a destruction <of the state it starts from> [as occurs in the (1)-(2) transition] the second type of alteration [the (2)-(3) transition] is better called a preservation of the state it starts from' (55).

This fails because the 'termini' of (1)-(2) can be considered to be *the same* (knowledge 1, knowledge 2) or *contrary* (ignorance 2, knowledge 2). And while viewed in the second way, the (1)-(2) alteration is the destruction of the state (ignorance 2) it starts from, viewed in the first way the (1)-(2) transition is the preservation of the state (knowledge 1) it starts from. Likewise the 'termini' of (2)-(3) can be considered as *contrary* (ignorance 3, knowledge 3) as well as the *same* (knowledge 2, knowledge 3). And while it may be that, viewed in the second way, the (2)-(3) alteration is the preservation of 'the state (knowledge 2) it starts from', viewed in the first way the (2)-(3) transition is the destruction of 'the state (ignorance 3) it starts from' – *just as* the (1)-(2) transition is the destruction of the state of ignorance 2 it starts from. Hence, Burnyeat's contrast between the (1)-(2) and (2)-(3) transitions does not exist. A second reason why Burnyeat's account fails is that the fact that a change is from second potentiality to second actuality is quite compatible with its being an ordinary change, including the case where the transition is an ordinary alteration (*Phys.* 255b12-13, 21-24).

### 3. *Potentialities and Starting-points for Change*

The previous section used the example of lightness in (2*b*) to argue that, in Burnyeat's language, the 'termini' of an ordinary change can be described with the same term in different but compatible senses. Burnyeat might reply that lightness is not parallel to

knowledge in the way I claimed. In the case of knowledge, he might say, the termini of the transition from (2) to (3) can be described by the same word in different *but compatible* senses: the knower 3 is also a knower 2. By contrast, he might say, being light 3 is *not* compatible with being light 2. The basis for this last claim would be his beliefs that

- (i) In ordinary change, the starting-point = the potentiality for being in the end-point, and
- (ii) According to *Physics III*'s definition, change = the actuality of the potentiality for being in the end-point of change.

Since the starting-point of the change is destroyed by the time the change is complete,

- (iii) the potentiality of which the change is the actuality is destroyed when the change is completed.<sup>27</sup>

Burnyeat might apply (i)-(iii) to the transition from lightness 2 to lightness 3: Suppose some air is restrained from rising. Its location, or its being in that location, by (i), is lightness 2, the potentiality for being higher up, for being light 3. Given (iii), when the locomotion to the higher place is completed, that is, when the air is light 3, the potentiality for being higher up (lightness 2), the initial location (or being there), is *destroyed*. Hence, Burnyeat might claim, being light 2 is not compatible with being light

3. For that reason, Burnyeat might say, the move from 2 to 3 is not parallel in the cases of knowledge and lightness: knowledge 3 is compatible with knowledge 2, but lightness 3 is incompatible with lightness 2. Hence, 2 and 3 are specified by the same word in different and *compatible* senses in the case of knowledge but not in the case of lightness.

This reply would fail because, in fact, Burnyeat is committed to the claim that lightness 2 and 3 are just as compatible as knowledge 2 and 3. Suppose we assume his

(ii) According to *Physics III*'s definition, change is the actuality of the potentiality for *being* in the end-point of change.<sup>28</sup>

If so, then

(iii) The potentiality of which the change is the actuality is destroyed when the change is completed

is false when air rises after having been prevented from doing so.

*Physics III*'s definition of change must apply to circular locomotion since it is the primary form of locomotion (*Phys.* 265a13-27), which is the primary form of change.<sup>29</sup>

At least most objects capable of locomotion can move in a circle and end where they began. Then the starting-point is identical with the end-point (*Phys.* 264b10-11, 18-19).

Suppose that air which (being prevented from rising) is light 2 begins to rise and becomes light 3 (τὸ ποῦ εἶναι καὶ ἄνω, *Phys.* 255b11, 15-17). Call this change *locomotion A*.

Burnyeat's interpretation of Aristotle's definition of change – (iii) – holds that the air

thereby loses the potentiality of which locomotion A is the actuality, the potentiality for being light 3, i.e. it *loses the potentiality that is lightness 2*.

That would mean that the air which rises to be high up cannot move in a circle and end where it is at present. For the air that is high up would no longer have the potentiality for being high up (the potentiality that is lightness 2). Lacking the potentiality, it could not actualise the potentiality, and therefore, assuming (ii), it could not move in a circle and end where it is now. But, of course, it can move in a circle and end where it is now. So if we assume Burnyeat's

(ii) According to *Physics III*'s definition, change is the actuality of the potentiality for *being* in the end-point of change,

the object that is high up, being capable of moving in a circle, must have the potentiality for being where it is now, i.e. it must have lightness 2. Hence, when the air is light 3, is high up, it is also light 2.<sup>30</sup> Therefore Burnyeat is committed to the compatibility of lightness 2 with lightness 3. So the parallel between knowledge and lightness stands: what has become 3 is also 2 in a different but compatible sense. So the previous objection stands: the 'termini' of a transition from 2 to 3 can be described by the same word in different but compatible senses where that transition is, nevertheless, an ordinary change, e.g. the locomotion from being light 2 (down below) to being light 3 (higher up).

A further problem with Burnyeat's characterisation of the potentiality involved in ordinary alteration (already referred to in n. 30) is that he understands

(i) In ordinary change, the starting-point is identical with the potentiality for being in the end-point,<sup>31</sup> and

(ii) According to *Physics* III's definition, change is the actuality of the potentiality for being in the end-point of change,

to imply

(iv) The starting-point of a change = the potentiality of which the change is the actuality.<sup>32</sup>

(iv) is impossible because the starting-point of a change ceases to exist (at least in many cases) as soon as the change exists (*Phys.* 207b21-25, 234b10-20, 235b8-19, 236b1-18, 236b19-237b9). But Burnyeat must grant that the potentiality of which a change is the actuality exists as long as the change exists since he claims (42) that, during the change, the potentiality of which the change is the actuality exists 'more fully', finding its 'fullest manifestation'. Since the starting-point of a change and the potentiality of which change is the actuality exist at different times, (iv) is untenable.

#### 4. *Perception and the Transition to Perception*

From the beginning of *De Anima* II.5 (*δοκεῖ γὰρ <ἡ αἴσθησις> ἀλλοίωσίς τις εἶναι*, 416b33-35) it is clear that its overriding aim is to illuminate *perception* – *not* something which is

not perception, viz. the *transition to* perception from not perceiving. Aristotle initially (417a9-14) explains that perception (not the transition to perception) is said in different ways, referring either to potential perception or actual perception (τὸ ἤδη ἐνεργοῦν). The actuality of the potentiality to perceive is perceiving, not the transition to perceiving. Then 417a21-b2 distinguishes between kinds of potentiality and actuality, using the example of knowledge to clarify the case of perception. Here, in 417a21-b2, what matches actual perception is contemplation (θεωρεῖν, ὁ ἤδη θεωρῶν), not the transition to contemplation. And it is contemplation, not the transition to contemplation, which is specified as the second actuality of which knowledge 2 is the potentiality (417a28-29), as knowledge 2 (not the transition to knowledge 2) is the actuality of which knowledge 1 is the potentiality (417a23-24). Likewise at *De Anima* 412a22-28, 429b5-9, 430a19-22 as in *Physics* 255a32-b4, contemplation rather than the transition to contemplation is the actuality of the potentiality for knowledge. And so, in II.5, after the distinctions between kinds of potentiality (417a21-b2) and kinds of πάσχειν (417b2-16) have been drawn, Aristotle concludes by comparing perception with contemplation (417b16-27), not by comparing the transition to perception with the transition to contemplation.<sup>33</sup>

In 417a30-b2 Aristotle, at the close of his exposition of different kinds of potentiality and actuality, does point out a difference between the *transitions* from knowledge 1 to knowledge 2, and knowledge 2 to knowledge 3. Here again is the text from 417a21-b2:

<sup>21</sup> At the same time, however, distinctions should be made concerning potentiality and actuality. For at the moment we are speaking about them in a simple way. For we can speak of something as knowing

as when we say that [i] a man is *knowing* because

man is one of the things that knows and has knowledge. But <we can also speak of something as knowing>

<sup>25</sup> as when we say that [ii] the man with grammatical knowledge knows.



Each of them is not potential in the same way, but

[i] the one (*ὁ μέν*) because his genus and matter are such, [ii] the other (*ὁ δ'*) because when he wishes he is able to contemplate (*δυνατὸς θεωρεῖν*) unless something external prevents him. Another is already contemplating, being in actuality and properly knowing this A.

30 Both the first two are potentially *knowers*,

31 but [i] the former (*ὁ μέν*) <is potentially> someone who has been altered through learning, i.e. someone who has repeatedly

32 changed from an opposite state, [ii] the latter <is potentially someone who has changed> in another way, viz. from having knowledge of arithmetic

61 or letters without exercising it to the actual exercise.

In accordance with Aristotle's official doctrine (a potentiality is defined in terms of its actuality – *De An.* 415a14-20, *Meta.* 1049b10-17), both kinds of potentiality are explained in terms of the actuality they are potentialities for. 417a23-24 explains knowledge 1 as the potentiality for its actuality, knowledge 2. 417a27-29 explains knowledge 2 as the potentiality for its actuality, knowledge 3 (*δυνατὸς θεωρεῖν*). While 417a30-b2 points out a difference between the transitions from 1 to 2 and from 2 to 3, those lines do not suggest that Aristotle is thinking of the transition to contemplation rather than contemplation as the actuality of knowledge 2. For Aristotle describes the transition from 2 to 3 as the transition *to* actuality (*εἰς τὸ ἐνεργεῖν*) where 'actuality' obviously refers to contemplation, the actuality of knowledge 2 (cf. 416b2-3). Hence, the statement, at 417a30-b2, that *the transition* from knowledge 2 to knowledge 3 is different from the alteration between contraries (learning) that is the move from knowledge 1 to knowledge 2, does not assert that *contemplation*, knowledge 3, is not an alteration of the sort that learning is. Of course, contemplation is not a change of the sort that learning is, but that is not what is claimed at 417a30-b2.

Nor, therefore, is Aristotle suggesting in 417a30-b2, in virtue of the analogy of perception with knowledge, that *perception 3* is not an alteration of the sort that learning is. Rather, the implication is that *the transition to perception 3* is not an alteration of the sort that learning is.

Burnyeat's main claim is that *De Anima* II.5 proves that Aristotle holds that *perception* is not ordinary alteration but extraordinary alteration,<sup>34</sup> and therefore the Sorabji interpretation of perception must be rejected. Any claims about the transition to perception being an extraordinary alteration are of no relevance to this issue. However, Burnyeat's exposition of *De Anima* II.5 emphasises<sup>35</sup> that what Aristotle identifies as an extraordinary alteration is *not* perception but the *transition to perception*. Hence, Burnyeat's argument that Aristotle denies that perception is an ordinary alteration is an obvious non-sequitur.<sup>36</sup> The assertion that the transition to perception is not an ordinary alteration is quite consistent with the claim that perception itself is an ordinary alteration.

To see how crude Aristotle's mistake would be on Burnyeat's interpretation, consider two parallel arguments. *De Anima* 417a31-32 points out that the *transition* from knowledge 1 to knowledge 2 – learning – is a change between contraries. Burnyeat takes this to mean that it is an ordinary alteration. That, obviously, does nothing whatever to imply that what that transition is a transition to – knowledge 2 – is an ordinary alteration between contraries. Or consider *Physics* V.2 where Aristotle argues at length that there is no change to a change. For example, the transition from not walking from S to E to walking from S to E is not itself a change. It is obvious that Aristotle recognises that the fact that the *transition to walking* is not a change does nothing to suggest that *walking* is not a change. But Burnyeat gives him an argument in the case of perception which is as

transparently invalid as the preceding two arguments would be if one took the claims about the *transitions to* knowledge 2 and walking to show that knowledge 2 is an alteration between contraries, and that walking from S to E is not a locomotion.

The invalidity of Burnyeat's argument is obscured by a persistent running together of perception (contemplation) with the transition to perception (contemplation). Consider, for example, the following passage:

... it is essential to retain the idea that *perception* is some sort of passive change with an external cause. Aristotle's solution is to keep the language of *alteration*, without which *perception* would no longer be covered by the pattern of explanation expounded in *De Generatione et Corruptione* I 7 and *Physics* III 1-3, but to refine the meaning of '*alteration*' so that it signifies a (2)-(3) *transition* [sc. to perception] rather than the ordinary change it signifies elsewhere.<sup>37</sup>

Aristotle is made to assert that *perception* is a refined form of alteration on the basis of the claim that the *transition to* perception is a refined form of alteration. If that were Aristotle's argument, it would be stupefyingly inept.<sup>38</sup>

The confusion is reflected in the fluctuating reference of Burnyeat's talk of 'the exercise' and 'the actuality' of a potentiality. Sometimes they refer to perception or thinking,<sup>39</sup> sometimes to the *transition to* perception or thinking,<sup>40</sup> sometimes it is unclear what they refer to (54, 55, e.g.).

Burnyeat is well aware of the distinction between perception and the transition to perception (at one point even basing an argument on it (67; cf. 54)). Later (72-73) he appears to think that the instantaneousness of the transition to perception allows us to apply claims about the transition to perception to perception itself: 'the (instantaneous)

transition to perceiving and perceiving can be allowed to merge'. But why instantaneousness should justify such a merger is not explained. And if, for that reason, such a merger is justified in this case, then the merger of any change and the transition to the change is equally justified. There is no reason to foist such confusions on Aristotle. As we will see in the next section, *De Anima* II is well aware of the distinction between an activity and the transition to that activity.

It might be suggested that, as far as his argument against Sorabji goes, Burnyeat could allow Aristotle's claim to be about perception rather than the transition to perception. Then Aristotle is saying directly, just as Burnyeat claims, that perception is not an ordinary alteration. But I will argue in the next section that *De Anima* II.5's claim that perception is a refined sort of alteration does not exclude the possibility that it is also an ordinary alteration.

##### 5. *Four Kinds of πάσχειν*<sup>41</sup>

The confusion between actuality and the transition to actuality results in part from a mistaken conception of the relation between two sections of Aristotle's text: 417a21-b2, which explains two kinds of potentiality, and 417b2-16, which explains two kinds of 'suffering' (πάσχειν).

417a31-b2

The conclusion of 417a21-b2's discussion of potentiality (417a31-b2) specifies a difference between

(1) the transition from knowledge 1 to knowledge 2, and

(2) the transition from knowledge 2 to knowledge 3.

(1) is an ordinary qualitative change between contrary qualities, a passage from ignorance to knowledge – learning. (2) is an importantly different kind of transition but not because of the absence of contrariety. For Aristotle, ignorance and knowledge are contrary qualities and therefore (1) is a straightforward alteration. (2) is not such an alteration because it is not a move between contrary qualities or any other entities of the sort that can replace one another by change in the proper sense. As Aristotle explains in *Physics* III, and assumes throughout his writings, there is proper change only when there is a transition between items within the categories of substance, quality, quantity or place. Thinking of what one knows 2 and not thinking of what one knows 2 belong to none of these categories, and thinking falls into the category of 'suffering' (πάσχειν, κινεῖσθαι).<sup>42</sup> Hence, a switch from not thinking to thinking is not a proper change (cf. *Phys.* 247b7-9).

It is important to note that the difference Aristotle points out between (1) and (2) is *specific to the examples of first and second potentiality under discussion*, viz. first and second potentiality *knowledge*. That difference is *not* a general feature of the distinction between first and second potentiality and their actualities. For example, the move from lightness 2 to lightness 3, from second potentiality lightness to second actuality lightness,

is an ordinary change.<sup>43</sup> But while that difference does not hold for all first and second potentialities, what matters for Aristotle is that it does hold for the case he wishes to illuminate – perception.

#### *417b2-16*

It is an error to conflate, as most do,<sup>44</sup> 417b2-16's distinction with 417a31-b2's distinction. Here is the information which can be derived without controversy from Aristotle's text about the four kinds of alteration distinguished in 417a31-b16.

#### *First Distinction, 417a31-b2*

- (1) the alteration from ignorance to knowledge, an ordinary alteration between contraries
- (2) the transition from not thinking of what one knows to thinking of what one knows (*ἐκ τοῦ ἔχειν τὴν [ἐπιστήμην] μὴ ἐνεργεῖν εἰς τὸ ἐνεργεῖν*), not an ordinary alteration between contrary qualities

#### *Second Distinction, 417b2-16*

- (3) (a) destruction by a contrary
  - (b) change towards negative (*στερητικᾶς*) states
  - (c) no examples given
- (4) (a) a preservation by the actual of the potential and what is like the actual as potentiality is related to actuality

- (b) an advance into itself and actuality
- (c) it is towards a thing's states and nature (*ἐπὶ τὰς ἕξεις καὶ τὴν φύσιν*)
- (d) it is either not alteration or another kind of alteration
- (e) thinking (or the transition to thinking)<sup>45</sup> is an example
- (f) learning is an example

Burnyeat claims that (4) divides into two cases:

(4.1) extraordinary alteration

- (a) a preservation by the actual of the potential and what is like the actual as potentiality is related to actuality
- (b) an advance into itself and actuality
- (e) thinking (or the transition to thinking) is an example.

(4.2) unordinary alteration

- (a) a preservation by the actual of the potential and what is like the actual as potentiality is related to actuality
- (c) it is towards a thing's states and nature (*ἐπὶ τὰς ἕξεις καὶ τὴν φύσιν*)
- (f) learning is an example.

It is certainly natural to identify (1) with (3), and (2) with (4) (or, in Burnyeat's case, (4.1)) since *ἀλλοιωθεῖς* at 417a31 indicates that the difference between (1) and (2) is a distinction between kinds of alteration, and 417b2-16 also explains a distinction between types of alteration. Further, both (1) and (3) speak of contrariety. Thus, (1)/(3) is

understood to be contrasted with (2)/(4), or, in Burnyeat's case, with *both* (2)/(4.1) and (4.2).

This interpretation goes together with an attempt to match kinds of potentiality in 417a21-b2 and kinds of alteration in 417b2-16. Thus, for Burnyeat, (1) and (3) are connected with the transition between first and second potentiality,<sup>46</sup> (2)/(4.1) with the transition from second potentiality to second actuality (51).

The most glaring problem with the identification of (1) with (3), and (2) with (4) or (4.1), is that learning is an example of both (1) and (4.2) (417a31, b12-13). This makes no sense on the proposed interpretation: Aristotle first says that learning is an example of (1)/(3) and therefore – on the view under consideration – *not* an example of (4) (or (4.2)) (417a31-b2), and then says that learning is an example of (2)/(4) and therefore *not* an example of (1)/(3) (417b12-16). While very reticent on the relation between learning as an example of (1) and learning as an example of (4), Burnyeat's position appears to be that viewed from one point of view learning belongs to one class and viewed from another it belongs to the other class (61). We have already seen the failure of his explanation in terms of the different possible ways of describing the 'termini' of learning, either with contrary terms [(1)/(3)] or with the same word [(2)/(4)]. I will explain in a moment why I believe that learning, even when viewed *as* a move between contraries, *as* an ordinary alteration from ignorance 2 to knowledge 2, cannot be an example of (3) and must be an example of (4).

Another reason to reject the identification of the distinctions is this: At 417b14-16, explaining the (3)-(4) distinction, Aristotle says that the first is '*towards* ( $\acute{\epsilon}\pi\acute{\iota}$ ) privative states', the second '*towards* ( $\acute{\epsilon}\pi\acute{\iota}$ ) nature. If (1) = (3) then (1)/(3) is '*towards* ( $\acute{\epsilon}\pi\acute{\iota}$ )



privative states'. Suppose, as Burnyeat claims, that learning considered as a move from *ignorance 2* to *knowledge 2* is 'towards privative states', and considered as a move from *knowledge 1* to *knowledge 2* is towards nature. This creates two difficulties. First,

- (A) the same change, towards the *same* thing under both descriptions (knowledge 2), would be described by Aristotle as *both* towards a *privative* state and towards a *positive* state.

Secondly,

- (B) Aristotle would be claiming that the move from *ignorance* to *knowledge* is a move towards a *privative* state.

Burnyeat would reply, I take it, that 417b14-16's contrast between moves towards privative states and moves towards nature, applied to learning, means that considered as an ordinary alteration from *ignorance* to *knowledge*, learning is a move towards *not* being ignorant, a *negative* state: after the learning is completed, what was ignorant *is not* ignorant. On the other hand, considered as an unordinary alteration from *knowledge 1* to *knowledge 2*, learning is a move towards a positive state.<sup>47</sup>

I would reply, in turn, that Burnyeat's point about learning would apply equally to the transition to thinking. If the move from *ignorance 2* to *knowledge 2*, considered *as* a move towards *not* being ignorant 2, is a move towards a negative state, then the move from *ignorance 3* to *knowledge 3*, considered *as* a move towards *not* being ignorant 3, is

equally a move towards a *negative* state. Burnyeat's contrast between (3) and (4) does not exist.

Further, if, as we were told, it is essential to ordinary alteration that it is an alteration between *contraries*, then surely the description of this alteration as a move from ignorance to *knowledge* is the 'canonical' ordinary alteration description. And, if our description is to be in terms of privation rather than contrariety, why should this canonical description be replaced by 'an alteration from being ignorant to *not being ignorant*' rather than by 'an alteration from *not knowing 2* to *knowing 2*'? And so why would it be more accurate to describe this alteration as a move *towards* a negative state rather than as a move *from* a negative state *towards* a positive state?

Further, I believe that the passage quoted two paragraphs below from *Metaphysics* H.5 indicates that τὰς στερητικὰς διαθέσεις at *De An.* 417b15 has a stronger meaning than mere negation, indicating an alteration destructive of the nature of the subject of change. Anybody who agrees, and, along with this, regards Aristotle's talk of the perfecting character of (4) as indicating a positive development towards the nature of the subject,<sup>48</sup> cannot identify (1) with (3). For Aristotle's example of (1) is the alteration from ignorance 2 to knowledge 2, and in contrast with (3), as Aristotle points out in 417b12-16, this example of (1) is plainly not an alteration destructive of the subject's nature but rather an alteration that develops and perfects the subject's nature. It matters not at all what learning is described as an alteration *from*: whether seen as a move from ignorance 2 or knowledge 1, the alteration to knowledge 2 is a positive development in the subject's nature. Like becoming fine, learning is the contrary of φθορά (*Phys.* 221a30-b2), not something *destructive* of the subject's nature.<sup>49</sup> Of course the starting-point of the

alteration to knowledge 2 – ignorance 2 – is destroyed, but that is good, not bad, for the subject. What *would* be destructive for the subject would be a return to ignorance 2 from knowledge 2, forgetting.

This reason for rejecting the identification of (1) with (3) must be accepted by Burnyeat. For he agrees that his unordinary alteration – (4.2) – described in contrast with (3) at 412b12-16,

(3) τήν τε ἐπὶ τὰς στερητικὰς διαθέσεις μεταβολὴν καὶ

(4.2) τὴν ἐπὶ τὰς ἕξεις καὶ τὴν φύσιν,

is alteration that *perfects* the *subject's nature*.<sup>50</sup> If so, he cannot deny that his unordinary alteration of learning, *as* such an alteration, is itself a *good*. Nevertheless, consistently with his identification of learning as an example of (1)/(3), Burnyeat dismisses the idea that what is contrasted with (4), viz. (3), indicates alteration towards anything *bad* (62, n. 88). He thinks that 417b2-4's contrast of ordinary alteration with extraordinary alteration merely makes the point that ordinary alteration – (1)/(3) – is destructive of *the starting-point* of ordinary alteration (54-55). If he thinks that, when explaining (3), 417b12-16's talk of 'change towards privative states' likewise refers to the destructive nature of ordinary alteration, its contrast between (3) and (4) is, for him, between (3) alterations towards the (mere) negation of (and hence destruction of) the *starting-point* of the alteration and (4.2) alterations *perfecting*, making *good*, the *subject* of alteration.

That makes 417b12-16's contrast very odd: a distinction between

- (3) what is towards the negation of and destructive of the *starting-point* with *no implication* about the alteration's *value*; and
- (4.2) what preserves and *perfects* the *subject* of alteration.

That would not be a real distinction. *Every* ordinary alteration is towards the negation of its starting-point, but some (e.g. learning, becoming healthy) also perfect rather than destroy the subject of the alteration. Often, when the starting-point is an evil or valueless, its removal through the acquisition of its opposite is a positive good for the subject.

Burnyeat might say that the fact that an ordinary alteration is destructive of the starting-point of the alteration indicates that it is also, in a way, destructive of the subject: to undergo an ordinary alteration is to become 'unlike one's present self' (42, 62). But what in that sense is 'destructive' of the subject may also *perfect* the subject as specified by (4.2). For example, to move from ignorance 2 to knowledge 2 is to become unlike one's present self: what was ignorant 2 *is not* ignorant 2 but knows 2. In such cases, as far as Aristotle is concerned, becoming unlike one's present self is quite consistent with, in Burnyeat's words, developing 'the dispositions which perfect the subject as a thing of its kind' (66), consistent with the alteration being a 'development ... which perfects the subject's nature' (77; cf. 63). So it would be illogical to *contrast* the subject's becoming 'unlike its present self' in Burnyeat's value neutral sense with (4.2)'s perfecting of the subject.<sup>51</sup>

These problems arise, in part, because of the mistaken assumption that (1) = (3) and (2) = (4) or (4.1). Instead, I believe, we should understand 417a21-b2 to set out the

distinction between kinds of potential knowledge, closing the discussion at 417a31-b2 by contrasting – as explained above – the ways in which their actualities are realised. 417b2-16<sup>52</sup> then goes on to explain another distinction between kinds of alteration. As it will turn out, 417b2-16 will explain that both contemplation and the learning referred to previously at 417a31-32 as an example of (1) are refined forms of alteration.<sup>53</sup> And the two distinctions between kinds of alteration will also diverge in that 417b2-16 tells us nothing about the *transition* to knowledge 3 referred to at 417a32-b2.

I believe the distinction drawn in 417b2-16 between two kinds of alteration matches a distinction drawn in *Metaphysics* H.5, 1044b29-34 between two types of state which matter can potentially change to:

There is a difficulty in the question how the matter of each is related to the contraries. For example, if the body is potentially healthy, and the contrary of health is disease, is the body potentially both healthy and diseased? And is water potentially wine and vinegar? Or in the one case is it the matter in respect of the positive state and form, and in the other case in respect of privation and destruction which is contrary to its proper nature? (*ἢ τοῦ μὲν καθ' ἑξῆς και κατὰ τὸ εἶδος ὕλη, τοῦ δὲ κατὰ στέρησιν και φθοραν τὴν παρὰ φύσιν;*)

H.5's distinction between potentialities for positive and negative states matches the difference between positive change and development and negative and destructive change 'contrary to nature'. This is the same language *De Anima* 417b2-16 uses to contrast (3) and (4):

Positive

*De Anima*: alteration that is σωτηρία of a thing's potentiality and ἐπὶ τὰς

ἕξεις καὶ τὴν φύσιν

*Metaphysics*: potentiality for alteration κατὰ ἕξιν καὶ κατὰ τὸ εἶδος<sup>54</sup>

Negative

*De Anima*: alteration that is φθορά τις ὑπὸ τοῦ ἐναντιοῦ and ἐπὶ τὰς στερητικὰς

διαδέσεις, not change ἐπὶ τὴν φύσιν<sup>55</sup>

*Metaphysics*: potentiality for change κατὰ στέρησιν καὶ φθόραν τὴν παρὰ

φύσιν

The *Metaphysics*' example of health and disease makes the difference relatively clear: health is a good, positive state for a living thing, and the potentiality for it is a potentiality for a positive state. Illness is an evil, a negative, destructive state for a living thing and the potentiality for it is a potentiality for a negative, destructive state. Corresponding to such positive and negative states and potentialities are positive and negative moves towards and away from a thing's nature. That is what the distinction in *De Anima* 417b2-16 is about: just as becoming healthy is a positive development preservative of a thing's nature,<sup>56</sup> so learning and thinking of what one knows (and perception and the acquisition of the capacity for perception) are positive developments preservative of the nature of their subject.<sup>57</sup> *De Anima* 417b2-16 gives no examples of negative developments contrary to a thing's nature, but forgetting what one knows and becoming ill or vicious would fall into this class.

As argued above, if (4) is a positive, nature preserving change and (3) a negative, nature destroying change, the (1)-(2) distinction cannot be identified with the (3)-(4) distinction. As the example of learning shows, an alteration belonging to (1) need not be a negative development. Nor is there any reason why transitions such as (2) should be identified with positive developments (4): for example, the move from not thinking what is false to thinking what is false.

Another reason, I claim, for rejecting the identification of (2) and (4) or (4.1) is that the former is about the *transition* from ‘non-actuality’ to actuality, such as from not thinking to thinking. At first sight it is very plausible to understand (4.1) to be about the transition to actuality in view of Aristotle’s language in 417b2-10.<sup>58</sup> Nevertheless, there are also good reasons to believe that Aristotle is making a point about thought and perception themselves rather than about transitions to thought and perception.

First, as stressed in section 4, the overall aim of *De Anima* II.5 is to clarify perception, not the transition to perception. If the refined form of alteration explained in 417b2-16, of which perception is supposed to be an example, is a *transition to actuality*, Aristotle is, in complete confusion, claiming that perception is a refined form of alteration because the transition to perception is an refined form of alteration.

Consequently, if it is possible to read 417b2-16 as being about actualities rather than transitions to actuality, we should do so. And it is quite possible to so read those lines. Consider, for example, 417b5-7:

*θεωροῦν γὰρ γίνεται τὸ ἔχον τὴν ἐπιστήμην, ὅπερ ἢ οὐκ ἔστιν ἀλλοιοῦσθαι ... ἢ ἕτερον γένος ἀλλοιώσεως*

The referent of *ὅπερ* is what this sentence claims to be a refined form of alteration. It can be understood to refer to *θεωροῦν*, in which case it asserts that thought is a refined form of alteration. Burnyeat thinks it obvious that *ὅπερ* refers to *θεωροῦν γίνεται*,<sup>59</sup> because ‘on anyone’s account of the earlier lines 417a30-b2’, (2) (the transition from not thinking of what one knows to thinking of what one knows) is a transition to actuality, and therefore it would be strained not to understand (4.1) in the same way (78). But this argument assumes what I am challenging: that (2) in 417a31-b2 = Burnyeat’s (4.1) in 417b2-16.

Again, it is quite possible to read *εἰς αὐτὸ γὰρ ἢ ἐπίδοσις καὶ εἰς ἐντελέχειαν* at 417b6-7 as a statement about thinking rather than the transition to thinking: thinking is an advance of the thinking subject towards itself and towards its actuality. I take *ἐντελέχειαν* to refer in the first instance to the realisation of the nature of the subject which knows. Thinking is a positive good for its subject which contributes to rather than thwarts the full manifestation of that nature.

Positive support for my proposal that 417b2-16 is about actualities (such as thinking and perception) rather than transitions to actuality is supplied by Aristotle’s initial description of (4) (or (4.1)) at 417b3-5: the refined kind of alteration that is a preservation of potentiality is related to that potentiality as actuality is related to potentiality. All agree that the kind of potentiality at issue here at least includes knowledge 2.<sup>60</sup> Now, what does Aristotle describe as the actuality of knowledge 2? What does *Burnyeat* describe as the actuality of



knowledge 2? Initially, at any rate, Burnyeat describes *thinking* of what one knows – i.e., knowledge 3 – as the actuality of knowledge 2 (50 and n. 60). Referring to *Metaphysics* Θ.8’s doctrine that a potentiality is defined in terms of its actuality, Burnyeat points out (54) that knowledge 2 is defined in terms of knowledge 3. This agrees with Aristotle’s consistently expressed view that knowledge 3, not the transition to knowledge 3, is the actuality of knowledge 2, a view stated a few lines previously in II.5 (417a27-29), in *De Anima* II.1 (412a9-11, 21-27), and everywhere else he speaks of actual and potential knowledge.<sup>61</sup> So, if the refined type of alteration that is a preservation of potentiality is related to that potentiality as actuality is related to potentiality, and the relation of knowledge 3 to knowledge 2 is one example of this kind of relation, then the refined alteration that is a preservation of potentiality is knowledge 3, not the transition to knowledge 3.

Strong evidence to support our understanding II.5’s refined alterations to consist in a class of actualities rather than transitions to actuality is the analogy Aristotle draws between thinking and housebuilding at 417b8-9:

Therefore it is not good to say that the thinker, *when he thinks* (ὅταν φρονῆ), is altered, just as it is not good to say that the housebuilder <is altered> *when he builds* (ὅταν οἰκοδομῆ).<sup>62</sup>

Burnyeat<sup>63</sup> and others understand this to mean that the thinker (housebuilder) does not alter when he thinks because *the transition to thinking* (housebuilding) is not an alteration. That interpretation is not impossible. Nevertheless, it is not what Aristotle *says*. When he explained the class (2) of alterations in 417a30-b2,

Aristotle made it clear that it is the transition to actuality (the alteration *ἐκ μὴ ἐνεργεῖν εἰς τὸ ἐνεργεῖν*) that is different from alterations such as learning. The consequence of that point for a thinker is that the thinker is altered in a different way from (1) *when he switches from not thinking to thinking*. But 417b8-9 says instead that the thinker and builder are not altered *when they think and build*. The ‘time’ when a man is switching to thinking or building is not the time when he thinks or builds. Since Aristotle’s statement is about a man at the time when he thinks, not about a man at the ‘time’ *prior* to the time when he thinks, it is most natural to understand 417b8-9 to be saying that for a man to think or build is not for the man to alter.

Thus, 417b8-9 makes a claim about the subject not changing in a certain way when engaged in a refined alteration, it indicates that actuality rather than the transition of actuality is a refined alteration. Furthermore, in accordance with my interpretation, as the example of housebuilding shows, those subject preserving actualities include paradigms of change in the strict sense (see n. 62). So it cannot be Aristotle’s aim to divorce refined alterations from change in the strict sense.

Burnyeat appeals (60) to *De Anima* II.4, 416a34-b3 to support his interpretation of 417b8-9’s statement about the builder and thinker as indicating that the transition to actuality rather than actuality is refined alteration:

Further, food is affected by what is nourished by it, but this is not affected by the food, just as the carpenter is not affected by the wood, but the wood by him. But the carpenter only changes from inactivity to actuality (*ὁ δὲ τέκτων μεταβάλλει μόνον εἰς ἐνέργειαν ἐξ ἀργίας*).

If this passage supports any reading of 417b8-9 it supports mine, not Burnyeat's. The second sentence makes a statement about the transition to actuality, saying that the carpenter *does* change in switching from inactivity to actuality, but also that the carpenter '*only*' changes in switching from inactivity to actuality. The way in which the carpenter is said *not* to be affected in the first sentence must differ from the way in which the carpenter *is* said to be affected in the second sentence. Since the carpenter is affected in changing from inactivity to actuality, it can only be *when acting on the wood* that the carpenter is not affected, just as, I claim, 417b8-9 means that the thinker and builder are not affected *when they think and build*.

In any case, my interpretation makes better sense of 416a34-b3. Aristotle says: 'the carpenter is not affected by the wood, but the wood <is affected> by him'. Evidently Aristotle's point about food is that what it nourishes is not affected *when* the food is acted on by what it nourishes. Likewise, the time when the wood is affected by the carpenter is evidently the time when the carpenter is acting on the wood, not the time *prior* to the time when the carpenter is acting on the wood, i.e. when the carpenter is *in transition* from not acting on the wood to acting on it. Note, too, that while Burnyeat's interpretation of II.5 is based on suppressing the distinction between actuality and the transition to actuality, 416a34-b3 shows that Aristotle is perfectly clear on the distinction.

Aristotle's claim at 417b8-9 that the housebuilder is not altered when he builds may be trading on his general view about agents and patients, that for an agent to act on a patient is not for the agent to change (intransitive) but for the patient to be

changed by the changing (transitive) the agent does (*Phys.* III.3). But as the example of learning which follows a few lines later (417b12-16) shows, Aristotle does not intend to deny that a subject which alters in the refined sense can thereby be altered in the strict *Physics* III sense: the learner changes qualities in the ordinary way but also thereby develops in a positive, refined way. So I take his point about the housebuilder to be (at least primarily) that the building is a positive development of the builder qua builder, as thinking (417b2-12) and learning (417b12-16) are positive developments for a human being qua human being.

I conclude that we have good reason to reject the identification of the distinctions between kinds of alteration drawn in 417a30-b2 and 417b2-16. 417a30-b2 distinguishes (1) ordinary alteration as defined in *Physics* III and (2) the transition from non-actuality to actuality. 417b2-16 distinguishes between (3) negative and (4) positive developments, where (4) covers actualities rather than transitions to actuality. The distinctions are evidently quite different, and examples of (1) will be found in both (3) and (4), as learning is an example of (4) and forgetting an example of (3).

Thus, *De Anima* II.5's notion of a refined alteration is not meant to specify a kind of change that cannot be an ordinary alteration as defined in *Physics* III. Hence, Aristotle's assertion that perception is a refined alteration (4) does not imply that perception is not an ordinary alteration (1). Nor, despite Burnyeat's claim (76-77), does the fact that 'perception is a refined alteration' uses the 'is' of classification rather than the 'is' of composition cause any difficulty with Sorabji's view that an ordinary alteration is the matter of perception. The claim

that perception is a preservative type of alteration is quite consistent with the claim that the matter of perception is an ordinary alteration.

#### 6. *Possible Identity or Necessary Difference?*

One final problem should be mentioned. Difficulty in understanding Burnyeat's view is created by the fact that at times he seems to suggest that an ordinary alteration can be a refined alteration.

1. His exposition (47-54) of 417a21-b2 ignores his own alleged distinction between ordinary potentiality and first potentiality, consistently describing ordinary alteration, which was supposed to be the actuality of ordinary potentiality, as the actuality of *first* potentiality, one of the potentialities whose actuality was supposed to be other than ordinary alteration.

2. Burnyeat is very unforthcoming on the question of how we are to view the relation between learning considered as an ordinary alteration and learning considered as an unordinary alteration; and what this is supposed to tell us about the relations between ordinary alterations and refined alterations.<sup>64</sup> He both points out that learning is an example of ordinary alteration *and* unordinary alteration,<sup>65</sup> and assumes that an unordinary alteration such as learning cannot be ordinary alteration.<sup>66</sup>

When discussing the example of learning at 417a31-b2 he says: '*At this stage* the first type of alteration is assumed to be the ordinary alteration we studied in the *Physics*, where indeed learning is a standard example of alteration' (54, my italics). Does this mean that the assumption that learning is an ordinary alteration is later *overridden*, or that

learning will turn out to be a refined alteration *as well as* an ordinary alteration? A few pages later he says (61):

even here the implication that to teach someone is to alter them *can* be misleading. For the pupil, *whom we have hitherto considered* under the description 'ignorant', *is also* a knower in sense (1). *When the pupil is so considered*, the termini of the (1)-(2) transition are *no longer* marked by contrary descriptions,<sup>67</sup> but by the same word 'knower', in different but compatible senses (my italics).

The assertion that it is misleading to say that learning is ordinary alteration might be understood to mean that the statement is false. But if the pupil 'is *also*' a knower 1, then presumably it is also true to say that before he learns he is ignorant 2 – a fact that, in any case, it would be absurd to deny. So the transition's being a move from knowledge 1 to knowledge 2 does not exclude its *also* being a move from ignorance 2 to knowledge 2.

Both the unclarity and difficulty in Burnyeat's position is brought out by his claim that ordinary alteration and unordinary alteration differ in that the result of an ordinary alteration is a *diathesis*, a temporary condition which its subject can be expected to discard; while the result of an unordinary alteration is a *hexis*, a 'fixed dispositional state' which, in ordinary circumstances, you can expect its subject *not* to lose.<sup>68</sup> But the state knowledge 2, which (according to Burnyeat) is the result of both ordinary alteration from ignorance 2 and of unordinary alteration from knowledge 1, cannot be both temporary and permanent. Likewise, Burnyeat must say that the single event of learning, as a move from ignorance 2 to knowledge 2, will both involve 'attributes accidental to a thing's

nature' *and*, as a move from knowledge 1 to knowledge 2, be, by contrast, 'a change towards nature', 'an advance into itself' (63).

3. He points out that one case of (to use his terms) moving from ordinary potentiality to first potentiality – an animal's development of sensory powers – 'is undeniably the result of change' (64). But he then claims (i) that 'the transition to being a second potentiality perceiver is not the coming to be of a new entity', (ii) the transition is not a '*straightforward* case of an existing subject to exchanging one quality for another', and (iii), as a change towards nature, '*is no ordinary alteration*' (65, my italics). If the animal's development of sensory powers 'is undeniably' a change, how can it be that it 'is no ordinary alteration'?

4. 417a14-17 says that 'to begin with we speak of *πάσχειν* and *κινεῖσθαι* and *ἐνεργεῖν* as the same'. According to Burnyeat, although by the end of *De Anima* II.5, with regard to these notions, three distinctions have been drawn between kinds of alteration, those distinctions leave 'unchallenged the idea that <ordinary alteration, unordinary alteration, and extraordinary alteration> are all examples of change (*kinesis*) in the sense of *Physics* III 1-3: actuality (*energeia*) which is incomplete in the sense that it is directed towards a result beyond itself' (66).<sup>69</sup> Similarly, he argues (55-56, 58) that extraordinary alteration must fit *Physics* III's definition of alteration since that book says that any non-substantial change must be an alteration, locomotion or change in quantity; and the transition from not thinking to thinking is manifestly not a locomotion or change in quantity.

Burnyeat does not explain how extraordinary alteration can fit *Physics* III's definition of change at the same time that, as he repeatedly says (see n. 4), *Physics* III's definition

picks out *ordinary* alteration *as opposed to* refined alteration. For example, earlier in his paper Burnyeat said that if the potentiality of which perceiving is the actuality

is the type discussed in *Physics* III 1-3 [i.e., the potentiality for ordinary alteration], its exercise will be the incomplete actuality of real alteration. The sense of sight will be the potentiality to *be* red ... In short, the Sorabji interpretation will be correct.

‘But distinctions must be made.’ The sense of sight is not that type of potentiality.

*Nor, consequently, is its exercise the incomplete actuality of real alteration.*<sup>70</sup>

How, then, can it be that *De Anima* II.5 leaves ‘*unchallenged* the idea that <ordinary alteration, unordinary alteration, and extraordinary alteration> are *all* examples of change (*kinesis*) in the sense of *Physics* III 1-3: *actuality (energeia) which is incomplete* in the sense that it is directed towards a result beyond itself’?<sup>71</sup>

Burnyeat makes statements in this last vein when he is instructing us on ‘how to read an Aristotelian chapter’:

the introduction of suitably refined meanings of ‘alteration’ allows Aristotle to explain perception and learning within the framework of his physics, which by definition is the study of things that change. He adapts his standard notion of alteration, familiar from *Physics* III 1-3... (28)

‘Adapt’ might suggest that there is some revision in the *Physics* III definition of alteration when it is applied to perception in *De Anima* II.5, and of course that is just what is suggested when Burnyeat denies that perception is an ordinary alteration. But as the above quotations show, when it is explained how *De Anima* II.5 fits into Aristotle’s study of nature, we are told instead that *Physics* III’s definition is simply adopted without



revision. The contradiction between Burnyeat's claims does not disappear because the denial that perception is an ordinary, incomplete alteration is made when arguing against Sorabji, while the assertion that perception is ordinary, incomplete alteration is made when explaining how the study of perception fits into Aristotle's physics. Refined alteration either does or does not fit *Physics* III's definition of change. It cannot fit the definition when we link the study of perception to the rest of Aristotle's physics, and not fit it when we are distinguishing perception from ordinary alteration. And if refined alteration satisfies the definition only in part, if we can only expect some but not all the features of ordinary alteration to hold of refined alteration,<sup>72</sup> then it does not satisfy the definition, period. *Physics* III's definition of change is obviously meant to define change, including alteration, in the strict sense.

However Burnyeat's claims are to be understood, they might suggest that there is no contradiction in a 'change' being both an ordinary alteration and a refined type of alteration. If so, he undermines his main claim about the most important lesson to be drawn about perception from *De Anima* II.5, made immediately after the remark quoted in the previous paragraph:

In the ordinary sense of these terms [sc. 'being affected', 'alteration'] they signify the loss of a quality and its replacement by another (opposite or intermediate) quality from the same range ... *That is not what happens in perception*, which is a different way of being affected and altered.<sup>73</sup>

If an extraordinary alteration can be an ordinary alteration, then the claim that perception is an extraordinary alteration does not justify the claim that ordinary alteration ‘is not what happens in perception’. In which case the demonstration that perception is a refined kind of alteration does nothing to show that it is not also an ordinary alteration.

### 7. Conclusion

I will conclude by setting out the main disagreements between Burnyeat and myself regarding the interpretation of *De Anima* II.5.

1. Burnyeat understands the points made about potential knowledge in 417a21-b2 to be setting out characteristics that hold generally for first and second potentiality. I understand Aristotle to be making points only about first and second potentiality in the case of knowledge, points that have parallels in the case of perception but not with other cases of first and second potentiality.
2. Burnyeat claims that II.5 distinguishes three kinds of potentiality: ordinary, first and second potentiality. I claim that it only distinguishes first and second potentiality.
3. Burnyeat claims that different kinds of potentiality distinguished in II.5 are realized by different kinds of actuality – ordinary potentiality by ordinary alteration, first potentiality by unordinary alteration, second potentiality by extraordinary alteration. I claim that the mere fact that a potentiality is a first or second potentiality implies nothing about what sort of entity or alteration

the actuality of that potentiality is. So the actuality of a second potentiality may be an ordinary change (building or being built), the occupation of a position (being high up), or an activity in *Metaphysics* Θ.6's sense.

4. Burnyeat claims that the distinction between kinds of alteration drawn in 417a31-b2 is identical with the distinction, or rather with one of the distinctions, drawn in 417b2-16. I claim that the two passages draw different distinctions.
5. Burnyeat claims that II.5 distinguishes three kinds of alteration – ordinary alteration, unordinary alteration, and extraordinary alteration. I claim that four types are distinguished: first (417a21-b2), a distinction is drawn between ordinary alteration and the switch from inactivity to activity; then (417b2-16) a distinction is drawn between negative and positive alterations.
6. Consequently, Burnyeat claims that II.5's statement that perception is a refined kind of alteration is based on both 417a31-b2 and 417b2-16. I claim that II.5's assertion that perception is a refined kind of alteration, while drawing on the distinction between first and second potentiality from 417a21-b2, is based primarily on the distinction between kinds of alteration drawn in 417b2-16, and means that perception is a preservative rather than a destructive kind of alteration.
7. Burnyeat claims that the refined kind of alteration is a transition to an actuality. I claim that it is an actuality.
8. Burnyeat claims that the fact that an alteration is a preservative, refined kind of alteration – as specified in 417b2-16 – entails that it cannot be an ordinary

alteration. (Or at least he claims this when explaining how II.5 is supposed to refute the Sorabji interpretation). I claim it entails no such thing: both thinking of what one knows and learning, an ordinary alteration, are preservative, refined alterations.

9. Consequently, Burnyeat claims, and I deny, that Aristotle's assertion that perception is a refined kind of alteration entails that it cannot be an ordinary alteration.

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<sup>1</sup> M. Burnyeat, 'De Anima II 5', *Phronesis* 47 (2002), 29-90, at 28-29, 46, 61, 76, 81-82. The paper expands an argument from 'Is an Aristotelian Philosophy of Mind Still Credible?', in A. Rorty and M. Nussbaum (eds.), *Essays on Aristotle's De Anima* (Oxford: Clarendon Press, 1995), 15-26, at 19. See also M. Burnyeat, 'How Much Happens When Aristotle Sees Red and Hears Middle C?', *Essays on Aristotle's De Anima*, 422-34; J. Magee, 'Sense Organs and the Activity of Sensation in Aristotle', *Phronesis* 45 (2000), 306-30, at 311-19. Richard Sorabji's position is set out in 'Body and Soul in Aristotle', *Philosophy* 49 (1974), 63-89; and 'Intentionality and Physiological Processes', in M. Nussbaum and A. Rorty (eds.), *Essays on Aristotle's De Anima*, 195-225.

<sup>2</sup> Numbers in parentheses refer to page numbers in Burnyeat's paper 'De Anima II 5'.

<sup>3</sup> Burnyeat labels as '(Pot<sup>2</sup>)' what has traditionally been called, and what he himself calls, 'first potentiality'; and as '(Pot<sup>3</sup>)' what has traditionally been called, and what he himself calls, 'second potentiality'. Similarly, he labels as '(Act<sup>2</sup>)' what has traditionally been called 'first actuality'; and as '(Act<sup>3</sup>)' what has traditionally been called 'second actuality' (66; cf. 51). I will ignore this confusing terminology and use the labels set out in the text.

<sup>4</sup> Burnyeat, 28, 29-30, 35, 42, 48, 51, 54, 58, 66.

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<sup>5</sup> Burnyeat, 28, 29, 38-9, 42-43, 51, 54-55, 65. For the present discussion it is especially pertinent to bear in mind that, as Burnyeat points out (54), Aristotle constantly uses learning as an example of ordinary alteration (*Phys.* 201a18, 201b31-32, 202a32, 202b2-8, 10-11, 16-17, 19-20, 224b11-13, 225b31-33, 226a15, 227b13, 229b4, 257b4-5; *De Gen. et Corr.* 319a16; *Meta.* 1048b24-25).

<sup>6</sup> Burnyeat, 42. Cf. 42-3, 47, 56, 57, 66, 67.

<sup>7</sup> Burnyeat, 29, 54-56, 65.

<sup>8</sup> Burnyeat, 42-43, 48, 54-55, 62, 66, 86. Cf. 63; Magee, 'Sense Organs and the Activity of Sensation in Aristotle,' 318.

<sup>9</sup> For example, 73: 'New meanings of "potentiality" have been distinguished, and we have seen how they bring with them new, non-standard meanings of "being affected" and "being altered"'. Cf. 46, 47, 54, and 'Is an Aristotelian Philosophy of Mind Still Credible?', 19: 'The alteration involved in perception is alteration in a special sense *because* it is comparable to the transition from' second potentiality to second actuality' (my italics).

<sup>10</sup> For example, 51: 'So to understand a change one has to understand what sort of potentiality it is the actuality of. The difference between first and second potentiality will be spelled out in terms of the difference between passing from (1) to (2) and passing from (2) to (3).' The first sentence suggests that the difference in actualities will be explained in terms of the difference between their potentialities. The second suggests that the difference between the potentialities are to be explained in terms of the difference between their actualities. (Note that, for Burnyeat, in the context of the quoted sentence, it is the *transitions* from (1) to (2) and (2) to (3) which are the actualities, the alterations, which Aristotle is concerned to distinguish.)

<sup>11</sup> Burnyeat, 28, 36-37, 82.

<sup>12</sup> Burnyeat, 28, 54, 65-66.

<sup>13</sup> Burnyeat, 61. In the scheme on p. 50, 'P is a knower' picks out what p. 51 refers to as 'first potentiality'.

<sup>14</sup> Perhaps 'Alt 2' is a misprint for 'Alt 3', or perhaps he is ignoring (as he frequently does – see below) his distinction between ordinary potentiality and potentiality 1.

<sup>15</sup> I use Burnyeat's own translation where possible, viz. for lines 417a21-22 (51), and 417a30-b2 (85). He has a different translation of 417a30-32 on p. 53.

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<sup>16</sup> I am not persuaded by Burnyeat's argument for this translation as opposed to the usual 'but the one *becomes actually knowing* after having undergone qualitative alteration, often from a contrary condition, the other *becomes actually knowing* in another way, ...' (84-87). But the choice of translation does not matter for present purposes since he agrees that 417a31-b2 describes 'a contrast between the transition from (1) to (2) and that from (2) to (3)' (88).

<sup>17</sup> 'In the ordinary senses of these terms ['being affected', 'being altered'] they signify a loss of a quality and its replacement by another (opposite or intermediate) quality from the same range (417a31-2; 417b2-3...)' (Burnyeat, 29, where his '417a31-2' shows that he understands these lines to describe what he means by 'ordinary alteration'; my italics; cf. 65).

<sup>18</sup> Burnyeat, 66: 'If there are three such alterations, there must be three types of potentiality for the three alterations to be actualities of.' Cf. 69-70 where it is said that only unordinary and extraordinary alteration are pertinent to first and second potentiality.

<sup>19</sup> My italics. The references show that Burnyeat is talking about ordinary alteration and extraordinary alteration.

<sup>20</sup> Burnyeat speaks of ordinary alteration as the actuality of first potentiality throughout his discussion of the distinction between first and second potentiality on pp. 47-57. For example: 'A knower in sense (1) has a potentiality to be a knower in sense (2), viz. someone who "has been altered through learning and has repeatedly changed from a contrary condition" (417a30-32)... By a "contrary condition" ... Aristotle means ignorance...' (53); 'Linguistically, the termini of the transition between (1) and (2) are marked by contrary descriptions: "ignorant" vs. "knows"' (55). (Similarly in 'Is an Aristotelian Philosophy of Mind Still Credible?', 19). Contrast 69, and 77: 'Learning, the transition from (1)-(2), is unordinary alteration.'

<sup>21</sup> Burnyeat, 61. Cf. 55-56, where 'the absence of contrariety' is a compelling reason for denying that the (2)-(3) transition is an alteration. The '(2)-(3)' transition is the transition from second potentiality to second actuality, from knowledge 2 to knowledge 3. See Burnyeat, 50-51.

<sup>22</sup> *Metaphysics* 1052a2-4: 'an ignorance (*ἄγνοια*) which is like blindness ... a total absence of the faculty of thinking (*τὸ νοητικόν*)'.

<sup>23</sup> Apart from the passages about to be discussed, see *EE* 122b32; *NE* 1110a1, 1110b18, 19, 25, 30-1111a1, 15-17, 19, 1113b24, 30, 1135b12, 1136a6-7, 1144a16; *Poetics* 1453b30. (For the case of

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perception, see *Topics* 106b13-20). Often an involuntary agent lacks knowledge 2, and hence is ignorant 3, viz. when the agent has no belief or a false belief. In other cases knowledge 2 will be present, and, on *NE* III's analysis, action with such knowledge is involuntary when the relevant ignorance 3 rather than knowledge 3 is present. This causes problems for Aristotle in the case of *akrasia*, discussed in the next paragraph, which I will not go into here.

<sup>24</sup> *NE* 1146b34, 35.

<sup>25</sup> *NE* 1147a7.

<sup>26</sup> Others have already pointed out that a transition from (2) to (3) can be an ordinary alteration. See S. Everson (*Aristotle on Perception* (Oxford: Oxford University Press, 1997), 93); J. Sisko ('Alteration and Quasi-alteration', *Oxford Studies in Philosophy* (1998) 16, 331-52 at 336; R. Sorabji, 'Intentionality and Physiological Processes: Aristotle's Theory of Sense-Perception,' 221. Burnyeat's sixty-two page paper contains no response.

Although Aristotle does speak in II.5 (417a32-b1, 9-10) of the transition *from* (*ἐκ*) knowledge 2 *into* (*εἰς*) actuality (knowledge 3), when used to specify the starting-point or end-point of a change, 'terminus' in its proper sense means 'the from which' (*τὸ ἐξ οὗ, ἀρχή, πόθεν*) or 'the into which' (*τὸ εἰς ὃ, τελευτή, ποῖ*) or 'limit' (*πέρας*) of *change in the strict sense*, i.e. change as defined in *Physics* III: change of substance, quality, quantity or place. (See, for example, *Phys.* 224a35-b4, 241b11-12, 262a25-26, 263a24-25, b1-2, 265a29-32; *Meta.* 1022a7-8, 12-13; *NE* 1174a30, 32, b5). In this proper use, apart from substantial change, only qualities, quantities and places are 'limits' of change. So there is no proper limit, starting-point or end-point in the transition from knowledge 2 to knowledge 3; while in the transition from knowledge 1 to knowledge 2, ignorance 2 is and knowledge 1 is not the starting-point. When describing the alleged differences between ordinary alteration, unordinary alteration and extraordinary alteration (29, 31, 55, 56, 61), Burnyeat uses 'termini', 'the altered state' and 'the state it starts from' to refer indifferently to knowledge 1, ignorance 2 or knowledge 2, running together the notion of a proper limit and Aristotle's language in 417a32-b1 and 417b9-10.

<sup>27</sup> Burnyeat, 42: 'Alteration, as a kind of change, is the actuality of the alterable *qua* alterable (*Ph.* III 1, 201a11-12) ... At the end of the process ... the potentiality which existed before and (more fully) during the alteration is no more. It is exhausted, used up.' The reference to *Physics* III.1 refers to Aristotle's

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general definition of change as the actuality of the changeable qua changeable. Since that definition applies to all four kinds change, it on its own can imply, as Burnyeat claims, that the potentiality actualized in alteration is destroyed at the end of the alteration only if it implies that the potentiality actualised in *any* change is destroyed at the end of the change.

<sup>28</sup> I argue that the potentiality is rather for *change* in ‘Is Aristotle’s Definition of Change Circular?’, *Apeiron* 27 (1994), 25-37. (Burnyeat mistakenly refers (89) to another paper that argues against (iii), ‘Kosman on Activity and Change’, *Oxford Studies in Ancient Philosophy* 12 (1994), 207-18.) Burnyeat objects that, contrary to Aristotle’s position that change is incomplete, my view makes change complete as soon as it begins (42, n. 37). In fact, my view implies no such thing. For Aristotle a change, as opposed to an activity, is incomplete in the following ways: (1) it is without its end (end-point) as long as it exists (*Meta.* 1048b21-22; *Phys.* 201b31, 257b8-9; *De Anima* 417a16-17); (2) as long as a change exists, there is more of *it* to come (*Phys.* VI, *NE* 1174a17-19, b6-14); and (3) as long as a change exists, its species is undetermined (*NE* 1174a14-b7). (See my papers, ‘Aristotle on Activity and Change’, *Oxford Studies in Ancient Philosophy* 13 (1995), 187-216; ‘Alteration and Aristotle’s Activity-Change Distinction’, *Oxford Studies in Ancient Philosophy* 16 (1998), 227-57). The assertion that change is defined as an actuality of a potentiality for *change* rather than *being* is consistent with all three statements.

<sup>29</sup> *Phys.* 208a31-32, 243a39-40, 260a20-261a28, 265b17-266a5; *De Caelo* 310b34-311a1; *Meta.* 1072b9.

<sup>30</sup> How could Aristotle hold this if he believes Burnyeat’s (i): In ordinary change, the *starting-point* is the potentiality for being in the end-point? That would imply that the object was simultaneously high up (lightness 3) at the end-point and down below (lightness 2) at the starting-point. But this is simply one indication of the unacceptability of (i): if we assume (ii), the object that is light 3 *does* possess lightness 2, the potentiality for being where it is, and the potentiality that is lightness 2 cannot be identified with the starting-point (or being in the starting-point) of the move from down below to high up. See further the end of this section.

<sup>31</sup> Burnyeat, 42. At the end of an alteration, Burnyeat says (42): ‘a new quality, which *is* a new potentiality for change, has replaced the old ... Cold *is* a potentiality for being warm. Being warmed, the actuality of that potentiality, ... [O]nce a thing is warm, it ... no longer even possesses the potentiality for being warm ... The cold has been destroyed.’ (my italics; see also 62, 63).



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<sup>32</sup> Thus too A. Kosman, 'Substance, Being and *Energeia*', *Oxford Studies in Ancient Philosophy* 2 (1984), 121-49 at 131, 132.

Burnyeat says (62) that ordinary alterations between ignorance and knowledge differ from those between warmth and coldness in that when knowledge is lost, the potentiality for ignorance of which forgetting is the actuality is not the knowledge that is the starting-point of the alteration. He does not explain what this further potentiality is, but whatever it is it must be a *second* potentiality that is *lost* as an outcome of the forgetting, otherwise the ordinary alteration of forgetting would be a preservation of the potentiality of which it is the actuality; but preservation, according to Burnyeat, is what non-ordinary alterations do. Further, if, in the case of forgetting, a potentiality distinct from the starting-point serves as the actualised potentiality, why not in other cases? All that appears to be offered for justification of the distinction between warmth and knowledge is the latter's greater stability, but *why* that should justify the distinction is not explained. And if the fact that 'in normal circumstances you can expect a knower *not* to change back to ignorance' (62) does indeed mean that forgetting is not the actuality of the potentiality that is knowledge 2, then the fact that in normal circumstances you can expect someone ignorant 2 of generalship (e.g.) not to change to knowledge 2 of generalship should mean that the ordinary alteration which is learning generalship is not the actuality of ignorance 2. Hence, since, as an *ordinary* alteration between *contraries*, learning generalship cannot, for Burnyeat, be the actuality of knowledge 1, there must be some potentiality distinct from both ignorance 2 and knowledge 1 of which learning is the actuality.

<sup>33</sup> Burnyeat claims that thinking differs from perception in that, in the alternative 'either [i] not an alteration at all or [ii] a different kind of alteration', Aristotle reserves thinking for [i], perception for [ii]. This, he explains, is because the transition to perception, being a *passive* change, fits *Physics* III's definition of change. By contrast, he claims, the transition from knowledge 2 to knowledge 3 'is not a passive change, hence not a change at all as understood in *Physics* III 1-3' (57-58). This difference is said to manifest itself in the fact that whereas one can think of what one knows whenever one wants, one cannot perceive whenever one wants (417b19-27).

There are at least two problems here. (1) Thinking is just as much an example of *πάσχειν* as perception. Aristotle's analogy between thought (*νοεῖν*, *not*, pace Burnyeat (70), learning; cf. *De Sensu* 441b22-23) and perception (429a13-18, b23-24, 431a8) shows that thought is understood as a *πάσχειν* brought about by an

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agent – τὸ νοητόν. The fact that one can think, but not perceive, whenever one wants, has nothing to do with the contrast between doing (ποιεῖν) and suffering (πάσχειν). It is rather based on a difference in τὰ ποιητικά in the two cases: the agent of perception is an individual external to the perceiver, the agent of thought a universal internal to the thinker (417b22-28). (2) As *Physics* III's γνωριμότερον formulation of the definition of change shows, that definition applies to *doing* (ποιεῖν) such as housebuilding as well as passive change (πάσχειν) (202b26-27): 'the actuality of what potentially acts (ἢ ἐντελέχεια) τοῦ δυνάμει ποιητικοῦ) and is potentiality acted on in so far as they are such'.

<sup>34</sup> 'Extraordinary alteration is what perceiving *is*' where 'this is the "is" of classification' (Burnyeat, 77).

Burnyeat speaks in the same way throughout his paper, for example on 28-29: 'The negative message of *De Anima* II.5 is easy to state. This is the chapter in which Aristotle informs us of his view that, although *perceiving* is traditionally thought to be a case of being affected by something, an alteration caused by the object perceived, it is only in a refined sense of being affected or altered that it is true. In the ordinary sense of these terms they signify the loss of a quality and its replacement by another (opposite or intermediate) quality from the same range', etc.... That is not what happens in *perception*', etc. (my italics).

<sup>35</sup> Burnyeat, 56, 58, 59, 65, 67, 69, 72, 74-75, 77.

<sup>36</sup> The conflation between perception (thinking) and the transition to perception (thinking) is common in discussions of *De Anima* II.5. See, for example, Alexander, *De Anima cum mantissa*, ed. I. Bruns (Berlin, 1887), 81, 27-82; 84, 23-28; R. D. Hicks, *Aristotle: De Anima* (New York: Arno Press, 1976), 356: 'Alex. Aphr. suggests γένεσις as a better term to describe ... the second *transition* from ἔξις to ἐνέργεια ..., though he admits that the term Becoming cannot be applied without qualification to *the activity of thinking*' (my italics); J. Sisko, 'Material Alteration and Cognitive Activity in Aristotle's *De Anima*', *Phronesis* 41 (1996), 138-57 at 142, 143; S. Everson, *Aristotle on Perception*: what Everson calls 'alteration 2' is both the realization of a capacity such as reflection (92) and 'the *change from mere capacity to activity*' (93, my italics). Magee, 'Sense Organs and the Activity of Sensation in Aristotle', 313: 'Aristotle identifies *the act of perception* with alteration<sub>2</sub> [i.e., refined alteration] ... as the exercise of knowledge *comes about through* an alteration<sub>2</sub> ..., so does actual perception <*come about through* an alteration<sub>2</sub>>'; cf. 317; T.K. Johansen, *Aristotle on the Sense Organs* (Cambridge: Cambridge University Press, 1997): 'Aristotle introduces these

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distinctions to make the point that *perceiving* is like the *change ... from possessing knowledge ... to having knowledge and actually using is*' (269, my italics).

By contrast Richard Sorabji, though clear on the distinction between actuality and the transition to actuality, thinks that 417a21-b16 is talking solely about the second ('Intentionality and Physiological Processes,' in A. Rorty and M. Nussbaum (eds.), *Essays on Aristotle's De Anima* (Oxford: Clarendon Press, 1995), 195-225 at 220-21).

<sup>37</sup> Burnyeat, 58, my italics and brackets. Another example (74-5, my italics): '[P/A]'s description of *perceiving* as assimilation is to be understood as referring to extraordinary alteration (Alt 3), *a* (2)-(3) *transition*.' Other examples can be found on 55, 68-69, 'Is an Aristotelian Philosophy of Mind Still Credible?', 19.

<sup>38</sup> Aristotle is given an equally inept argument in the opposite direction by Lear (*Aristotle: the Desire to Understand*, 104). According to him, Aristotle concludes that since contemplation and perception are activities (*ἐνέργειαι*) in *Meta. Θ.6*'s sense, the transitions to contemplation and perception are activities in the same sense. This is as bad as the argument that since walking is an ordinary change, the transition to walking is an ordinary change.

<sup>39</sup> Burnyeat, 48, 50, 53, 56, 57, 65, 67, 69, 85, 86.

<sup>40</sup> Burnyeat, 28, 51, 52, 54, 65, 66, 70. The same ambiguity is found in Lear (*Aristotle: the Desire to Understand*, 104).

<sup>41</sup> Aristotle says that one kind of transition he marks off is either not an alteration (affection) or a different kind of alteration (affection) (417b6-7, 13-15). I will simply speak of it as a refined form of alteration.

<sup>42</sup> Here *πάσχειν* refers to the 'undergoing' of the patient in any change.

<sup>43</sup> For this reason, *Notes on Eta and Theta* (M. Burnyeat et. al., (Oxford, 1984), 136) is inaccurate in saying that the distinction between (1) and (2) is merely 'the familiar contrast between the transition from first potentiality to first actuality ... and from first actuality to second actuality' (136). What holds for the two contrasted transitions in the case of knowledge does not hold for all transitions from first potentiality to second potentiality, and from second potentiality to second actuality.

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<sup>44</sup> *Notes on Eta and Theta* is one exception (136). For the conflation, see, for example, T. Penner, 'Verbs and the Identity of Actions', in Ryle, eds. G. Pitcher and O. Wood (Garden City, 1970), 393-460, at 447; S. Everson, *Aristotle on Perception*, 91; J. Sisko, 'Alteration and Quasi-Alteration', 335. For Burnyeat, 417a31-b2's distinction between ordinary alteration and extraordinary alteration is also set out at 417b2-12, while 417b12-16 distinguishes ordinary alteration from unordinary alteration.

<sup>45</sup> I take the example to be thinking, Burnyeat and others understand it to be the transition to thinking.

<sup>46</sup> As noted in section 1, this is how Burnyeat speaks in his exposition of 417a21-b2 (47-57), until he suddenly introduces ordinary potentiality as the potentiality of which (1) and (3) are actualities on p. 66.

<sup>47</sup> Burnyeat, 62: 'Ordinary alteration Aristotle now describes, less vividly than at 417b3, as "change towards negative conditions" (417b15). What he means is the familiar story we read before. Alteration is coming to be qualitatively unlike one's present self. At the end of the process, what *was* e.g. cold *is not* cold, but warm: the negation "is not" signifies that one quality has been replaced by another.' So likewise, presumably, in the case of the change from ignorance to knowledge, what was ignorant *is not* ignorant. (Cf. 54-55: 'As one learns, ignorance gives way to knowledge like cold to warmth'). Hence, the move from ignorance to knowledge is a 'change towards negative conditions' because it is a move to the privation of the starting-point of the change.

<sup>48</sup> As many do. For example, R.D. Hicks, (*Aristotle: De Anima*, 356-57), who appeals, as I do below, to *Meta.* H.5. He explains change *ἐπὶ τὰς ἕξεις καὶ τὴν φύσιν* (417b16): 'The subject is capable of taking on qualities or positive states ... and so becoming what nature designed it to be ... nature of course always aiming at the good and tending to perfection'. Such change is opposed to alteration that is 'a deterioration or reversal', implying 'suffering and deterioration'. Cf. R. Sorabji, 'Intentionality and Physiological Processes', 221; Themistius, *In Libros Aristotelis De Anima Paraphrasis*, ed. R. Heinze (Berlin: Reimer, 1890), 56.6-12; Philoponus, *In Aristotelis De Anima Libros Commentaria*, ed. M. Hayduck (Berlin: Reimer 1897), 304, 16-22; G. Rodier, *Aristote: Traité de l'Âme* (Paris: 1900), 258; A. Jannone, in A. Jannone and E. Barbotin, *Aristote: de l'âme* (Paris: Les Belles Lettres, 1966), xvii-xviii; *Notes on Eta and Theta*, 136-37; J. Sisko, 'Material Alteration and Cognitive Activity in Aristotle's *De Anima*', 142.

<sup>49</sup> Cf. *EE* 1217b29-33; *Rhetoric* 1371a33-34, quoted in n. 54. Hicks (*Aristotle: De Anima*, 356) says that alteration in the strict sense is 'inconsistent with ... enhanced existence and self-development'. But,

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obviously, this is not true of learning, alteration in the strict sense from ignorance 2 to knowledge 2.

Likewise for many other ordinary alterations.

<sup>50</sup> He says that the learning described in 417b12-16 – unordinary alteration – is developing ‘the dispositions which perfect the subject as a thing of its kind’ (66), a ‘development ... which perfects the subject’s nature’ (77; cf. 63). He also agrees that extraordinary alteration preserves the dispositions that perfect the subject’s nature (66). Cf. ‘Is an Aristotelian Philosophy of Mind Still Credible’, 19.

<sup>51</sup> Philoponus’ account of 417b12-16 (304, 19 to 305, 2) illustrates the confusion that can result in trying to graft 417a31-b2’s distinction on to the distinction drawn in 417b2-16. He recognizes that 417b2-16 distinguishes between (4) good and (3) bad alterations (304, 22-23, 24-28), and wishes to align this contrast with 417a31-b2’s contrast between (2) the move from not actualising a potentiality to actualising it, and (1) alteration between contrary qualities (304, 29-32). Yet he recognizes that the alteration from ignorance to knowledge, an example of (1), is an alteration of positive value (304, 22-24).

<sup>52</sup> Beginning: ‘*But* (δέ) affection is not simple either ...’, which is naturally understood to introduce a new point, not a repetition of the distinction drawn in the immediately preceding lines, 417a31-b2.

<sup>53</sup> Thus, too, *Notes on Eta and Theta*, 136. However, it differs from my view in identifying (4) with the transition to actuality rather than actuality.

<sup>54</sup> Cf. *Rhetoric* 1371a33-34: ἐν μὲν γὰρ τῷ θανμαστον τὸ ἐπιθυμητόν, ἐν δὲ τῷ μανθάνειν <τὸ> εἰς τὸ κατὰ φύσιν καθίστασθαι. *NE* 1153a11-12: καὶ τέλος οὐ πασῶν [ἡδονῶν] ἕτερόν τι, ἀλλὰ τῶν εἰς τὴν τελέωσιν ἀγομένων τῆς φύσεως. 1153a33-35: ἔτι ἐπεὶ τοῦ ἀγαθοῦ τὸ μὲν ἐνέργεια τὸ δ’ ἔξις, κατὰ συμβεβηκὸς αἱ καθιστᾶσαι εἰς τὴν φυσικὴν ἔξιν ἡδεῖαι εἰσιν.

<sup>55</sup> Cf. *NE* 1119a23-24: καὶ ἡ μὲν λύπη ἐξίστησι καὶ φθείρει τὴν τοῦ ἔχοντος φύσιν. See also *De Gen. Anim.* 724b32, 725a27-28; *EE* 1227a18-31; *Pol.* 1342a19-23.

<sup>56</sup> A ‘perfecting’ such as becoming healthy or learning can be a straightforward change, a motion to and end beyond itself. Magee’s defence of Burnyeat’s view rests, in part, on misidentifying II.5’s refined form of alteration with ἐνέργεια in *Meta.* Θ.6’s sense (‘Sense Organs and the Activity of Sensation in Aristotle’, 313, 318; cf. Sisko, ‘Material Alteration and Cognitive Activity’, 142).

<sup>57</sup> Cf. *Phys.* VII.3, 246a13-17: ἀλλ' ἢ μὲν ἀρετὴ τελείωσίς τις (ὅταν γὰρ λάβῃ τὴν αὐτοῦ ἀρετὴν, τότε λέγεται τέλειον ἕκαστον - τότε γὰρ ἔστι μάλιστα κατὰ φύσιν ..., ἢ δὲ κακία φθορὰ τούτου καὶ ἔκστασις. Speaking of strength and beauty, *Phys.* 246b22-24 says: διαδέσεις γὰρ τινες τοῦ βελτίστου πρὸς τὸ ἄριστον, λέγω δὲ τὸ βέλτιστον τὸ σῶζον καὶ διατιθὲν τὴν φύσιν.

However, *Physics* VII.3 cannot be applied blindly to the interpretation of *De Anima* II.5, for its 'refined' form of alteration is not *De Anima* II.5's. *Physics* III defines 'change' (κίνησις) in such a way that changes of substance, quality, quantity and place all count as changes. Various places in the corpus (*Physics* V.2, *Physics* VII.3, *De Anima* II.5) introduce more restricted uses of 'alteration' and 'change' that also diverge from one another. *De Anima* II.5, 417b2-16 restricts 'alterations' to changes destructive of a subject's nature. In *Physics* VII.3, by contrast, *no* change that is the acquisition or loss of a shape or a state counts as an alteration, and so a destructive change such as the acquisition of a vice or the loss of a virtue does not count as an alteration (246b13-14, 247a4-5, b1-2). And whereas on the *Physics* VII.3 use *any* change that is the acquisition or loss of a sensible quality counts as an alteration, in *De Anima* II.5 the acquisition of a sensible quality that is a positive development is a refined alteration.

<sup>58</sup> θεωροῦν γὰρ γίνεται το ἔχον τὴν ἐπιστήμην ... εἰς αὐτὸ γὰρ ἢ ἐπίδοσις καὶ εἰς ἐντελέχειαν ... τὸ μὲν οὖν εἰς ἐντελέχειαν ἄγειν ἐκ δυνάμει ὄντος τὸ νοοῦν καὶ φρονοῦν.

<sup>59</sup> *NE* X.4, 1174b12-14 asserts that there is no γένεσις or κίνησις of an ἐνέργεια. If thought is an ἐνέργεια as opposed to a κίνησις, how can thought 'come to be'? While, contrary to a common misconception, *De An.* II.5 is not concerned with the ἐνέργεια-κίνησις distinction, *NE* X.4's statement means that since an ἐνέργεια is temporally indivisible, its existence is to be contrasted with that of a κίνησις which, being a temporally divisible entity, exists through one part after another 'coming to be' (*Phys.* 206a21-23, 27-33, b12-14, 207b14-15, 219b9-10; see my 'Activity and Change in Aristotle', 201-2). In *De An.* II.5, 417b5, by contrast, thought 'comes to be' in the same way as there is a *transition to ἐνεργεῖν* in 417a32-b2.

<sup>60</sup> Unlike Burnyeat, I believe that the pair knowledge 2 and knowledge 1 is another example of the actuality and potentiality referred to at 417b3-5.

<sup>61</sup> *Phys.* 247b7-9, 255a30-b5; *De Gen. Anim.* 735a7-11; *Meta.* 1048a34-35, 1050a10-14, 36, 1087a15-21; *NE* 1146b31-35; *EE* 1225b11-12. Likewise, the actuality of the potentiality to perceive is always

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perception, not the transition to perception (*De An.* 412b28, 428a6-7; *Meta.* 1048b2, 1049b10-15, 19-23, 1050a10-12, 21-24, 36).

<sup>62</sup> Mistranslated by Burnyeat on p. 60: ‘For this reason, it is not good to call it alteration when a knower exercises their knowledge any more than when a builder builds’ (cf. 57). The Greek says not (as Burnyeat’s allows) that the action – thinking or building – is not an alteration but that the subject is not altered when performing it. This is not an insignificant difference: ‘the fact that [housebuilding] is not an alteration of the housebuilder does not mean that the building of a house is not a *κίνησις*’ (*Notes on Eta and Theta*, 137). For Aristotle, housebuilding is an ordinary change but the builder is not altered in building since, if x is a change, for the agent to x a patient is for that patient, not the agent, to undergo the change x (*Phys.* III.3). (Burnyeat (81) mentions the view that housebuilding is not a change without expressing agreement or disagreement. In fact, it is clear that housebuilding is a *κίνησις*, not an activity (*ἐνέργεια*) in Θ.6’s restricted sense. Building, like any *κίνησις* and unlike any activity, has a path from starting-point to end-point, divides into temporal parts with a positive temporal magnitude, is divisible into specifically different stages, exists only so long as its end does not exist, etc. It falls under Aristotle’s definition of *κίνησις* at *Phys.* 202b26-27, quoted in n. 33 (cf. 251a8-16). See my paper, ‘Activity and Change in Aristotle,’ 211-16).

<sup>63</sup> Burnyeat, 60: ‘If the builder does not alter, but merely changes from inactivity to activity, then the knower’s *passage* to activity is not alteration either’ (my italics). Sorabji agrees (‘Intentionality and Physiological Processes’, 221). Thus, too, Hicks, *Aristotle: De Anima*, 356.

<sup>64</sup> There are a number of questions that arise here that Burnyeat does not address. For example, what is the relation between the two pairs of starting ‘termini’ – ignorance 2 and knowledge 1? I have already pointed out (n. 32) that the reason Burnyeat gives for denying that knowledge 2 is the potentiality of which forgetting (the move from knowledge 2 to ignorance 2) is the actuality equally implies that the potentiality of which learning is the actuality is not ignorance 2. Then the question arises as to what this potentiality actualised in learning might be. But if he wants ignorance 2 to be a potentiality actualised in learning, what is the relation between knowledge 1 and the actuality of ignorance 2? Both knowledge 1 and ignorance 2 will be the potentiality for knowledge 2, and given Aristotle’s general doctrine that a potentiality is defined

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in terms of its actuality, since they are defined in terms of the very same actuality, knowledge 1 and ignorance 2 must be potentialities that are specifically identical.

<sup>65</sup> Burnyeat, 65: ‘Aristotle first distinguished (Alt<sup>1</sup>) [ordinary alteration] and (Alt<sup>3</sup>) [extraordinary alteration], with learning as his example of (Alt<sup>1</sup>). Then he distinguished (Alt<sup>1</sup>) from (Alt<sup>2</sup>), with learning now an example of (Alt<sup>2</sup>) [unordinary alteration].’

<sup>66</sup> That an unordinary alteration cannot be an ordinary alteration is the assumption behind Burnyeat’s statement that the development of sensory powers, being ‘a “change towards nature”, a real “advance into itself”, *is no ordinary alteration*’ (65, my italics). It is also assumed on p. 77.

<sup>67</sup> Note how Burnyeat here implies that the single (1)[= *first* potentiality]-(2) transition can be described both as a move from knowledge 1 to knowledge 2, *and* as a move from *ignorance* 2 to knowledge 2, paying no attention to his distinction between ordinary potentiality and first potentiality.

<sup>68</sup> Burnyeat, 62. See n. 32.

<sup>69</sup> There is no need to accept Burnyeat’s claim (47; cf. 56, 66) that 417a14-17 asks ‘us to suppose that there is no such thing as complete actuality... There is only the incomplete actuality exhibited by a process of change which is defined by and directed towards an end-state outside itself’. To say that one is going to proceed without distinguishing between three items (*μινεῖσθαι, ἐνεργεῖν, πάσχειν*) is not to say that the last two are to be assimilated to the first. Aristotle’s statement that *κίνησις* is an incomplete *ἐνέργεια* presupposes that *ἐνέργεια* as such is not incomplete, and he may mean simply that he is not concerned with the distinction between complete and incomplete *ἐνέργεια*.

<sup>70</sup> Burnyeat, 48, with my words in brackets, italics in last line my own. Cf. 29-30: ‘... perceiving is not an ordinary alteration of the type familiar from other Aristotelian writings such as the *Physics* and *De Generatione* ...’; 37: ‘How Much Happens When Aristotle Sees Red and Hears Middle C?’, 428: ‘At the end of 2.5 (418a1-3) [Aristotle] had declared that we are not to understand ‘being affected’ and ‘being altered’ in the proper (*kurios*) sense fixed for them in ... *Physics* 3.1-3’.

<sup>71</sup> My italics. Cf. 56, 58.

<sup>72</sup> Burnyeat, 37, 74.

<sup>73</sup> Burnyeat, 29. My italics. Cf. further statements to the same effect on 28, 29, 36-37, 74, 82; ‘Is an Aristotelian Philosophy of Mind Still Credible?’, 19.



