

CONCEPTS IN CLASSICAL GREECE: ARISTOTLE & HIS PREDECESSORS

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THERE IS A WIDESPREAD TENDENCY to run together talk of concepts with talk of universals. We typically focus on the generality of concepts; conversely, we often conduct discussions of the universal features of things in terms of the conceptual frameworks we employ. Both tendencies have roots in Western philosophy with the rise of conceptualism and antirealism, which in many ways form part of our background. But we would do well to disentangle the two. Seeing how concepts and universals differ and how they interact will give us a better grasp of how the concept of concepts develops in the history of philosophy.¹

1. Plato and before

Plato and Aristotle are the first Greek philosophers to explicitly discuss the nature of concepts as such. But their reflections emerge from longer running concerns, not simply with the characteristics shared by many things, but more specifically their natures or essences—their ‘being’ quite literally, what it is for each to be that sort of thing. This accounts for the im-

1. Rapp 2024 is an exception to the general rule, distinguishing clearly between concepts and universals in things, while arguing that Aristotle in the *Metaphysics* treats universals as ‘merely conceptual’ because they are objects of definition, but not causes or principles; see also Weitz 1988 on ‘definitional entites’ (30–32). For a valuable corrective to conceptualist readings, see Hartmann 1957, though he goes too far in the opposite direction: his anti-psychologism leads him to overlook entirely what Aristotle says about concepts in his psychology and to undervalue Hellenistic contributions, claiming that the concept of concept strictly arises only with Ockham and Aureol.

portance of definition in later discussions and the standards that must be met to grasp an essence adequately, beyond just having true descriptions. The focus on essences must be understood within a larger context, in turn, namely the preoccupation with explanation, manifest in Greek philosophy from its beginnings. To make sense of the complexity and changes in the world around us, philosophers sought to identify and articulate the regularities underlying phenomena and what grounds them. But the divergence in their accounts quickly led to reflection on their own theorizing and in particular the concepts they used to grasp the way things are. The beginning of Heraclitus' book is a clear example of this self-reflective turn, when he complains about how others fail to comprehend the truth of what he says:

For even though all things happen in line with the account given here, people act as if unaware, despite being aware, of the words and facts I set out, as I distinguish each thing according its nature and declare how it is.² (22 B 1 DK)

The implication plainly is that his own account (*λόγος*) of the nature (*φύσις*) of things should be preferred to the misconceptions of others. His words are meant to capture generally the character of each type of thing, so as to explain their behavior and interactions. This focus on the nature of kinds or types is not unique in Greek philosophy before Plato. Appeal to kinds in explanations and even the language of 'forms' (*εἶδη, ἰδέαι*) can be found in Empedocles, Philolaus, and Democritus; indeed, Democritus is arguably the first to distinguish clearly between types and tokens (and even uses letters or *stoicheia* to illustrate this contrast).³

So if there is any sense in which Aristotle is right to say that Socrates initiated discussion of

2. All translations are my own.

3. For these claims and discussion of the evidence, see Mourelatos 2022b, esp. 64–76; also Mourelatos 2022a.

universals, it is only in the sense that they were first thematized in his search for adequate definitions.⁴

Plato's discussions of forms, essences, and definition are extensive as well as controversial. For our purposes, though, what matters is the way he links them to thinking. Often this occur in his reflections on the best methods of inquiry, spurred by his keen awareness of how far short of knowledge we fall and how even our grasp of what we are seeking is inadequate or misconceived. By employing what he called 'dialectic', he hoped we might 'divide each kind at its natural joints', rather than hacking it up 'like a bad butcher' (*Phdr.* 265D–266C at 265E1–3), to grasp the underlying natures of things. This well-known remark is an expression of his realism about forms, which he regarded as fundamental both to the nature of things and our knowledge of them. Plato seems willing to go further, though. He is often taken to hold that forms are required for meaningful speech and thought to even be possible (*Prm.* 135B5–C2; *Soph.* 259E4–6). If so, he has the makings of a transcendental argument for the existence of forms: given that there actually is meaningful speech and thought, the preconditions required for their very possibility must be satisfied.⁵ This was Aristotle's impression as well. In his polemical *On Ideas*, he reports a Platonic argument for forms based on our ability to think of a kind, regardless of whether any particulars of that kind exist, since 'the same thought [*ennoia*] remains' even when they have perished (81.25–82.1 Harlfinger).⁶

4. *Metaph.* 13.9, 1086b1–5; cf. 1.6, 987b1–4; 13.4, 1078b17–19, b23–32.

5. So Shields 2013, esp. 213. Some caution may called for, though: whether these passages state a condition for meaningful language in general depends on how we construe *logos* (*Soph.* 259E6) and *dialegethai* (*Parm.* 135C2) in context; and this extends to thought only if Plato's repeated characterization of thought as internal speech is taken in a strongly literal sense (*Tht.* 189E4–190A6; *Soph.* 263E3–264B4; *Phileb.* 38E1–39A7). For an examination of some of the nuances, see now Duncombe 2016.

6. Not mentioned by Shields 2013. For discussion, see Caston 1998a, 264–68.

Yet while forms are obviously relevant, they are not themselves concepts or conceptual constructions. Plato is explicit on this point. In his *Parmenides*, he has the young Socrates suggest to Parmenides that their puzzles about forms might be solved if forms were themselves just thoughts. Parmenides makes quick work of this proposal. The first argument is especially relevant for our purposes:

‘But Parmenides’, Socrates said, ‘might not each of these forms be a thought [*νόημα*], in which case it would be inappropriate for it to occur anywhere other than in our souls? In that way each might be one without being subject any longer to what you were describing.’

‘How’s that?’ [Parmenides] said, ‘Is each of these thoughts one, but a thought of nothing?’ — ‘Impossible’, [Socrates] said.

‘But a thought of something?’ — ‘Yes.’

‘Of something that is or something that is not?’ — ‘Of something that is.’

‘Doesn’t that thought think of some one thing set over all [the instances], since it is some single characteristic?’ — ‘Yes.’

‘But then won’t this one thing that is thought be a form, since it is always the same thing over all [the instances].’ — ‘This, too, seems necessary.’

(*Prm.* 132B3–C8)

Parmenides’ main point is that what makes these thoughts *general* is that they are of a single thing that is ‘set over all’ the instances of a given kind; so it is this *object*, rather than the thoughts themselves, that has the character of a form. The form is the object such thoughts are directed *towards*, the single nature or being these thoughts are *about*. Parmenides and Socrates immediately head off after this quarry. But our interest lies in what they abandoned,

the thought or *noēma*, rather than its object—to use Aristotle’s terminology, the *noēton*. The distinction Plato draws is pivotal. A thought is not in general what it is a thought of. We must distinguish the content of thought—what we are thinking—from its object, what we are thinking of.⁷

The Greek ‘*noēma*’ is not originally a technical term. It occurs frequently in Homer and Hesiod (notably in the metaphor, ‘swift as thought’); and it can be found in a host of authors before the 4th century, including philosophical authors.⁸ Even when theoretical weight is placed on it, as in Parmenides’ poem, it is used for thoughts quite broadly, including false thoughts, and even a way of thinking.⁹ The suggestion that there might be a specific element or component of a thought—what we would call a ‘concept’—seems to emerge only with

7. Sedley (2024, 84–85) and Brown (2024, 98) deny that a *noēma* is the content of thought, arguing that it refers instead to an act or episode of thinking. But both conflate contents with objects: contents are what we think about objects on a particular occasion, not the objects we are thinking of. (This is especially clear in the case of Fregean senses and propositions, which in general are not objects of thought, even intentional ones.) Since, moreover, Sedley holds (84 n. 19) that I can have the same thought as others or on different occasions, he does not use ‘thought’ for individual acts of thinking, but their type, individuated according to their content; so his interpretation comes to much the same thing. O’Brien argues that there is a slide from *noēma* as an act (in Socrates’ proposal) to *noēma* as an object (2103, 206–11, 225–26, 232–34). But if Parmenides’ objections are to be construed charitably, there must be a univocal sense throughout.
8. Homer: *Il.* 7.456, 10.104, 17.409, 18.295, 328, 19.218, 23.216; *Od.* 2.363, 6.183, 7.36, 292, 8.548, 559, 13.330, 14.273, 15.326, 17.403, 18.215, 220, 20.82, 346, 23.30. *Hom. Hymn. Herm.* 43; *Dem.* 329; *Ap.* 186, 448; *Apbr.* 251. Hesiod: *Theog.* 656; *Op.* 129; *Sc.* 88, 222; fr. 43.51 Merkelbach–West. Pittacus: . Theognis: 435, 985, 1083, 1149. Sappho: fr. 41, 51, 60.3, 90 (4).4 Lobel–Page. Alcaeus: fr. 361, 392. Lobel–Page. Pindar: *Olymp.* 7; *Pyth.* 6.29; fr. 52a.3, 122.5 Maehler. Bacchylides: 3.75; 11.54. Herodotus 3.80. For the metaphor ‘swift as thought’, see Hom., *Il.* 15.80–83, *Od.* 7.36; *Hymn. Ap.* 186, 448; Hesiod *Sc.* 222; Theognis 985; Pindar fr. 122.4–5 Maehler; fr. 292 (*ap. Plat. Tht.* 173E–174A); Thales 11 A 1 DK; cf. Theognis 237, 1053.
Philosophers (all Diels–Kranz): Xenoph. B23.2, A35; Parm. B7.2, B8.34, 50, B16.4; Emped. B105.3, B110.10; Gorg. B11.17; Antiph. B9. Cf. Aristophanes *Nub.* 229.
9. See von Fritz’s classic papers (1943, 1945, 1946). Some have argued that these terms are restricted in early Greek poetry and philosophy to a *true* grasp of the essence or nature of things. (For a similar view applied to Aristotle, see the next section below.) But as von Fritz notes, *noein* and its cognates are also used for false thoughts as early as Hesiod and even Parmenides, and it is increasingly common as time goes on, especially in philosophical authors (1945, 226, 237 esp. n. 77, 239–40, 241); cf. Barnes 1982, 158–59 esp. n. 6; Leshner 1992, 103–4. For extended discussion, see Evans 2021, 18–24, esp. 20 ff.

Plato and to become a technical term only with Aristotle.

2. Concepts in ordinary thought

Aristotle has much to say about *nous* or ‘thought’ and its object, the *noēton*—literally, ‘what can be thought about’—as well as the activity of *noein*, thinking. He sometimes uses ‘thought’ to refer to a more fundamental act of understanding or the capacity for it, in contrast with *di-anoia* or ‘discursive thinking’, which includes propositional thought and inference. We might reasonably assume that concepts are what we grasp in these most basic acts and deploy in our more complex ones.

Some take Aristotle to hold a more restrictive account, though, which reserves the term ‘concept’ for a *correct* grasp of essences (and analogously for cognates of *noein* generally).¹⁰ Michael Frede, for example, has argued that according to Aristotle reason emerges very late in individual humans (if at all). Most of our mental life depends instead on what he calls *empeiria*—the accumulated and loosely organized body of similar experiences retained in memory—without any deeper, explanatory grasp of what things truly are and why things happen the way they do. The obvious problem with this interpretation is that such concepts are vanishingly rare; so if true, it follows that most of what we ordinarily call ‘thought’ takes place *without concepts* and would *not even constitute thoughts* ‘properly speaking’,¹¹ a view that contains more than a whiff of paradox. Most of us are able to use terms meaningfully in speech, categorize a wide variety of things, and successfully reason throughout our lives. If we re-

10. Others have claimed this holds earlier in the tradition, especially in Parmenides. See previous note.

11. Frede’s own words (1996 162–64). He says the notions we ordinarily employ are only ‘*something like* concepts’ and do not suffice for genuine thought (163–64, emphasis added; cf. Politis 2001, 400), but belong instead to ‘experience’ (*empeiria*). Frede does not cite any texts, but may have in mind the ‘*ennoēmata* of experience’ mentioned at *Metaph.* 1.1, 981a6, which he would have to distinguish strictly from *noēmata*.

serve the term ‘concept’ exclusively for the sort of understanding that emerges from scientific inquiry, we will need another term, such as ‘conceptions’, ‘notions’, or ‘ideas’, to describe the means by which we perform these operations. Such stipulations would be confusing at best, though. We commonly treat all these terms as equivalent and in the present case, they would be used for remarkably similar functions.

A more straightforward approach would be to say that the features of thought by which we organize experience, draw inferences, and communicate with each other *just are* concepts, without further qualification, even if we aspire towards a more correct, scientific understanding of the natures of things. This, in fact, is Aristotle’s practice. Even though he generally thinks that we should understand things by reference to their fullest realization, that isn’t required for something to *count as* an instance of that kind. So too here. Aristotle does not restrict the term ‘concept’ to the correct grasp of a thing’s nature—what we might call *the normative sense* of the term. Much like Plato, he thinks we often stray wide of the mark: concepts in *the ordinary sense* of the term are frequently inadequate. Human thought may find its highest realization in the acquisition and use of concepts in the normative sense. But this is not how we start out at birth—Aristotle emphatically rejects the doctrine of innate ideas¹²—or how most of us we operate day to day. He clearly thinks that beyond an early age most humans and certainly any competent language user will have concepts well before any attain a scientific grasp of things. To put it in a slogan, we can have *a* concept of animal without yet having *the* concept of animal.¹³

12. *APo* 2.19, 99b25–27; cf. *DA* 3.4, 429b31–430a2.

13. McKirahan 2024 draws a similar distinction, rightly noting that the *Posterior Analytics* is primarily concerned with attaining the correct concept of a thing (119). But he allows that in 2.19 and elsewhere Aristotle is often concerned with the broader notion, which I am concerned with here (120).

Indeed, in Aristotle's view it is only through the skillful deployment of concepts in the ordinary sense that we can develop concepts in the normative sense. His account of the ideal type of definition used in scientific demonstration starts from preliminary nominal definitions of what words express;¹⁴ and this ability to understand words depends on the ordinary concepts we actually possess. Spoken words are themselves symbols and signs of 'modifications in the soul' (*τῶν ἐν τῇ ψυχῇ παθημάτων σύμβολα ... σημεία*), and these in turn are 'likenesses' (*ὁμοιώματα*) of things in the world (*Int.* 1, 16a3–8; 14, 24b1–2, cf. 23a32–33). In the rest of the passage, though, he just refers to *noēmata* or thoughts, which are undoubtedly included in these modifications.¹⁵ When thoughts are 'combined or divided', there is truth or falsehood, just as with words; when they occur individually on their own, they are neither true nor false, like a noun or a verb (1, 16a9–16; 10, 20a31–36). It is reasonable, then, to regard uncombined thoughts, which we have when we understand the words that express them, as *concepts*. The example Aristotle offers is significant: he says that when the word 'goatstag'

14. *APo* 2.7, 92b26–28; 2.10, 93b29–32; cf. 2.7, 92b4–8; 2.8, 93a20–26. See Bolton's classic article (1976) and the extensive discussion in Charles 2000, Part I and esp. ch. 4; also Bronstein 2016, ch. 9.6.

15. Plato uses the same phrase 'modifications in the soul' (*παθήματα ἐν τῇ ψυχῇ*) to describe the mental states in all four parts of the Divided Line, including the two highest, *dianoia* and *noēsis*, which study forms (*Rep.* 6.511D7–8; 7.533D6, E8). Aristotle similarly treats thinking (*νοεῖν*) as a 'modification of the soul' in *De anima* 1.1 (*τὰ πάθη τῆς ψυχῆς*, 403a3–10); he only questions whether this modification is shared in common with the body.

Against this, McKirahan worries (2024, 123; see also Weitz 1988, 19) that if 'modifications in the soul' includes *noēmata*, it would preclude different people from having different concepts, since Aristotle says that these modifications are 'the same for all', as are the objects they are likenesses of (*Int.* 1, 16a6–8). But this is too quick. Aristotle is making a cross-linguistic claim there: while languages are conventional, differing from group to group, the objects we encounter and our mental reactions to them are not; the likeness that holds between mental states and objects is a natural relation, invariant across languages. In contrast, the rest of the chapter concerns the signification of expressions *within* a language. Aristotle thinks words possess definite significations, captured by their nominal definitions (*τί σημαίνει τὸ ὄνομα*, *APo* 2.7, 92b5–8, b26–28; *Metaph.* 4.4, 1006a34–b7). So the modifications that words are a sign of (*ὧν ... σημείον*, *Int.* 1, 16a6) and signify (*σημαίνει τι*, 16b–17, cf. 13–14) will be concepts that speakers of a language *share*, even though some will go on to develop different and possibly more accurate concepts that diverge, much as Aristotle recognizes both nominal definitions and definitions that surpass them (*APo* 2.7).

(τραγέλαφος) occurs on its own, it still ‘expresses something’ (σημαίνει τι, 16a16–18), even though there are no goatstags.¹⁶ We can thus have a concept GOATSTAG and even offer a nominal definition, despite there being no essence or scientific definition (*APo* 2.7, 92b5–8, b26–28). The same can be said of the word ‘void’, which Aristotle also thinks does not refer to anything and yet is still willing to discuss what it means (*Phys.* 4.6, 213a22–29, 213b31–214a12). Aristotle thus uses ‘*noēma*’ for concept in the ordinary sense, not the normative one.¹⁷ Scientific concepts arise only later, after considerable inquiry and effort.¹⁸

3. Aristotle’s empiricism

What, then, are concepts and how are they formed? We know the overall story in outline. The ascent of cognitive powers he traces in both *Posterior Analytics* 2.19 and *Metaphysics* 1.1 is meant to show how our grasp of universals emerges from perceptual experience, by accumulating memories of past perceptions, which are then sorted into those about similar objects (cf. *περὶ τῶν ὁμοίων*, 1.1, 981a7). In *De anima* 3.8, Aristotle makes a stronger claim about how *all* abstract thought depends on the perceptions it derives from:

16. *APr* 1.38, 49a24; *Phys.* 4.1, 208a30–31.

17. In fact, it is only because we have such concepts that we can have the true belief that such things do not exist (*Int.* 11, 21a32–33; *Top.* 4.1, 121a21–25).

18. Aristotle occasionally uses ‘universal’ when he surely has concepts in mind. In *Nicomachean Ethics* 6.3, he says that induction is the ‘source of the universal’ and that syllogisms are constituted ‘out of universals’ (1139b28–29), neither of which is literally true. In discussing how we transition from *empeiria* to knowledge in *Posterior Analytics* 2.19, he similarly speaks of ‘the universal that has come to rest in the soul’ (ἡρεμήσαντος τοῦ καθόλου ἐν τῇ ψυχῇ, 100a6–7, a16, cf. b2) and that perception ‘produces the universal’ (τὸ καθόλου ἐμποιεῖ, b5). But Aristotle is plainly aware of the metonymy involved, as *De anima* 2.5 makes clear: universals, he says, are only in the soul ‘in a way’ (πως, 417b22–24). Universals are present in us only in the sense that ‘likenesses’ of them—that is, concepts—exist in the soul and are thus available to think whenever we want. *Metaphysics* 1.1 is likewise more circumspect than *Posterior Analytics*: he does not say that a universal arises, but merely ‘a single universal belief’ (μία καθόλου ... ὑπόληψις) about similar cases ‘from many notions in experience’ (ἐκ πολλῶν τῆς ἐμπειρίας ἐννοημάτων, 981a5–7). In all these passages, then, we should take him to be referring not to universals themselves, but our grasp of them.

Since there is nothing separate, it seems, apart from perceptible extensions,¹⁹ it follows that the things that can be thought are in perceptible forms, both those described by abstraction, as well as any conditions and modifications that belong to perceptibles. It is for this reason that someone without perception could not learn or comprehend anything. Whenever one entertains [a thought], one must at the same time entertain a quasi-perceptual representation [*phantasma*].²⁰ For quasi-perceptual representations are like perceptual stimulations, but without matter.

(432a3–10; cf. *APo* 1.18)

What can be thought, Aristotle claims, must be *already present in* the perceptible forms received through earlier perceptions. For that reason, the content of abstract thoughts depends on the content of *phantasmata*, the underlying representations that stem from perception. There are complications here, especially regarding compound and negative concepts, to which we will return later. But in Aristotle's mind the connection between thought and quasi-perceptual representations is so close that he worries just two sentences later whether there is *any* substantive difference between them in the simplest cases:

How will the first thoughts differ from quasi-perceptual representations? Or is it

19. This statement cannot be strictly universal, as Alexander himself noted (*apud* Simplicius, *In DA* 284.23–25); for discussion, see Hicks 1907, 545; Shields 2016, 345. Nonetheless there is good reason to think that Aristotle accepts the conclusions here for sublunary objects and bases his account of how we think of immaterial things on them (*DA* 3.7, 431b18–19; *Mem.* 1, 450a7–9, cf. 49–14).

20. Aristotle's technical use of *phantasma* refers to a type of representation that is produced from perception in such a way that it represents its objects in a similar manner (*ὁδὸν ζωγράφημα τι*, *Mem.* 1, 450a27–32; *DA* 3.3, 428b11–14). I have therefore used the translation 'quasi-perceptual representation' to distinguish it from abstract representations like concepts. For discussion of the nature of quasi-perceptual representations, see Caston 1998a, and 2021.

The correlation here between the temporal adverbs *ὅταν ... ἄμα* strongly suggests that thinking takes place concurrently with entertaining a *phantasma*. This would be implied even more strongly if one reads *φαντάσματος* instead of *φάντασμα τι* and construes *ἄμα* as a preposition: 'one entertains [the thought] *together with* a quasi-perceptual representation'. For discussion, see Hicks 1907, 546.

rather than not even these²¹ are quasi-perceptual representations, though they do not occur without quasi-perceptual representations. (432a13–14)

‘First thoughts’ (τὰ πρῶτα νοήματα) are the most basic concepts, which include those initially formed from quasi-perceptual representations. Aristotle clearly assumes that in this basic case, the contents are the same—a concept of RED, for example, and a quasi-perceptual representation of red—since otherwise there is no risk of their being identical. But if they don’t differ in their content, the only difference is in the mode of representation: one is quasi-perceptual, the other conceptual. Aristotle does not explain that difference further, but simply notes that they do differ and that one depends on the other. Conceptual representations cannot be formed or employed apart from the quasi-perceptual representations underlying them.

The puzzle arises directly from the nature of his empiricism and how rich the content of perception is. Aristotle does not accept the crude sensationalism many have attributed to him, starting with Alexander of Aphrodisias.²² On such an interpretation, the only things that can strictly speaking be perceived are qualities intrinsically perceived by a single sense exclusively (ἴδια αἰσθητά), that is, colors, tones, odors, flavors, temperatures, and moisture; what he calls common (κοινά) and coincidental (κατὰ συμβεβηκός) perceptibles are ‘perceived’ only in an extended sense. This interpretation becomes even more extreme when combined (as it typically is) with a widespread reading according to which we only perceive particulars and not types or universals.²³ But this is not in fact Aristotle’s view. In the *Posterior Analytics* he in-

21. Reading ταῦτα with Ha and corrections in E (along with Themistius, Sophonias, and the Aldine). But the same result is implied, by a slightly more circuitous route, if one reads τὰλλα and construes οὐδὲ as a conjunction, “the others are not either,” i.e. *a fortiori*.

22. Alex. Aphr. *DA* 41.9. For discussion, see Caston 2012, 15–16 and 148–49 n. 366.

23. Although some such reading is widely assumed, it is only spelled out precisely in Everson 1997, ch. 5, §1 for ‘accidental’ or coincidental perception, which he construes extensionally. It has recently been reaffirmed and extend-

sists twice that perception involves *both* universals and particulars:

For though one in fact perceives the particular, perception is of the universal—of human, say, and not of Callias, a human. (2.19, 100a16–b1)

For even though perception is of the such, and not of some this, one necessarily perceives a this at a certain place in the present. (1.31, 87b28–30)

The difference between the verbal and nominal constructions, ‘perceives’ and ‘perception’, is best understood as expressing a *de re* view of perception: we perceive an individual x as being of some type F , where the x -place is transparent to substitution, while the F -place is opaque and nonextensional. We do perceive particulars, here and now (1.31, 87b29–33). But perception is fundamentally a ‘power of discrimination’ for Aristotle (*δύναμιν κριτικήν*, 2.19, 99b35) that enables us to distinguish different types of particulars: it ‘reveals’ and ‘informs’ us of their many differences (*πολλὰς δηλοῖ διαφοράς*, *Metaph.* 1.1, 980a27; *πολλὰς εἰσαγγέλουσι διαφοράς*, *Sens.* 1, 437a2). He takes this to explain not only knowledge but behavior. Animals move *because* perception is discriminative (*κριτικά*, *MA* 6, 700b19–21). Discrimination, moreover, is essential to all forms of perception. Aristotle never says that the only perceptibles ‘strictly speaking’ are qualities intrinsically perceived by one sense exclusively—he uses the term *kuriōs* at *De anima* 2.6, 418a24–25 to indicate that they are the *most fundamental* kind of perceptible, not to exclude the others. An animal must be able to recognize another animal as threatening or approaching quickly as much as it needs to tell the difference between plants by their shape, color, or taste. This cannot require concepts, though, since non-rational animals lack them entirely in Aristotle’s view. But they do possess perceptual powers

ed by Gasser-Wingate 2021, who takes it to apply to all perception, without fully recognizing the extreme consequences of the view.

of discrimination. Their senses are sensitive to various ranges of universals that particulars instantiate, and this enables animals to respond differentially. Universals are already part of the content of their perceptions, even though concepts are not.

To grasp a concept one further needs the power of *nous* or understanding. But this ultimately depends on perception in Aristotle's view. *Posterior Analytics* 2.19 argues that a concept of *F* arises, at least in the simplest cases, from repeated perceptions of *F*s as *F*s, when retained in memory and collated in experience.²⁴ This is what gives rise to the worry at the end of *De anima* 3.8. If a simple concept of *F* arises from perceptions of particular *F*s, because these perceptions share the universal *F* as part of their content, then Aristotle needs to differentiate perceiving particular *F*s as *F*s and grasping the universal *F* as such, thereby possessing a concept of *F*. What are concepts, then?

Aristotle views concepts atomistically, in opposition to Plato's more holistic approach.²⁵ In arguing against the *Timaeus*' account of thinking as a continuous cyclical change, Aristotle says that thought just *is* the concepts (*νοήματα*) it consists in: it possesses unity as a sequence (*τῶ ἐφεξῆς ἔν*) of discrete items, like numbers, rather than as something continuous (*DA* 1.3, 407a6–8). The discreteness of each concept is suggested by the term 'noēma' itself. It shares the Greek suffix *-ma* with 'aisthēma', a term Aristotle coins for the stimulation produced in our senses when perceptibles act on them, and also 'phantasma', the term Aristotle uses for the quasi-perceptual representation formed as 'a kind of impression of the aisthēma' (*οἶον τύπον τινὰ τοῦ αἰσθήματος*, *Mem.* 1, 450a27–32). All three words ending in *-ma* signify modifications of our psychological system that bear content and so represent items in the world.

24. For a full defense of this view, see Caston In progress.

25. For an ambitious reconstruction of Plato's holism in the *Timaeus*, see Corcilius 2018.

Aristotle's use of the term '*noēma*' confirms the discreteness of concepts. He compares entertaining a representation from memory just on its own, independent of any awareness of the earlier perception from which it stems, to the way 'a concept or quasi-perceptual representation seems to strike us'; it occurs in the soul 'as a lone concept does' (ὥσπερ νόημα μόνον, *Mem.* 1, 450b29, 451a1). When one reasons and deliberates about how to achieve an end, one sometimes deploys 'quasi-perceptual representations and concepts in the soul as though one were seeing' (*DA* 3.7, 431b6–8).²⁶ Most importantly, Aristotle likens an individual noun or verb to 'a concept without combination or division' (τῶ ἄνευ συνθέσεως καὶ διαιρέσεως νοήματι, *Int.* 1, 16a13–14), which occurs in the soul 'without truth or falsehood' (a9–10). True and false thoughts are possible only through the 'interweaving of concepts' (συμπλοκὴ νοήματων, *DA* 3.8, 432a11–12). This metaphor is used for combinations of words unsurprisingly, in light of the analogy he draws between thought and language, as well as Plato's definitions of *logos* or statement.²⁷ But they differ in a significant way. Plato says that *logos* arises only because of the 'interweaving of forms' (εἰδῶν, 259B5–6); the 'interweaving of words' is due to things themselves 'being woven together' (ὥσπερ αὐτὰ πέπλεκται, *Tht.* 202B3–6). For Aristotle, in contrast, 'weaving' belongs to the conceptual and linguistic order, like truth and falsity:

For falsehood and truth are not in things ... but in thought [ἐν διανοίᾳ] ... Since interweaving and division are in thought rather than in things, this way of being [i.e. being true] is different from the fundamental ways [of being]. Since thought adds or subtracts what something is, the sort of thing it is, how much it is, or

26. Although Aristotle discusses visualization on various occasions, he doesn't think that quasi-perceptual representations, much less concepts, are themselves *objects* of inner awareness. See Caston 2021, 170–76.

27. Interweaving of words: *Cat.* 2, 1a16–19; 4, 1b25; 10, 13b10–12. Analogy between thought and language: *Int.* 1, 16a9–18. Plato's definition of statement: *Soph.* 262c5–7, d2–6.

something else like that, we can put aside coincidental being and being true, since one is indefinite and the other a modification of thought [διανοίας τι πάθος]

(*Metaph.* 6.4, 1027b25–1028a2; cf. 11.8, 1165a21–24)

Truth and falsehood are possible because the discrete concepts we possess can be combined or divided in different ways, which may not correspond to the way things are. They enable us to think of an individual like Aristomenes even after he ceases to exist, not to mention completely nonexistent objects like goatstags and hippocentaurs.²⁸

4. How understanding comes about

Humans not only respond differentially to various types of objects, as animals do, we acquire concepts of these types or features, grasped just as such. On this basis, we further construct logically complex concepts, form judgements, and reason. But how do we form concepts in the first place?

The explicit agenda of *De anima* 3.4 is to explain ‘how thought comes about in the first place’ (429a13). It begins from the assumption that the most basic form of thinking—what I have referred to as ‘understanding’ for clarity, to distinguish it from discursive thinking or *dianoia*—is in a key respect analogous to perception, the other principal power of cognition. Understanding likewise results from an interaction with its object, which causes a person to understand it:

Understanding, then, if it is like perceiving, consists in being modified in a certain

28. Deceased individuals: *APr.* 1.33, 47b21–29; *Peri ideōn* 82.1–4 Harlfinger; cf. *Int.* 11, 21a25–28. Nonexistent objects: *Int.* 11, 21a32–33; *Soph. elen.* 5, 167a1–2; *Peri ideōn* 82.5–7. On Aristomenes, see Ross 1949, 401; Smith 1989, 162–63; Striker 2009, 216–17; also Bäck 1987, 132–35. On nonexistent objects, see Ebbesen 1986, 116–17; cf. Carson 2000; Crivelli 2004, ch. 5.

way by what can be understood [πάσχειν τι ... ὑπὸ τοῦ νοητοῦ] or something else similar [to being modified]. (429a13–15; cf. b24–26)

Aristotle does not think understanding is a simple case of being modified or altered any more than perception is, since we don't lose these powers when they are exercised, but rather realize them.²⁹ But that does not prevent him from making the same claim without this qualification:

The understanding is changed by what can be understood [ὑπὸ τοῦ νοητοῦ κινεῖται].

(*Metaphysics* 12.7, 1072a30)

A simple causal model thus underlies both perception and understanding. Aristotle takes it to imply a certain kind of infallibility, because something's receiving the form of what acts on it does not admit of equivocation. When we perceive or understand *F*, the form we receive is invariably the form acting on us, even if it does not belong to what we take it to. This is fundamental for Aristotle's realism. We have the ability to grasp the actual nature of things because of the way they affect our minds. The causal relation guarantees *sameness in form*:

[The understanding] must, then, be unaffected: it can receive the form [of what can be understood] and is potentially such as it is, though not it; and just as what can perceive is related to the things that can be perceived, so the understanding is related to the things that can be understood. (*DA* 3.4, 429a15–18)

Aristotle is careful here to distinguish between the object understood and the form we take on in understanding the object. Though there is sameness of form, in general they are not numerically the same: the understanding becomes the *same sort* of thing the object is, but *not*

29. *DA* 2.5, esp. 417b5–16; 3.7, 431a4–7. The precise interpretation of this qualification has been the source of extensive controversy over the past 40 years. See Caston 2005, 265–69.

it (τοιούτων, μὴ τοῦτο, 429a16). The form that is received in the understanding just is a concept or *noēma*. What is thought (τὸ νοούμενον) will be numerically the same as what understands it (τὸ νοοῦν, 430a3–4) only in cases where the object is itself ‘without matter’, cases not further identified.³⁰ But even then what it is to understand something and what it is to be understood are not the same (οὐδὲ ταῦτὸ τὸ εἶναι νοήσει καὶ νοουμένῳ), despite being one and the same (*Metaph.* 12.9, 1074b38–1075a5). They constitute an coincidental unity at most and so are not identical in any strong sense.

The forms of what can be understood do not, however, wander into our minds on their own as ‘precise, naked appearances’ (to use Locke’s phrase), but arrive via perception fully clothed. Aristotle says that *noēta* are literally *in* perceptible forms (ἐν τοῖς εἶδεσι τοῖς αἰσθητοῖς, *DA* 3.8, 432a4–5). The latter, having been received in perception, are preserved in quasi-perceptual representations, which have been engendered in such a way as to be similar to them (3.3, 428b11–14; *Mem.* 1, 450a30–32). The soul capable of discursive thought (τῇ διανοητικῇ ψυχῇ) can then use these representations like perceptual stimulations (*DA* 3.7, 431a14–15, b4–5). Aristotle repeatedly states that the soul never thinks without a quasi-perceptual representation for this reason.³¹ But he makes an even more specific claim. It is not simply that whenever we consider something in thought, we use a quasi-perceptual representation at the same time (3.8, 432a8–9). Rather,

what is capable of understanding understands the forms *in* the quasi-perceptual representations [ἐν τοῖς φαντάσμασι]. (3.7, 431b2)

30. I take numerical sameness to be the issue here, since sameness in form has already been affirmed in other cases. For similar claims about the sameness of understanding or knowledge with its objects, see *DA* 3.5, 430a19–20; 3.7, 431a1–2, b16–17.

31. *DA* 3.7, 431a16–17; 3.8, 432a8–10; *Mem.* 1, 449b31. The first passage’s context concerns at least practical thought, but the latter two are clearly theoretical.

Since the general features we grasp in thought are discerned in our quasi-perceptual representations, they must already be contained in their content. But the content of these representations contains much more, as they have the same rich detail as perceptions. If so, then a key part of understanding will consist in *isolating* the features we are focusing on from other parts of its content. This is the task of abstraction, properly understood.

5. Simple concepts and abstraction

In a passage that has not received much attention, *De anima* 3.4 discusses how we apprehend abstract characteristics as such³²—not how we grasp the extension of various things, for example, but what extension itself is, its ‘being’ or essence:

Given that extension is one thing and extension’s being another, water and water’s being, and likewise in many other cases (though not all, since in some they are the same),³³ one discriminates flesh and flesh’s being either (i) by something different or (ii) by being differently disposed [*ἄλλως ἐχόντι*], since flesh is not without matter, but a this-in-that like the snub nose. Now, one discriminates hot and cold with what can perceive, and flesh is just a proportion of them. But one discriminates flesh’s being with something different either (i) separable [from it] or (ii) as a bent line is to itself when straightened out. (429b10–17)

Aristotle doesn’t explicitly endorse either option here, or in what follows. What is striking

32. Lowe 1983, Politis 2001, 395–99 and Menn 2020, 146–50 are exceptions, along with Hicks 1907, 485–93, with references to the Greek commentaries.

33. The only things that are the same as their essences are primary substances, which are not ‘one thing in another thing’ (*ἄλλο ἐν ἄλλῳ*) as its subject and matter. Compounds and things in a subject are distinct from their essences (*Metaph.* 7.11, 1037a33–b7; cf. 7.6, 1031b11–15).

is that he even offers an alternative.³⁴ Some think only option (i) is really in play:³⁵ while we discriminate perceptible qualities with embodied perceptual powers, we discern their being with a different power ‘separable’ from them or from body as a whole (*χωριστῶ*, b16). But Aristotle repeatedly mentions another possibility—twice here and a third time in the continuation of the passage—that we discriminate the essence of concrete objects (ii) with what can perceive (*τῶ ἀισθητικῶ*) but differently disposed or, if it is in some sense different (*ἄλλῳ*, b16),³⁶ related to what can perceive as a straightened line is to its earlier bent state.

Aristotle offers no further elaboration. But a bent line, when straightened, becomes as a whole like one of its elements; so what can perceive, when ‘straightened’, as a whole is not concerned with the myriad features of a perceptible object, but just one, simply as such. The suggestion that understanding is a distinctive use of perceptual powers becomes even more attractive once we recall Aristotle’s immediately preceding argument that there is no bodily organ dedicated to understanding (429a18–27); the understanding does not have *any actual nature* prior to its activity beyond the bare power to understand (a21–22). This minimalist account makes sense if, as option (ii) suggests, the understanding merely uses the perceptual apparatus, in a different way, to apprehend select features we perceive just as such.

Aristotle continues with abstractions (*ἐπὶ τῶν ἐν ἀφαιρέσει ὄντων*), invoking the same pair of alternatives (429b18–21). Just as a snub nose cannot be understood apart from its underlying matter, straightness cannot be understood without its matter—both are compounds,

34. Lowe (1983, 20–21, 25) suggests it is because Aristotle had not yet made up his mind.

35. So Ross 1961, 293; Shields 2016, 307; perhaps also Hicks 1907, 489, though cf. 487, 492. Noriega-Olmos seems to be an exception (2013, 95–97).

36. At 429b16 the expression ‘by something different’ seems to apply to both disjuncts, but it is applied solely to the first disjunct just before (b13) and just after (b20).

where straightness is something like duality in continuous extension.³⁷ So one must discriminate it, he says again, either (i) by something else or (ii) ‘by its being disposed in another way’ (ἐτέρως ἔχοντι, b21). When he discusses abstractions a few chapters later, he compares them to the snub nose once more, saying that we understand both in the same way:

One understands things described by abstraction as one would the snub nose: in so far as it is snub, one does not understand it as separate, whereas if one were to actively understand it as concave, one would understand it without the flesh in which concavity is present. So too one understands mathematical objects as separate, when one understands them, though they are not separate. (3.7, 431b12–16)

In many cases, we cannot understand what something is apart from the matter in which it inheres. Snubness cannot be understood apart from noses—we would have in mind a different, more abstract feature, concavity, that is exemplified by many things besides noses. But concavity, in turn, can’t be understood apart from extension, any more than straightness can. Abstraction can thus be iterated: it is relative to the features we exclude from consideration, though otherwise analogous. We identify a feature within a complex and consider it ‘separately’, i.e. simply as such, *by not considering* other features that accompany it. In this way thought can isolate a feature, whether or not it can ever be found apart from others: those which are coextensive are just ‘harder to isolate in thought’ (χαλεπὸν δὲ ἀφελεῖν τοῦτον τῆ διανοίᾳ) than those found in different materials, as a circle is (*Metaph.* 7.11, 1036a31–b3). We can even think of a substance apart from *all* nonsubstantial features, stripping away in

37. See esp. *Metaph.* 7.11, 1036b8–17; 8.3, 1043a33–34; cf. Plato *Parm.* 137E. Intelligible matter: 7.10, 1036a9–12 (cf. a3–5); 7.11, 1036b32–1037a5 (cf. 1036b8–13); 8.6, 1045a33–b2; cf. 6.1, 1025b33–34.

thought its properties, states, causal powers, even spatial dimensions, to leave only its matter, even though no substance could ever exist apart from such determinations.³⁸

Abstraction, then, does not *extract* forms from matter, either literally or figuratively. It keeps them as they are, but *ignores* what accompanies them.³⁹ It is the ability to consider something simply in a certain respect, to selectively attend to it *without* attending to the rest. Aristotle standardly contrasts abstraction or *aphairesis*—literally, ‘subtracting’—with *prosthe-sis* or ‘adding’, especially as regards descriptions and definitions.⁴⁰ Sometimes we need to add a qualification, to restrict the relevant sense at issue; sometimes we want to consider a broader feature to see what follows more generally, in which case we subtract mention of extraneous features.⁴¹ In physics, the inclusion of material features is essential to its study of bodily change (ἐκ προσθέσεως), while mathematics omits mentioning them to attain its generality (ἐξ ἀφαιρέσεως, *Cael.* 3.1, 299a15–17). Mathematics therefore does not study special objects existing separately, as theology does, but ordinary objects considered in certain respects and ‘not in some other’ (οὐ καθ’ ἕτερον τι θεωρεῖ).⁴² Causal explanations in physics likewise require abstraction: we distinguish something’s being responsible in a certain respect or for a specific

38. *Metaph.* 7.3, 1029a11–26, esp. a11, 16–17; cf. 11.3, 1061a28–b3.

39. See Caston 1998a, sec. VIII. The suggestion is made earlier by Mueller (1979, 99–100, 101–102) and more recently by Bäck (2014, esp. ch. 2.2–3).

For a classic statement of this understanding of abstraction see Geach 1957, 18–38; he rightly lambasts those who make Locke its originator (19–20). Angelelli 2005 characterizes this as the only ‘genuine’ sense of abstraction (157–61). For recent criticism of ‘abstraction-as-subtraction’, focusing on Locke’s imagistic theory, see Gauker 2011, 24–28.

40. See Cleary 1985, esp. 18–20.

41. *APo* 1.5, 74a37–b4 offers a classic example of this, where a property still belongs when some features are subtracted but not others. Lear 1982 frames this in terms of the ‘as-’ or ‘*qua*-operator’ and ‘predicate filters’ (168–69).

42. *Phys.* 2.2, 193b31–194a12; *DA* 1.1, 403b9–16; *Metaph.* 6.1, 1025b25–1026a16; 11.7, 1064a19–28; 13.2, 1077b12–17; cf. 11.3, 1061a28–b3; 13.3, 1077b22–30. The quoted phrase occurs at 1061a35.

effect, and ‘not in some other’ (οὐ καθ’ ἑτερον τι).⁴³ Things that exist separately from matter, like God, must be understood in another way.⁴⁴

The ability to ignore parts of the content furnished by perception can be characterized more positively as the ability to *focus*, which forms the basis for all abstract, rational thought. And it can reasonably be described as using a power we already have, but ‘in a different way’: by not applying it to everything it comes into contact with, but exercising it on just a part. All this requires is that our cognitive system can be causally affected by *some* features of quasi-perceptual representations, without being affected by *all* of them.⁴⁵ Like touching, we either focus on a feature present in such representations or fail to; we cannot attend to it incorrectly. Thought of such simple elements is always true.⁴⁶ It will always have a basis in reality, because of how these representations are generated. Hence, *abstrahentium non est mendacium*—‘no falsity arises’ (*Phys.* 2.2, 193b34–35)—except coincidentally, by attributing that feature to the wrong object (*Metaph.* 9.10, 1051b25–26).

Aristotle’s one extended description of the psychological process involved confirms this interpretation of abstraction. Even when we remember abstract subjects, we use quasi-perceptual representations, but in a distinctive way:

Given what was said about quasi-perceptual representation in *De anima*, it is not possible to understand without a quasi-perceptual representation.⁴⁷ For the very

43. *Phys.* 2.3, 195a6–7; *Metaph.* 5.2, 1013b6–8.

44. For recent discussion of thinking separate forms, see Menn 2020.

45. Caston 1998a, 285–86.

46. *Metaph.* 9.10, 1051b21–27, 1052a1–4; *DA* 3.6, 430a26. Note this is a change from the claim in *De interpretatione* 1 that thought of things without combination is *neither true* nor false (16a10, 15–16, 17).

47. As Biehl 1898 and Beare 1908 both note ad loc., ἐπεὶ at 449b30 is plausibly answered only at 450a13 with ὥστε, rather than being an anacolouthon as Siwek 1963, 151–52 n. 18 and Bloch 2007, 27 n. 5 suggest.

same phenomenon occurs in understanding as in diagramming: even if we don't utilize the fact that a triangle has a determinate quantity, we must still draw one with a determinate quantity. One understands in the same way: even when one doesn't consider quantity, one visualizes a certain quantity, but does not consider it as a quantity; should its nature have quantity, but not a determinate one, one still visualizes a determinate quantity, but understands it merely as having quantity. The reason why it is not possible to understand anything apart from continuity, or things not in time apart from time, is another story. But extension and change must be apprehended by the same thing as time is, and a quasi-perceptual representation is a modification of the common sense. Clearly, then, apprehending them is done by what fundamentally can perceive, so that memory even of what can be understood does not occur without a quasi-perceptual representation. It will be of something understood coincidentally,⁴⁸ but intrinsically it will belong to what fundamentally can perceive. (*Mem.* 1, 449b30–450a14)

When we understand very abstract items—e.g. what has extension, but not any specific one, or something without extension, such as a point—we do so by considering something that has a determinate extension, but without considering that aspect.⁴⁹ To possess a concept, then, we need to store a quasi-perceptual representation on which a concept can be based and brought to mind as desired (*DA* 2.5, 417b22–25; 3.4, 429a6–9). But it needn't be that particular representation. Another with the same feature would do.

48. Reading *τοῦ νοουμένου* with LXSU and corrections in E.

49. Humphreys interprets this passage as involving a 'modification' or 'deformation' of the imagined diagram, which then can stand for a universal object (2023, 84, 86; cf. 2017, 218), in contrast with the concrete perceptible diagram, which is never actually moved but only treated 'as if' it were deformed (77). I cannot find a textual basis for this claim.

If all human thought depends on quasi-perceptual representations, whose content is spatial and temporal like perception, then thought of even the most abstract items must begin from representations of this character. This constraint helps answer a puzzle raised at the end of *De anima* 3.7, which has been largely neglected:

Whether or not it is possible to understand anything actually separate, when one is not oneself separate from extension, is something we must investigate later.

(431b18–19)

Though various things might exist separate from extension, the only thing Aristotle positively identifies as such is God (*Metaph.* 12.7, 1073a3–7). The passage above thus bears on how embodied creatures can pursue a subject like theology, since even our most abstract thoughts must take their start from quasi-perceptual representations of natural, material objects. Perhaps we can reason analogically about God or pursue apophatic theology using negation and complex concepts. But direct apprehension of God of the sort some medievals thought might yield a mystical ‘conjunction’ seems to be ruled out.

This interpretation explains why it is hard to distinguish the most basic concepts from the quasi-perceptual representations on which they are based. The simple, positive features that figure in concepts produced solely by abstraction must already be present in the representations employed—we ‘understand these forms *in* the quasi-perceptual representations’ (*DA* 3.7, 431b2). If little is ignored, their contents will overlap significantly, if not entirely. Such ‘first concepts’ (3.8, 432a12) will be basic in the following regards. (1) As they involve the least abstraction, their content will be closest or even identical to the content of the quasi-perceptual representations on which they are based. (2) They may be temporally earliest as well, since they require the least effort. For the same reason, (3) they are likely to be the most

concrete, not ‘the highest, most abstract thoughts’.⁵⁰

Physics 1.1 contains a particularly suggestive example. It argues that in natural science we advance by using analysis, starting from universal ‘wholes’ that are better known to us through perception, but ‘intermingled’ (184a21–26). In a similar way, Aristotle says, young children initially call all men ‘father’ and all women ‘mother’, taking these words to track certain generic features of their parents’ perceptual appearance; but later they refine this, by separating features that are too general or too specific, to capture the exact extension of these terms (184b12–14).⁵¹ Instead of using ‘mother’ for all women, one reserves it for a woman who is also one’s parent, employing a concept that is both complex and relational. This step requires cognitive operations beyond simple abstraction (see next section).

The power of abstraction described in *De anima* 3.4 is what makes possible the apprehension of essences, whether of magnitude, water, flesh, or anything else. We do not intuit essences straight off—it takes considerable work to get there, as *Physics* 1.1 makes clear or *Posterior Analytics* 2.13 (esp. 97b7–25).⁵² But we cannot get underway unless we can think about types of things as such, in isolation, and investigate what they are specifically. Being able to form *a* concept of *F* is what makes it possible to acquire *the* concept of *F* that captures its true essence. Abstraction is not the source of all concepts. But it provides the base case.⁵³

50. As Ross suggested (1961 310).

51. *APo* 2.17, 99a33–35; cf. 2.13, 96a32–b14, 1.5, 74a37–b1. On identifying ‘commensurate’ universals, see Inwood 1979; Goldin 2019.

52. Berti 1978 rightly stresses the effort that goes into identifying something’s essence, but thinks that it is the correct result that is infallible, rather than the initial, simple thoughts (149–50, 154, 162 n. 39).

53. This restriction shows why most of Geach’s critique of ‘abstractionism’ misfires (1957, 18–33). His discussion of color concepts is hardly more decisive (33–38).

6. Complex concepts and propositions

Call a concept ‘simple’ if it is formed solely by abstraction from quasi-perceptual representations, in the way described above. The content of a simple concept will be a subset of features positively represented by the quasi-perceptual representation it is based on, by ignoring other features represented. Its content need not be a proper subset: the end of *De anima* 3.8 suggests there might be a limiting case where nothing is ignored, so that the only difference is that it is conceptual rather than quasi-perceptual. But by ignoring features, we can whittle down the content of quasi-perceptual representations significantly and arrive at abstract contents very far from the representations they are based on, much as *De memoria* suggests. So even if all the ‘first’ or basic concepts are simple, not all simple concepts are basic. Many abstract, non-basic concepts will be simple too.

Abstraction alone, however, cannot produce concepts with contents *not* present in a quasi-perceptual representation and so go beyond previous experiences. To do that, we need to build up from abstracted contents, using cognitive operations of the sort Aristotle calls *combination* and *division*. Call a concept ‘complex’ if it is not formed solely by abstraction, but also by means of such operations (and iterations of them). I will consider each in turn.

a. Combination

Aristotle offers a very clear example of a complex concept, namely, the modification in our soul ($\tau\hat{\omega}\nu \acute{\epsilon}\nu \tau\hat{\eta} \psi\upsilon\chi\hat{\eta} \pi\alpha\theta\eta\mu\acute{\alpha}\tau\omega\nu$, *Int.* I, 16a3–4) expressed by the word ‘goatstag’ (αἰβ). Since there are no goatstags, we cannot form a simple concept of one merely by abstraction from experience. We may have the concepts GOAT and STAG individually, but we must somehow

combine these to arrive at GOATSTAG. Hence there is not a simple concept corresponding to every noun: we cannot read off the structure of our concepts from the simplicity or complexity of expressions, due to the arbitrariness of natural language (16a5–6). Aristotle sometimes stipulates uses of words to make just this point. Let ‘cloak’ stand for human and horse, he says later in *De interpretatione*. Despite being one word, ‘cloak’ does not express one thing, and this affects what is expressed by sentences employing it.⁵⁴

Some care is needed, though. Aristotle distinguishes between the word ‘goatstag’ and even the simplest sentences in which it occurs (*Int.* 1, 16a6–8). This syntactic distinction is based on an underlying semantic one. Individual words like ‘human’ or ‘white’ on their own are without truth or falsehood (a14–16), ‘like a concept without combination or division’ (ἔοικε τῷ ἄνευ συνθέσεως καὶ διαρέσεως νοήματι, a13–14). Truth and falsehood only become possible with the addition of a verb like ‘is’ or ‘is not’ to form a sentence (a17–18) and so involve combination and division respectively.⁵⁵ Analogously, Aristotle distinguishes between the mental act corresponding to affirmation or denial and to merely speaking a word (*DA* 3.7, 431a8–10; cf. 3.8, 432a10–12). But then the combination in complex concepts is distinct from the combination in thoughts corresponding to sentences such as ‘there is a goat stag’ or ‘there is no goat stag’. A complex concept does not assert or deny anything, but just concerns something with the features in question. It does not make any claim about whether there are such things.

In describing the sort of combination that corresponds to sentences, Aristotle stresses

54. *Int.* 8, 18a13–14, 18–25; 11, 20b12–22; *Metaph.* 7.4, 1029b25–1030a2; 8.6, 1045a26; cf. 4.4, 1006a28–b18. Aristotle could have used ‘hippocentaur’, but intends his point to be fully general and not dependent on whether there always is a term.

55. *Int.* 1, a12–13; 5, 17a11–15; 10, 19b5–19; *Categ.* 4, 2a6–10.

the unity of the proposition. Wherever there is truth and falsehood, ‘there is *eo ipso* a composition of concepts, *as though they are one*’ (σύνθεσις τις ἤδη νοημάτων ὥσπερ ἐν ὄντων, *DA* 3.6, 430a27–28), where the concepts are not merely in sequence, but form a genuine unity (μὴ τὸ ἐφεξῆς ἀλλ’ ἐν τι γίγνεσθαι, *Metaph.* 6.4, 1027b23–25).⁵⁶ It is the understanding, moreover, that produces this unity (τὸ δὲ ἐν ποιοῦν ἕκαστον, τοῦτο ὁ νοῦς, 3.6, 430b5–6). The act of thinking is itself one, like the proposition it thinks, as is the time in which it thinks: while each is potentially divisible, they are actually undivided, like a single continuum (430b6–20). This holds not only when thinking of objects continuous in time or extension, but also things ‘undivided in form’ (ἀδιαίρετον ... τῷ εἶδει, 430b14–15), which lack the sort of division we will consider below.

In order for such combinations to be true, there must be a corresponding combination or division in objects (*Metaph.* 9.10, 1051b11–12). But in the case of falsehood, where these *fail* to occur in the corresponding objects, combination and division are solely due to thought, from which Aristotle concludes that truth and falsehood belong to thought rather than things (6.4, 1027b25–1028a2; cf. *Int.* 4, 17a2–3). Essences constitute an important limiting case. Although a definiens differs from a definiendum, in a definition we are not predicating one *of another*, since both terms refer to the very same thing, indeed necessarily and essentially.⁵⁷ Nonetheless thinking a definition involves distinct concepts, just as the sentence requires distinct phrases. So a correct definition, while *predicationally* simple, is not *conceptually* simple. Arriving at a correct definition is informative and explanatory.

56. Cf. *Metaph.* 4.7, 1a012a1–5. Contrast *DA* 1.3, 407a6–8.

57. *DA* 3.6, 430b26–29; *Metaph.* 7.4, 1030a10–17; cf. *APo* 1.2.2, 83a24–32. For discussion, see Owen 1986, 208–11; Kirwan 1993, 100; Sorabji 1983, 141 esp. nn. 16–17.

b. Division

In some sense, division must be the inverse of combination: what is combined can be divided and what is divided combined. One might be tempted to understand this mereologically: to arrive at the concept of a goatstag, one must first separate parts of goats and stags in thought before recombining them, much as Plato describes how painters create images of them (*Rep.* 6.488a4–7). But Aristotle does not speak this way. The relation between the two operations is logical, rather than mereological.⁵⁸ To explain that falsehood always involves combination, he gives the example of thinking that something white is not white, and then says that all such cases can be considered divisions as well (*DA* 3.6, 430b1–3). This makes sense if he is thinking of negation. ‘Is not white’ can equally be construed as (i) affirming that a subject is not-white or (ii) denying that it is white: in (i) we combine not-white with it, in (ii) we divide white from it. An affirmation asserts that a predicate belongs to a subject (*κατὰ τινός*), while a denial asserts that it is separated from it (*ἀπὸ τινός*, *Int.* 5–6, 17a23–26). Thought is what ‘joins’ a predicate to a subject or ‘subtracts’ it (*συνάπτει ἢ ἀφαιρεῖ ἡ διάνοια*, *Metaph.* 1027b32–33).

The link with negation is confirmed a little further on when Aristotle explains how we grasp negative concepts such as bad and black, using the example of mathematical points:

Any point or division, indeed whatever is indivisible in this way, is apprehended in the way privation [*στέρησις*] is; a similar account holds for the other cases, e.g. the way one recognizes what is bad or black. For one discriminates [them] in a way

58. There may be a Platonic precedent here as well: *Soph.* 253b8–c3. An early version of the interpretation that follows can be found in Caston 1998b. Crivelli 2004 similarly takes ‘separation’ and ‘division’ to indicate a negative predicative belief (67–71, 82–85, 88–89, 92–94, 257).

by their contrary. What discriminates [them] must potentially be [them] and have [them] present in oneself. (430b20–24).⁵⁹

Start from the remark about contraries. Although Aristotle often claims that contraries belong to the same field of knowledge,⁶⁰ he does not think we grasp each in the same way. Earlier in *De anima* he argues that we only need to grasp one of them, the positive one, and use it in a different way:

One member of the contrariety suffices to discriminate both itself and what corresponds to it. For we recognize both what is straight and what is curved with something straight: the straightedge [κανών] is a means of discriminating [κριτής] both, but what is curved isn't, of either itself or what is straight. (1.5, 411a3–7)

Our faculties' ability to 'become like' a positive quality, on Aristotle's view, might also make possible a way of recognizing its absence or privation: we can consider something to *not* be like that.⁶¹ The order is the reverse of abstraction. Rather than *failing to consider* a feature it has (abstraction), we *consider* it as *lacking* that feature (division): instead of *not* considering a feature an object has, we consider it as *not* having a feature, shifting negation from wide to narrow scope, so that it falls within the content of the thought. A mathematical point is an apt emblem for this. On Aristotle's view, it is the division of a continuum into two subcontinua, while being itself indivisible and without magnitude.⁶² In a similar way, we can divide

59. Aristotle's subsequent remark about what would happen in the case of things without a contrary (430b24–26) is, if not a glossator's comment, a remark tangential to the argument in context.

60. *APr* 1.1, 24a21; 1.36, 48b5; *Top.* 1.14, 105b5–6, b22–23; *Phys.* 8.1, 251a30; *Metaph.* 3.2, 996a20–21; *EN* 5.1, 1129a13–14.

61. Becoming like the quality cognized: *DA* 2.5, 417a13–20, 418a3–6; 2.11, 424a1–2; 2.12, 424a21–24; 3.4, 429a15–18. Becoming perceptually aware of absences, like being in the dark: 3.2, 425b20–22; cf. 2.11, 424a10–12.

62. *Phys.* 4.11, 220a10–11; *Metaph.* 14.3, 1090b5–6; cf. *Top.* 6.4, 144b19–22; *Phys.* 6.1, 231b9; *Metaph.* 11.2, 1060b19.

a genus into two species, taking one to possess a certain differentia, the other to lack it. The differentia figures in our apprehension of each in different ways, depending on whether we see it as belonging to a certain kind or separated from it. It is possible to subdivide each further. But until we do, we consider each species as undivided, simply as such (*ἀπλῶς*).

Combination and division are thus operations on other concepts, whether simple or complex. Combination joins two together: we consider something as both having a feature *F* and a feature *G*, so that it will be true of anything falling under that concept that it is *F* and that it is *G*.⁶³ Division, if it is to function as the inverse of combination, must divide two concepts: it would be to consider something as *F*, but not also *G*. This would fit the division of a genus by a differentia, in line with the analogy of dividing continua. But Aristotle also seems to allow a wider, unrestricted form of negative concepts, expressed a noun or verb with a negation, such as ‘not human’ or ‘not just’ (*Int.* 10, 20a31–36). He calls such terms ‘indefinite’ (*ἀόριστον*), because while they still express one thing, they do so indefinitely (19b5–10; cf. 2, 16a29–32). If he regards this as the result of division—he never says so—then it may also be possible to use division without a determinate higher genus. Through iterations of these operations on concepts, we can form ever new concepts of greater logical complexity.

It is surprising how little attention has been given to combination and division in the secondary literature. I suspect it is because most assume that combination is straightforward, even though it is not the same as conjunction or predication, much less mereological combination. But division has been ignored more, even though some form of negation is essential to all rational thought.

63. Some predicates, like ‘good’, don’t operate in this way, as Aristotle notes: from the fact that someone is both good and a cobbler it does not follow that he is a good cobbler (*Int.* 11, 20b31–21a7, 21a14–16).

7. Conclusion

The concept of concept emerges in Classical Greece once philosophers begin to reflect on their disagreements about the nature of things and the misconceptions others have. Plato made a critical advance by distinguishing the content and object of thought, but prioritized the latter. It is only with Aristotle, who has more to say about content, that we find the beginnings of a theory of concepts, based on abstraction.

Some will be surprised that I have not discussed *De anima* 3.5, a brief but notorious chapter that mentions a *second* understanding, the so-called ‘agent intellect’, which looms large in the Aristotelian tradition. It is often thought to be essential to abstraction, understood as the production of *universals* from quasi-perceptual representations: the forms embodied in these representations, because they are enmattered, are particular and so not able on their own to produce understanding of what is universal. These forms, it is claimed, must first be denuded of all particularity by dematerializing them, to release the pure universal forms within. This is what the agent intellect is supposed to bring about.⁶⁴

One will look in vain for these claims in Aristotle’s texts. The second intellect is never invoked in passages discussing how thinking occurs or even identified as human.⁶⁵ Aristotle does not raise the worry about matter or particularity, much less describe a process whereby the forms in representations might be dematerialized. He doesn’t, I suggest, because on his view perception is already of *universals* and so includes them in its content (*APo* 2.19, 100a16–b1; cf. 1.31, 87b28–30), enabling animals to distinguish between different types of particu-

64. See the fabulous diagrams in Miller 1963, 116, 119.

65. See Caston 1999.

lar.⁶⁶ But perception doesn't isolate these types as such and consider them on their own abstractly, as we do in thought. The latter ability, together with combination and division, allows us to consider a far wider range of types than we encounter directly in perception.

The whole rational enterprise rests on the vital first step, abstraction, our ability to focus on specific details, rather than attending to all—in short, to *ignore distractions*. But it is the ability to create new concepts, by adding positive and negative qualifications, that underwrites the productivity of language and the very possibility of scientific investigation. By developing our concepts, we can formulate definitions and derive what they entail, which we can then test against experience and subsequently revise. These abilities make genuine explanation and hence understanding possible.⁶⁷

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66. See Caston In progress.

67. I would like to thank warmly both editors, Hamid Taieb and Stefan Schmid, and the participants of the conference they organized in Hamburg for their perceptive questions and comments, along with audiences who heard earlier versions at the University of Texas at Austin and the TIDA conference at the Villa Feltrinelli. I am especially grateful to Robert Roreitner, my commentator at the last mentioned, for his extensive and penetrating remarks, which have helped me refine the paper in many ways.

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