

Abstract. It is standardly held that Aristotle denies that artifacts are substances. There is no consensus on why this is so, and proposals include taking artifacts to lack autonomy, to be merely accidental unities, and to be impermanent. In this paper, I argue that Aristotle holds that artifacts *are* substances. However, where natural substances are absolutely fundamental, artifacts are merely relatively fundamental—like any substance, an artifact can ground such nonsubstances as its qualities; but artifacts are themselves partly grounded in natural substances. Many contemporary metaphysicians view authorial intentions or communal recognition as an essential feature of most artifactual kinds. Drawing on Aristotle's own examples of artifactual definitions, I note that there is little reason to ascribe this view to Aristotle. So Aristotle has the resources to hold that it is possible that there are kinds with both artifactual and non-artifactual members.

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It is standardly held that Aristotle denies that artifacts are substances. There is no consensus on why this is so, and proposals include taking artifacts to lack autonomy, to be merely accidental unities, and to be impermanent. In this paper, I will argue that Aristotle holds that artifacts *are* substances. However, where natural substances are absolutely fundamental, artifacts are merely relatively fundamental—like any substance, an artifact can ground such nonsubstances as its qualities; but artifacts are themselves partly grounded in natural substances.

So that is one controversial move made in the essay. A second is this. Many contemporary metaphysicians view something like authorial intention or communal recognition as an essential feature of most artifactual kinds. But take a kind whose members are typically artifacts, such as *house*. I will argue that Aristotle would deny that features such as authorial intention or communal recognition are part of the definition of houses. So Aristotle has the resources to hold that it is possible that there are kinds with both artifactual and non-artifactual members.

Consider an artifact such as a house, a chair, an arrowhead or a sandcastle. Such artifacts exhibit many of the marks characteristic of substances. Primary substances are identified in *Categories* 5 as being incapable of standing in a predicative relation to a subject. Yet a term referring to an individual house, no less than a term referring to a natural substance such as a human or a horse, can stand in the subject position, but not the predicate position, of a standard Aristotelian subject-predicate sentence. Also, an individual substance lacks a contrary. Just as there is no contrary for an individual man, there is no

contrary for an individual house. And neither an artifact nor a natural substance admits of variation of degree with respect to being a substance. As I will note below, Aristotle does allow for degrees of substantiality among different kinds of substances, but he denies that a substance of one kind admits of variation of degree within itself. For example, consider the following passage.

T1 One man cannot be more man than another, as that which is white may be more or less white than some other white object, or as that which is beautiful may be more or less beautiful than some other beautiful object. The same quality, moreover, is said to subsist in a thing in varying degrees at different times. A body, being white, is said to be whiter at one time than it was before, or, being warm, is said to be warmer or less warm than at some other time. But substance is not said to be more or less that which it is: a man is not more truly a man at one time than he was before, nor is anything, if it is substance, more or less what it is. (3^b37-4^a9)¹

οἷον εἰ ἔστιν αὕτη ἡ οὐσία ἄνθρωπος, οὐκ ἔσται μᾶλλον καὶ ἥττον ἄνθρωπος, οὔτε αὐτὸς αὐτοῦ οὔτε ἕτερος ἑτέρου. οὐ γάρ ἐστιν ἕτερος ἑτέρου μᾶλλον ἄνθρωπος, ὥσπερ τὸ λευκὸν ἐστιν ἕτερον ἑτέρου μᾶλλον λευκόν, καὶ καλὸν ἕτερον ἑτέρου μᾶλλον· καὶ αὐτὸ δὲ αὐτοῦ μᾶλλον καὶ ἥττον λέγεται, οἷον τὸ σῶμα λευκὸν ὃν μᾶλλον λευκὸν λέγεται νῦν ἢ πρότερον, καὶ θερμὸν ὃν μᾶλλον θερμὸν καὶ ἥττον λέγεται· ἡ δὲ γε οὐσία οὐδὲν λέγεται, —οὐδὲ γὰρ ἄνθρωπος μᾶλλον νῦν ἄνθρωπος ἢ πρότερον λέγεται, οὐδὲ τῶν ἄλλων οὐδέν, ὅσα ἐστὶν οὐσία· — ὥστε οὐκ ἂν ἐπιδέχοιτο ἡ οὐσία τὸ μᾶλλον καὶ ἥττον.

So too a house does not admit of variation of degree: one house may be a better house than another, but one house is not more of a house than another, or more of a house at one time rather than at another time.

An artifact, no less than a natural substance, seems to possess what Aristotle calls the most distinctive mark of substance: while remaining one and the same, it can admit contrary qualities. That is to say, a house admits of qualitative variation while remaining numerically identical. This seems to be true for both synchronic and diachronic qualitative variation. The fact that a house is smaller than a highrise but bigger than a breadbox does not make the artifact somehow two things. And an artifact such as a house appears to persist through qualitative changes.

In the *Metaphysics*, Aristotle arguably rejects features such as being a substratum persisting through changes as marks of substance in favor of such marks as being a ‘this’, exhibiting unity and being separate. But at first blush, artifacts would seem to possess these marks no less than natural substances. I can refer to an artifact by demonstration, just as I can demonstratively refer to a natural substance. The parts of an artifact are

¹ Translations, with some alterations, are based on Bostock (1994) except **T1** from Ackrill (1963), **T6** from Charlton (1970) and **T7** and **T8** from Ross (1908).

unified by reference to the definition and characteristic activity of the whole, just as in the case of the body parts of living things. And an individual artifact appears to possess a capacity for independent existence no less than an individual animal. Of course, much depends on the interpretation of these marks of substance, and a rival view of separation will be central to my argument below.

2

Despite these considerations, most Aristotle scholars have ascribed to Aristotle the view that artifacts are not substances. I will rehearse some of the reasons given for this view below. But first I will note that the textual evidence for this ascription is slight. Indeed, Aristotle nowhere unambiguously denies that artifacts are substances. He does canvass rejecting that artifacts are substances in the following passage.

T2 On whether the substances of destructible things are separable nothing is yet clear, though it is clear that some cannot be. Substances such as a house or an implement cannot exist apart from the particular houses and implements. Perhaps (*isōs*) indeed these are not even substances, and nor is anything which is not formed by nature; one might well hold that the only substance to be found in destructible things is their nature. (1043^b18-23)

εἰ δ' εἰσὶ τῶν φθαρτῶν αἱ οὐσίαι χωρισταί, οὐδέν πω δῆλον πλὴν ὅτι γ' ἐνίων οὐκ ἐνδέχεται δῆλον ὅσα μὴ οἶόν τε παρὰ τὰ τινὰ εἶναι οἶον οἰκίαν ἢ σκεῦος ἴσως μὲν οὖν οὐδ' οὐσίαι εἰσὶν οὔτ' αὐτὰ ταῦτα οὔτε τι τῶν ἄλλων ὅσα μὴ φύσει συνέστηκεν τὴν γὰρ φύσιν μόνην ἂν τις θεῖη τὴν ἐν τοῖς φθαρτοῖς οὐσίαν.

Since Aristotle qualifies the rejection with a 'perhaps' (*isōs*), **T2** is consistent with the view that artifacts are substances but not unqualifiedly substances, a view which Aristotle implies in the following passage.

T3 Things which come to be do so either by nature or by skill or spontaneously; and they all come to be something, and come from something and are brought to be by something. (When I say that they come to be something, I mean the 'something' to apply in any category; they may come to be a this, or to be somehow quantified or qualified or placed.) Natural generation applies to those things whose generation is due to nature. What they come from is what we call matter; what they are brought into being by is something that exists naturally; and what they come to be is a man or a plant or something else of this sort, which we call substance most of all (*malista*). (1032^a2-19)

τῶν δὲ γιγνομένων τὰ μὲν φύσει γίγνεται τὰ δὲ τέχνη τὰ δὲ ἀπὸ ταυτομάτου, πάντα δὲ τὰ γιγνόμενα ὑπὸ τέ τινος γίγνεται καὶ ἐκ τινος καὶ τί: τὸ δὲ τί λέγω καθ' ἐκάστην κατηγορίαν: ἢ γὰρ τόδε ἢ ποσὸν ἢ ποιὸν ἢ

πού. αἱ δὲ γενέσεις αἱ μὲν φυσικαὶ αὐταὶ εἰσιν ὧν ἡ γένεσις ἐκ φύσεώς ἐστιν, τὸ δ' ἐξ οὗ γίγνεται, ἣν λέγομεν ὕλην, τὸ δὲ ὑφ' οὗ τῶν φύσει τι ὄντων, τὸ δὲ τὶ ἄνθρωπος ἢ φυτὸν ἢ ἄλλο τι τῶν τοιούτων, ἃ δὴ μάλιστα λέγομεν οὐσίας εἶναι.

The most that can be drawn from **T3** is that artifacts are not called substances most of all. (Aristotle believed that many living things arise spontaneously through abiogenesis, and these too are not substances most of all.) The Greek adverb *malista* is the superlative of *mala*, ‘very’, and suggests that there are at least two degrees of substantiality (or rather, two degrees of being called a substance) and so there are both things called substances and things called most of all substances. I have generally translated this phrase as ‘most of all’, altering the Bostock translations. Bostock translates the phrase variously; for example he translates the final clause in **T3** as ‘which we most strongly affirm to be substances’. An anonymous referee notes that the term might be translated as ‘certainly’ or ‘clearly’. But ‘most of all’ is a possible translation of *malista*, and lacks the connotations, carried by ‘certainly’ or ‘clearly’, of an epistemic distinction or an issue of perspicuity. Although the adverb is qualifying the calling, it will be useful to have a label for things so called, so I will occasionally speak of ‘most-of-all substances’.

Aristotle uses the term in a few other passages—for example, in **T4** and **T5**, below.

T4 Of the several ways in which substance is spoken of, there are at any rate four which are the most important; the substance of a thing seems to be (a) what being is for that thing, and (b) its universal and (c) its genus, and fourthly (d) the substratum. The substratum is that of which the rest are predicated while it is not itself predicated of anything else. For this reason we must first determine its nature, for the primary substratum seems most of all (*malista*) to be substance. (1028^b33-29^a2)

Λέγεται δ' ἡ οὐσία, εἰ μὴ πλεοναχῶς, ἀλλ' ἐν τέτταρσί γε μάλιστα: καὶ γὰρ τὸ τί ἦν εἶναι καὶ τὸ καθόλου καὶ τὸ γένος οὐσία δοκεῖ εἶναι ἐκάστου, καὶ τέταρτον τούτων τὸ ὑποκείμενον. τὸ δ' ὑποκείμενόν ἐστι καθ' οὗ τὰ ἄλλα λέγεται, ἐκεῖνο δὲ αὐτὸ μηκέτι κατ' ἄλλου: διὸ πρῶτον περὶ τούτου διοριστέον: μάλιστα γὰρ δοκεῖ εἶναι οὐσία τὸ ὑποκείμενον πρῶτον.

In **T4**, Aristotle asks what, among such contenders as the substratum, the form or essence, the universal and the genus, has the best claim to substantiality; he writes that the substratum seems to be substance most of all—a claim he goes on to reject, partly on the grounds that the substratum is not separate.

T5 If, then, we proceed on this basis [i.e. taking as a mark of a substance that it is a substratum], matter turns out to be a substance. But this is impossible, for separability and thisness seem to belong most of all (*malista*) to substance; and for this reason the form and the compound would seem to be substance more than matter is. (1029^a26-30)

ἐκ μὲν οὖν τούτων θεωροῦσι συμβαίνει οὐσίαν εἶναι τὴν ὕλην: ἀδύνατον
δέ: καὶ γὰρ τὸ χωριστὸν καὶ τὸ τόδε τι ὑπάρχειν δοκεῖ μάλιστα τῇ οὐσίᾳ,
διὸ τὸ εἶδος καὶ τὸ ἐξ ἀμφοῖν οὐσία δόξειεν ἂν εἶναι μᾶλλον τῆς ὕλης.

How ought we to take this distinction between substances and most-of-all substances? Let's take **T5** as a point of departure. Admittedly, the application of **T5** is somewhat tenuous. Where in **T3** and **T4** *malista* modifies calling something a substance or something seeming to be a substance, in **T5** *malista* modifies the belonging of an alleged characteristic mark to substance. I will assume that the marks which belong most of all to substances are characteristic of most-of-all substances.

As we have seen, a characteristic mark of substances is that they are called 'separate'. Above, we followed a common translation decision in taking separation to involve a capacity for independent existence. Fine (1984) argues for such a reading. In Corkum (2008, 2016), I argue that separation terminology often refers to a notion of grounding and cannot be reduced to capacities for independent existence. For discussion of the general methodology of appealing to the contemporary notion of grounding in ancient philosophy scholarship, see Corkum (2020).

Grounding is a relation that backs explanations by relating derivative entities to more fundamental entities. If one fact grounds a second then the second obtains in virtue of the first fact obtaining. For example, we might hold that certain biological facts are grounded in—that is to say, obtain in virtue of—certain chemical facts. To say that aspects of biology are explained by reference to aspects to chemistry is not to say that chemical facts are not themselves grounded. For example, we might hold that chemical facts are grounded in physical facts, and so aspects of chemistry are explained by reference to physics. Chemical facts in this story are not absolutely fundamental but they play the role of fundamental relata in the explanation of certain biological facts. Call the chemical facts in this example *relatively* fundamental. My proposal is that the distinction between most-of-all substances and substances that are not most-of-all substances is the distinction between absolute and relative fundamental entities. That there would be degrees of substantiality in this way does not violate the prohibition in **T1**. An individual substance is not more or less what it is, from one time to another or in one respect. But an entity can play the role of ground with respect to a given contrast class of derivative items, while not being itself ungrounded.

Let me draw out a few points of connection with other issues in Aristotle scholarship. The thesis that artifacts are relatively fundamental is similar to a move I made in Corkum (2012). There I argue that Aristotle views certain mathematical objects as properties of sensible substances; but he holds that mathematicians treat such objects as themselves substances within a domain restricted to mathematical objects and their properties. Similarly, the proposal in this essay is that individual artifacts act as substances when considered in a domain restricted to artifacts, their kinds and their properties. Let me clear up a potential misunderstanding. It may seem to the reader that I take the characteristic mark of a substance to be that it is a substratum. A term referring to a substratum can stand in the subject position in a statement expressing a simple

predication or a categorical proposition. And Aristotle rejects the role of being the substratum as a mark of substance in **T5**, since the mark overgenerates, wrongly counting matter as a substance. However, Aristotle does not reject impredicability as a mark of substance. He consistently holds that a term picking out a substance cannot stand in the predicate position in a categorical statement. My proposal is that an item is a substance if it is impredicable within a given domain, and a most-of-all substance if it is impredicable within the unrestricted domain.

This general line of interpretation draws an attractive picture of the relation between the *Categories* (where, as we have seen, there is the best evidence for taking artifacts to be substances) and the *Metaphysics* (where, as we have also seen, there is reason to hesitate to ascribe this view to Aristotle). Allow me an aside on this point. In the *Categories*, Aristotle asserts that individual objects such as you and I are primary substances. But in the *Metaphysics*, Aristotle views such objects as hylomorphic compounds. He takes the forms of these individuals to be the substance of the thing, and there is a scholarly discussion whether this is an inconsistency or a change in Aristotle's metaphysical views. Within the restricted ontology of the *Categories*, individual objects are maximally fundamental. One might view the *Categories* as presenting a static ontology, a snapshot picture of the world, with its objects, qualities and so on, but without viewing these items as changing through time. But in the *Metaphysics*, the domain is expanded to include forms and materials as the causal explanations of the activities of the individuals of the *Categories*. In this expanded world, individual objects are not maximally fundamental. To put the point in another way, in the *Categories* individual objects are treated as if they are absolutely fundamental, but in the *Metaphysics*, they are treated as relatively fundamental. Relative fundamentality is of course a relation, and so the ascription of relative fundamentality is influenced by the appropriate contrast class. The differences between the *Categories* and the *Metaphysics* on these points can thus be explained while ascribing neither inconsistency nor change in Aristotle's metaphysical views.

3

Why are artifacts not absolutely fundamental? One might hope that one of the extant explanations in the secondary literature as to why artifacts are not substances could be tweaked to provide an explanation. I will discuss three explanations. Consideration of these interpretations will also give me the opportunity to discuss some of the features Aristotle associates with artifacts.

Katayama (1999) holds that artifacts are not substances since their species are not eternal. Katayama appeals to passages such as **T2** to argue that the artifactual form is not separate from the composite, and so cannot exist apart from composites; since all composites can pass out of being, artifactual forms are also impermanent. This argument rests on the mistaken view that separation terminology in Aristotle refers to a capacity for independent existence. Aristotle holds that both artifactual and natural sub-lunary *individuals* are impermanent. He does seem to believe that natural *species* are eternal. There has always been and always will be humans. But if Aristotle does hold this view, he could also believe that certain kinds of artifacts are also eternal. The production of

artifacts involves deliberation but artifactual kinds are not necessarily *inventions*. And Aristotle might well hold that man has always made tools and always will make tools. He seems to endorse something like part of this line at 7.15 (1039^b25), writing that “being for a house cannot come to be; only being for this particular house.” Finally, even if impermanence *distinguished* artifacts from natural substances, artificiality does not *consist* in impermanence.

A second line of explanation. Some scholars hold that artifacts lack autonomy. For example, Gill (1991: 213) writes that “artifacts are not self-preserving systems but depend on external agents both for the full realization of their being and for their maintenance. Artifacts lack autonomy, and for this reason they are ontologically dependent on other more basic entities.” And Shields (2008) holds that artifacts are not substances since, unlike living things, they lack an internal principle of self-direction and regulation. Irwin (1988: 571-72 n. 8) offers a somewhat similar interpretation, although he ascribes to Aristotle merely a doubt that artifacts are substances, on the basis of their lack of autonomy. Adapting this thought to our purposes, we might say that a house, for example, is not absolutely fundamental since it depends on the artisan for its production, and other craftsmen for its upkeep.

There are reasons to doubt whether such an account provides a fully satisfying explanation why Aristotle characterizes artifacts as substances but not most-of-all substances. To bring out this point consider in more detail the alleged disanalogies in causal explanations between artificial and natural generation. Gill and others hold that artifactual production and natural generation differ with respect to the efficient cause. On this line, Aristotle holds that the efficient cause for production involves reference to something different in essence from the artifact—namely, the artisan. But Aristotle at least occasionally implies that the efficient cause in artifactual production is instead the form of the artifact. It is uncontroversial that the process of production at least partly involves the form, as entertained by the artisan, and that this manner by which the form is initially exemplified plays a role in classifying the artifact as such. For example, Aristotle says at *Metaphysics* 7.7 (1032^b1) that “the things produced by skill are those whose form is in the soul of the producer.” The role of the artisan, whose rational soul immaterially actualizes the form and whose activity makes that form manifest in a material, may be just as an enabling condition. The artisan allows the form to be efficacious, just as in the case of a natural generation such as the growth of an acorn, the presence of sufficient sunlight and water is an enabling condition allowing the form—here, materially manifest in the parent oak—to be efficacious.

But putting this doubt aside, Aristotle’s discussion of natural objects and artifacts in *Physics* 2.1 certainly suggests that he would draw this contrast in terms of something akin to autonomy.

- T6** This [contrast between natural objects and artifacts] suggests that nature is a sort of source and cause of change and remaining unchanged in that to which it belongs primarily and of itself, that is, not by virtue of a concomitant attribute. (What do I mean by that qualification? Well, a

man who is a doctor might come to be a cause of health in himself. Still, in so far as he is healed he does not possess the art of medicine, but being a doctor and being healed merely concur in the same person. Were the matter otherwise, the roles would not be separable.) Similarly with other things which are made. They none of them have in themselves the source of their making, but in some cases, such as that of a house or anything else made by human hands, the source is in something else and external, whilst in others the source is in the thing, but not in the thing of itself, i.e. when the thing comes to be a cause to itself by a concomitant attribute. (192^b20-32)

ὥς οὐσης τῆς φύσεως ἀρχῆς τινὸς καὶ αἰτίας τοῦ κινεῖσθαι καὶ ἡρεμεῖν ἐν ᾧ ὑπάρχει πρῶτως καθ' αὐτὸ καὶ μὴ κατὰ συμβεβηκός (λέγω δὲ τὸ μὴ κατὰ συμβεβηκός, ὅτι γένοιτ' ἂν αὐτὸς αὐτῷ τις αἴτιος ὑγείας ὢν ἰατρός· ἀλλ' ὅμως οὐ καθὼς ὑγιαίνεται τὴν ἰατρικὴν ἔχει, ἀλλὰ συμβέβηκεν τὸν αὐτὸν ἰατρὸν εἶναι καὶ ὑγιαζόμενον· διὸ καὶ χωρίζεται ποτ' ἀπ' ἀλλήλων). ὁμοίως δὲ καὶ τῶν ἄλλων ἕκαστον τῶν ποιουμένων· οὐδὲν γὰρ αὐτῶν ἔχει τὴν ἀρχὴν ἐν ἑαυτῷ τῆς ποιήσεως, ἀλλὰ τὰ μὲν ἐν ἄλλοις καὶ ἔξωθεν, οἷον οἰκία καὶ τῶν ἄλλων τῶν χειροκμητῶν ἕκαστον, τὰ δ' ἐν αὐτοῖς μὲν ἀλλ' οὐ καθ' αὐτά, ὅσα κατὰ συμβεβηκός αἴτια γένοιτ' ἂν αὐτοῖς.

Natural things have an internal and *per se* source of their activity. States such as health can be achieved through an internal source which is not *per se*; and artifacts lack internal causes of their own production. However, the inference that Gill seems to draw—artifacts are ontologically dependent on things other than themselves, and so not full-fledged substances—rests (not unlike Katayama's argument) on the mistaken assumption that the relevant notion of dependence here is a capacity for existence. Artifacts cannot exist without artisans. But so too I could not exist without my parents. And Gill holds that artifacts cannot persist without external agents providing occasional maintenance, but neither can the unhealthy persist without occasional medical attention. Generally, one thing's incapacity to exist without some second thing fails to show that the first is not a substance. Aristotle seems to view the contrast between natural things and artifacts in terms akin to autonomy. But even if an object is an *artifact*, as opposed to a natural thing, because it is non-autonomous, it is far from clear that this is why artifacts are not full-fledged *substances*.

A third line of interpretation. Some scholars hold that artifacts lack the integrity of natural substances. Kosman (1987: 369), for example, holds that artifacts are not substances since artifacts are accidental unities, like kooky objects (e.g. white horse). Compare Halper (1989: 171-72), Gerson (1984) and Ferejohn (1994). Somewhat similarly, Papandreou (forthcoming) holds that artifacts are not substances since artifactual wholes are only unified to a degree. Aristotle views unity as a mark of substances, and so this line of interpretation holds promise for explaining why artifacts are not full-fledged substances. The integrity exhibited by artifacts is in some way impoverished, in comparison to natural substances. For reasons that will become clearer in the final section of the paper, I find some considerations that might support the

interpretation less than compelling. But generally, I agree with the views that individual artifacts are non-autonomous, impermanent and perhaps merely accidental unities, but I doubt that these features fully explain why artifacts are not most-of-all substances. Rather, these features strike me as *explananda* which, as a condition of adequacy, accounts of artificiality and substantiality ought to be able to explain. So it will be helpful to first lay out my proposal, and then return to these interpretations.

4

Here is an alternative reason why Aristotle holds that artifacts are merely relatively fundamental. Aristotle asserts in the following passage that an artifactual form is not separate.

T7 Again, is there anything besides the concrete whole (I mean the matter and the form in combination) or not? If not, all things in the nature of matter are perishable; but if there is something, it must be the form or shape. It is hard to determine in what cases this is possible and in what it is not; for in some cases, e.g. that of a house, the form clearly does not exist in separation. (1060^b23-28)

ἔτι πότερον ἔστι τι παρὰ τὸ σύνολον ἢ οὐ λέγω δὲ τὴν ὕλην καὶ τὸ μετὰ ταύτης; εἰ μὲν γὰρ μή, τά γε ἐν ὕλῃ φθαρτὰ πάντα· εἰ δ' ἔστι τι, τὸ εἶδος ἂν εἴη καὶ ἡ μορφή· τοῦτ' οὖν ἐπὶ τίνων ἔστι καὶ ἐπὶ τίνων οὐ, χαλεπὸν ἀφορίσαι· ἐπ' ἐνίων γὰρ δῆλον οὐκ ὄν χωριστὸν τὸ εἶδος, οἷον οἰκίας.

T7 is compatible with my claim that an artifact is relatively fundamental, or fundamental within the restricted ontology of the *Categories*. For Aristotle is considering in **T7** what is separate within an expansive ontology, a domain which includes form and matter. In this context, 'separate' plausibly means absolutely fundamental. **T7** might suggest that the reason an artifact is not absolutely fundamental is a deficiency primarily with its form, and not its reliance on external agents for generation and maintenance.

From what are artifactual forms inseparable? That is to say, on what are artifactual forms grounded? Here's a conjecture: **T7** suggests that artifactual forms are inseparable from the hylomorphic compound. And Aristotle's own examples of artifactual definitions would seem to support this suggestion. For example, he writes that

T8 if we had to define a threshold we should say a 'wood or stone arranged so-and-so (*hōdi keimenon*) and a house, 'bricks and timbers arranged so-and-so (*hōdi keimena*)' or there is a final cause (*to heneka*) as well in some cases.... And so, of the people who go in for defining, those who define a house as stones, bricks, and timbers are speaking of the potential house, for these are the matter; but those who propose 'a receptacle to shelter goods and bodies', or something of the sort, speak of the actuality. (1043^a5-18)

οἷον εἰ οὐδὸν δέοι ὀρίσασθαι, ξύλον ἢ λίθον ὥδὶ κείμενον ἐροῦμεν, καὶ οἰκίαν πλίνθους καὶ ξύλα ὥδὶ κείμενα ἢ ἔτι καὶ τὸ οὗ ἔνεκα ἐπ' ἐνίων ἔστιν ... οἱ μὲν λέγοντες τί ἐστὶν οἰκία, ὅτι λίθοι πλίνθοι ξύλα, τὴν δυνάμει οἰκίαν λέγουσιν, ὅλη γὰρ ταῦτα: οἱ δὲ ἀγγεῖον σκεπαστικὸν χρημάτων καὶ σωμάτων ἢ τι ἄλλο τοιοῦτον προτιθέντες, τὴν ἐνέργειαν λέγουσιν.

The context of this passage is a discussion of defining things that are analogous to substances—again, I take ‘substances’ here to refer to most-of-all substances. In the immediately preceding chapter, *Metaphysics* 8.2, Aristotle notes that there are a variety of kinds of definition for such things, including appealing to the ways materials are combined, to position, place and sensible attributes. In **T8**, Aristotle canvasses defining a house by appeal to its material arrangement, and its final cause. The first kind of definition makes reference to the material of the compound, and so the form of an artifact is partly grounded in its natural matter. Aristotle also canvasses the suggestion that artifactual forms are partly grounded in its final cause. The end of a house, for example, might be a certain way of providing shelter. Of course, the shelter that a house provides is specific to the needs of those to be housed within the structure. On this suggestion, then, what it is to be human partly grounds what it is to be a house. Likewise, a chair might be defined in terms of a assemblance of natural materials—with reference to an arrangement of its legs, seat and back. Or a chair might be defined as being for sitting—with reference to a posture specific to the way human legs can be articulated.

Aristotle’s examples generally are at best defeasible indicators of his views; but they do provide *prima facie* evidence. The examples in **T8** suggest that Aristotle would disagree with many contemporary metaphysicians. Let me here lay out an overly simple contemporary theory. No one to my knowledge advocates such a view, but the sketch will throw into sharp relief my reading of Aristotle’s view. In the final section of the essay, I will briefly sample a few contemporary authors, so to present a more sophisticated theory, and to draw a more nuanced contrast with Aristotle. Artifacts are typically produced with the authorial intention to produce a thing with the function associated with members of that kind. The artisan usually makes a chair with the intention of creating an object suited for sitting. But one might go further and view a chair as being *essentially* so produced. On this line, authorial intentions are a constituent of the definition of a given artifact. For example, a definition of a chair might be given as an object made with the intention of being suited for sitting. A found object or readymade artwork need not be originally produced with authorial intentions for its function; and the intentions of an artist or community, in recognizing the object as having such a function, may serve a similar definitional role.

However, Aristotle’s examples of artifactual definitions in **T8** suggest that he would hesitate to locate authorial intentions or communal recognition within an artifact’s form, essence or definition. Let me begin to bring this section of the essay to a close with a vivid case. Suppose that while carrying some lumber and nails, I fall down the stairs and, in my tumbling, assemble what looks like a chair. Contemporary theorists would perhaps doubt that the result of the accident is indeed a chair. I agree that the result is not an

artifact, but it is less obvious to me—both as a philosophical claim and as a point of Aristotle interpretation—that the result is not a *chair*.²

To sum up the story so far, I have argued that artifacts are substances, since they are relatively fundamental, but they are not called substances most of all, since they are not absolutely fundamental. Artifacts are not absolutely fundamental because artifactual forms are grounded in natural forms. On this line of interpretation, the status of the object as a *substance*, and the characterization of its definition or essence, are distinct issues from the status of the object as an *artifact*, and the process of its production.

I now return to the rival accounts of artificiality. Recall, scholars have suggested that artifacts are not substances because they lack autonomy, are merely accidental unities, or are impermanent. And we considered above whether any of these accounts can explain why Aristotle appears to view artifacts as substances but not most-of-all substances. (I will discuss the view that artifacts are accidental unities in more detail in the next section.) Although I doubt that the status of not being a most-of-all substance *consists* in lacking autonomy, being an accidental unity or being impermanent, I do not deny that individual artifacts typically exhibit these features. And perhaps the account I have put forward can go some ways towards explaining this. Kinds of objects that are typically artifacts are by definition arrangements, externally imposed on natural materials, for human use. For this reason, members of such kinds are typically produced and maintained by the deliberative action of an artisan. The arrangements are extrinsic to the natures of the components, and so the resultant unity is merely accidental. And since the parts are not held together necessarily, such arrangements are likely to be impermanent. These features flow from what it is to be a kind, the members of which are typically artifacts. They are commonly exhibited by individual artifacts. But they are neither necessary nor essential to be a member of such a kind.

5

Let me address a few objections. Consideration of these complaints will help to flesh out the proposal. First, on the line of interpretation put forward in this essay, something can be called a substance if it is impredicable within some domain or other. This view, the objection might go, has the implausible consequence that anything can be called a substance, given a sufficiently restricted domain. In response, I embrace this consequence. But narrow domains are of little interest. So although anything could be called a substance, not everything would be so-called, and it should be clear that the metaphysician will be interested in domains of mathematical objects in abstraction from non-mathematical objects, or in domains of artifacts considered apart from natural substances, and in articulating what grounds what within these realms.

² Papandreou (2021) discusses this view, as put forward in an earlier draft of this paper, as well as giving us an interesting overview of the historical debate over artifacts made by chance, centered around a reading of *Phys.* 2.6 (197^b16ff.).

A second objection. I have claimed that artifacts are substances, but here's a reason why that claim is wrong. No substance has substances as actual parts, yet artifactual components are themselves substances, temporally prior to the composite. So an artifactual composite cannot be a substance. This is also why we ought to take artifactual matter to be best described as actualities, and not potentialities for the artifactual form, unlike in the case of natural substances. Papandreou (forthcoming) draws on similar considerations when she argues that artifacts are not substances since their parts exist in actuality. And this line of thinking might be put forward in defense of Kosman's position that artifacts are not substances since they are merely accidental unities. Artifacts are wholes whose parts are not essentially unified, for they have been assembled into a single thing by imposing on pre-existing substances a structure extrinsic to them. Thus a chair, for example, is constructed out of legs, seat and back. Each of these is an actual substance, existing as such prior to the construction of the chair, and not a mere potential constituent of a chair.

One passage where Aristotle might be taken to be endorsing the thesis that no substance has actual substantial parts is the following.

T9 It is impossible for a substance to be composed of substances present in it in actuality. For what is in actuality two things cannot also be in actuality one thing, though a thing may be one and at the same time potentially two. (For instance, a line that is double another line is composed of two halves, but only potentially; for the actuality of the two halves separates them from each other.) (1039^a3-7)

ἀδύνατον γὰρ οὐσίαν ἐξ οὐσιῶν εἶναι ἐνυπαρχουσῶν ὡς ἐντελεχεία: τὰ γὰρ δύο οὕτως ἐντελεχεία οὐδέποτε ἐν ἐντελεχείᾳ, ἀλλ' ἐὰν δυνάμει δύο ἢ, ἔσται ἓν (οἷον ἡ διπλασία ἐκ δύο ἡμίσεων δυνάμει γε: ἡ γὰρ ἐντελέχεια χωρίζει)

But it is not clear that Aristotle endorses the thesis in this passage. The immediate context of **T9** is this: Aristotle argues that no universal is a substance. He moots the thesis that no substance has actual substantial parts in **T9**. And then he quickly problematizes the thesis by noting that it appears to be inconsistent with the claim that no universal is a substance in the following passage.

T10 This result, however, involves a problem. For if no substance can be composed of universals (since a universal signifies such a kind of thing, and not a this), and if also no substance can be composed of substances present in it in actuality, then every substance must be incomposite and so indefinable. Yet everyone thinks—and we have long ago asserted—that it is only or chiefly substances that can be defined. (1039^a14-20)

ἔχει δὲ τὸ συμβαῖνον ἀπορίαν. εἰ γὰρ μήτε ἐκ τῶν καθόλου οἷόν τ' εἶναι μηδεμίαν οὐσίαν διὰ τὸ τοιόνδε ἀλλὰ μὴ τόδε τι σημαίνειν, μήτ' ἐξ οὐσιῶν ἐνδέχεται ἐντελεχεία εἶναι μηδεμίαν οὐσίαν σύνθετον, ἀσύνθετον

ἂν εἴη οὐσία πᾶσα, ὥστ' οὐδὲ λόγος ἂν εἴη οὐδεμιᾶς οὐσίας. ἀλλὰ μὴν
δοκεῖ γε πᾶσι καὶ ἐλέχθη πάλαι ἢ μόνον οὐσίας εἶναι ὅρον ἢ μάλιστα.

Aristotle seems to believe that the two theses taken together entail that substances are incomposite and indefinable. The argument of **T10** is obscure and has generated much discussion; see, for example, Bostock (1994: 202-4). Here's one reconstruction. Aristotle is concerned with the question whether a species is a substance. A species is identified with a definition composed of a genus with a differentia. A genus is either a universal or a substance. But if the genus is a substance, then the species has a substantial part. And if the genus is a universal, then the species is a universal, since it is composed of universals. On neither horn is a species a substance. And on the assumption that only species are definable, the theses that substances lack substantial parts and no universal is a substance is in conflict with a characteristic mark of substantiality, definability. If this reading is correct, then the objection relies on a thesis, that no substance has actual substantial parts, that may not be a view which Aristotle endorses.

A third objection. I have claimed that the accidentally produced chair is a chair but not an artifact. But consider the following passage.

T11 The question might be raised why some things are generated both artificially and spontaneously—e.g. health—and others not; e.g. a house. The reason is that in some cases the matter—which is the starting-point of the process in the production and generation of artificial things, and in which some part of the result is already existent—is such that it can initiate its own motion, and in other cases it is not. (1034^a9-14)

ἀπορήσειε δ' ἂν τις διὰ τί τὰ μὲν γίγνεται καὶ τέχνῃ καὶ ἀπὸ ταῦτομάτου, οἷον ὑγίεια, τὰ δ' οὐ, οἷον οἰκία. αἴτιον δὲ ὅτι τῶν μὲν ἡ ὕλη ἢ ἄρχουσα τῆς γενέσεως ἐν τῷ ποιεῖν καὶ γίγνεσθαι τι τῶν ἀπὸ τέχνης, ἐν ᾗ ὑπάρχει τι μέρος τοῦ πράγματος, ἢ μὲν τοιαύτη ἐστὶν οἷα κινεῖσθαι ὑφ' αὐτῆς ἢ δ' οὐ.

The context of this passage is a sequence of chapters, *Metaphysics* 7.7-7.9, where Aristotle compares natural and artifactual generation. He notes that both kinds of change have a formal cause, for example the male gamete in sexual reproduction, and the form of the artifact as entertained in the mind of the artisan in production. What then explains the difference among cases of artificial generation that some can also arise through spontaneity? The explanation is that in such cases the material cause can initiate the motion that gives rise to the resultant state or product. Notice however that **T11** does not obviously yield a counterexample to the accidental chair. Spontaneous events are one kind of happenstance, which Aristotle considers in *Physics* 2.4-2.6 as a potential rival fifth cause rival to the four causes. Aristotle's move is to view happenstance as an event which, under the right description, is adequately explained by just the four causes. For example, meeting a debtor at a market is a chance event but it just is the event of going to market to buy groceries; going to market to buy groceries is adequately explained by the formal, final, material and efficient causes; and it is only under the description of meeting

a debtor that the event appears chancy. Notice that going to the market to buy groceries is an action involving deliberation. Occasionally, Aristotle uses the terminology of spontaneity to refer to the broader notion of happenstance where the underlying event is either deliberative or not; but he sometimes uses the terminology more narrowly to those cases of happenstance where the underlying event does not involve deliberation. The action which gives rise to the accidental chair is a deliberative act. The parts of the chair have been given their final shape, and I go down the stairs with the intention of assembling the chair. My deliberative action of going down the stairs can be described as a making of the chair, and it is only under that description that the event appears to be chancy. Notice that the accidental chair does not require the material to initiate its motion in the assembly: some of the action is brought about by the downwards tendency of the earth in my flesh and the wood; but the activity is initiated by my deliberation.

These next objections I owe to Simon Evnine. Some contemporary authors allow that there are kinds with both artifactual and non-artifactual members. Consider the example of a village, which may be planned but which may arise simply because a number of houses happen to have been built in close enough proximity to each other, without the intention of founding a village. Hilpinen (2011) gives other examples: “Artifact sortals can be essentially or nonessentially (accidentally) artifactual. For example, ‘motor controller’ and ‘paper clip’ are essentially artifactual terms, but a path through a forest can be intentionally made (an artificial path) or it can be an unintended product of people's habit of following the same route when they walk through the forest.” Evnine tells me he agrees with Hilpinen that some kinds only have artifactual members. Hilpinen gives the example of a paper clip, and Evnine suggests a melody. One might, on analogy with my accidental chair, randomly string together a sequence of notes—say, by leaning against a piano—without the intention of creating a melody. Evnine holds that this sequence of notes is not a melody and, furthermore, kinds such as *chair* and *house* are more like melodies or paper clips than villages or paths.

In support of this judgment, consider again **T8**. Recall, the passage begins: “a house we should define as ‘bricks and timbers arranged so-and-so (*hōdi keimena*)’ or a final cause may exist as well in some cases.” Aristotle canvasses two kinds of definitions for artifacts, one material-based and the other based on the final cause. In the material-based definition of a house, the timber and bricks are arranged ‘so-and-so’. Evnine objects that I must view this phrase as referring only to the static or final arrangement of the parts, their intrinsic properties and the relations obtaining among them. I cannot view the phrase as referring to the dynamic process of arranging these parts, or the history of the arrangement, which very well might include the intentions of the artisan.

In **T8**, Aristotle moots not only material-based but also final cause-based definitions. Such a definition of a house might run along the lines of ‘a receptacle to shelter goods and bodies’. A house is *for* shelter. These kinds of final causes appear to be purposes, and one might be hard pressed to explain how such purposes get attached to artifacts without a story involving intentions. On the simple contemporary theory of artifacts laid out in the previous section, artifacts are defined by reference to authorial intentions or communal recognition: the intentions of an artist in making the object for a purpose, or of

a community in recognizing the object as having such a function, are a requirement for the object to be a member of a given artifactual kind. This theory is a tad too strong, as Evnine (2016: 121) explains:

Paul Bloom (1996: 5–6) argues, correctly I believe, that it is not necessary for something to belong to an artifactual kind that it be intended to perform the function associated with that kind. The function associated with the kind *chair*, for example, is to be sat on. Being sat on is what chairs are for. But one might make a chair to serve as an exhibition model, intending that no one sit on it (and hence lacking the intention that it be sat on).... This shows that having the associated function is not itself dependent on something's being made with the intention that it perform that function.

What is the salient kind of intention? Bloom (1996: 10) holds that a member of an artifactual kind K must be intended to be of the same kind as current and previous members of the kind. Thomasson (2007: 59) notes that “the relevant sort of intention to make a thing of artifactual kind K must thus involve a substantive (and substantively correct) concept of what a K is, including an understanding of what sorts of properties are K-relevant and an intention to realize many of them in the object created.” And Evnine (2016: 122) suggests the following.

Let K be some artifact kind associated with a given function F (as *chair* is associated with being sat on, *bottle opener* with opening bottles, and so on). An artifact has the function F if it is made, not with the intention that it be used to F (as the rejected account above had it), but with the intention that it be a K.

Putting the suggestion into somewhat more Aristotelian terms, an individual artifact need not be produced with an intended final cause, but it is sufficient for an artifact to have a given final cause that it be made with the intention to make something of a kind associated with that final cause. So, the objection concludes: by dint of both examples of artifactual definitions in **T8**, the material-based and final cause-based definitions, Aristotle is committed to viewing intentions as essential to artifacts.

I will end this essay by briefly responding to these objections. The gist of the response is that the textual evidence is too weak to unequivocally ascribe to Aristotle the view that authorial intentions are required elements in the definitions of artifacts. Consider first the material-based definition in **T8**. The expression *hōdi keimena* contains the neutral plural present middle participle of *keimai*, used for the passive of *tithēmi*, and so means something like ‘the things being placed’ (Smyth 1984: §1752, p. 397). The expression also contains the dative of manner for the deitic *hodos*, used emphatically with the *i* ending (Smyth 1984: §1240, p. 307), and so means something like ‘in this here way’. I have followed the Ross translation of the phrase as ‘so-and-so’ so as to not bias the translation too strongly. But to my ears, this expression does sound as a reference to just the static arrangement of the parts. Bostock (1994: 34) seems to agree: he translates the phrase as ‘in such a position’. The use of the present participle *might* suggest the process of assemblance. But even if the expression is intended to refer to the history or process of

the arranging, there is no compelling textual reason here to read authorial intentions as a part of that process.

Now consider the final cause-based definition in **T8**. Recall that the objection runs that the final causes of an artifact are bestowed by intentional activity of an artisan. Notice first, however, that Aristotle hedges when introducing the final-based definition. He merely claims that artifacts in some cases have such definitions. If there are items falling under typically artifactual kinds which are lacking final-based definitions, then the association of final causes with artisan intentions fails to show that all items falling under typically artifactual kinds are dependent on artisan intentions. However, allow for the sake of argument that all items, falling under typically artifactual kinds, indeed have final-based definitions. Still, we have seen no reason to hold that for Aristotle the final causes of any such items are necessarily bestowed by the intentional activity of an artisan. And so, if there are kinds with both artifactual and non-artifactual members, then Aristotle may well hold that there are kinds, whose typical members are artifacts, where the intentions of the author are not required elements in their definitions.

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