Chapter 3

Extending the Limits II: Intellectual Artworks

Abstract In this chapter, I defend the view that scientific and philosophical theories genuinely (as opposed to metaphorically) possess aesthetic properties and that they are genuine cases of artworks. In order to do so, I argue against the sensory dependence thesis according to which aesthetic properties necessarily depend on sensory properties. The case of intellectual artworks such as theories, as well as other cases of works of art like novels, show us that there is no such dependence, and we can then extend our understanding of what counts as art to such types of objects.

3.1 Aesthetic Properties, Sensory Dependence, and the Case of Theories

§1. The main aim of this chapter is to discuss the case of scientific and philosophical theories and to argue that they are genuine cases of what I'll refer to as "intellectual artworks". "Conceptual artworks" would have been a more appropriate label, but since the term "conceptual art" is widely used to talk about something else, I'll use "intellectual artworks" to avoid confusion. My main examples will be mathematical, physical, and metaphysical theories, but I see no obstacle to extend what I will say to other types of theories as well.

Adajian (2018, §1) classifies theories and mathematical proofs as having aesthetic properties but not as being artworks—similarly to natural entities such as sunsets, landscapes, or flowers. Perhaps the idea here is that theories are not human-made, but that they exist out there and are discovered/appreciated by us. I adopt a different view according to which theories are products of the intellectual activity of conscious beings (mostly, in the sense of being theoretical *models* (see Paul 2012; Benovsky 2016, Part I).¹ The notion of being human-made thus plays a role here; we will see that the idea that theories are created is important, and we will also see in Chap. 4

¹In "*Meta-metaphysics*" (2016, Springer), I have already defended the view that theories possess aesthetic properties and that these are crucial when it comes to their evaluation. In that book, my overall focus was on how this justifies an anti-realist stance when it comes to the nature of metaphysics. I shall not insist on this point here, but it is useful to keep it in mind. Here, I provide

the importance of human intervention in the case of artworks in other cases (namely, painting and photography).

§2. The case of intellectual artworks is not only interesting for its own sake and as a further extension of the limits concerning what counts as art and what does not, but also as an interesting contribution to the debate about the claim that aesthetic properties necessarily depend on sensory properties. This latter claim will thus be the starting point for my discussion here. In Chap. 2, I argued for an extension of the limits of art in order to fully include artworks based in perceptual modalities such as touch, olfaction, taste and proprioception, in addition to the more standard auditory and visual perceptual modalities. In this Chapter, I'll start by raising the question whether our senses do always have to play a role or not. In his excellent book *The metaphysics of beauty*² Nick Zangwill presents an elaborated argument against physicalist aesthetic realism which is based, *inter alia*, precisely on the premise that aesthetic properties *do* metaphysically necessarily depend on sensory properties (Zangwill 2001; Chaps. 8 and 11 and also Zangwill 1998). Even though I share the argument's conclusion, I will argue here that this premise is false, and so the argument does not go through. This has a consequence not only for us who want to reject physicalist aesthetic realism. The idea behind this premise actually plays an important role in Zangwill's own overall view as well: he defends a version of the view that aesthetic properties are response-dependent, and that "the responses that aesthetic properties depend on are [...] sensory responses" (Zangwill 2001, p. 200). Here again, even if at the end of the day I would also like to embrace a response-dependence view of aesthetic properties, I think that the aesthetic/sensory dependence claim is incorrect, and so it cannot be used in the defence or in the formulation of this view. So it is in a spirit of tough love that I will argue here against the aesthetic/sensory dependence claim. In order to do so, as mentioned above, I will focus on counter-examples to this claim such as the beauty of theories, proofs, and theorems. In short, I will defend the claim that theories—and the like—do possess genuine aesthetic properties, where these do not depend on any sensory properties.

§3. Here is how Zangwill formulates the aesthetic/sensory dependence thesis: "I shall defend a *weak dependence* thesis: Aesthetic properties depend in part on sensory properties, such as colors and sounds. Just as something has moral properties only if it has mental properties, so, according to the weak dependence thesis, aesthetic properties are properties that something has only if it has sensory properties. [...] The thesis is not the *strong* thesis that the aesthetic properties of a thing depend *only* on its sensory properties. The thesis is that sensory properties are *necessary* for aesthetic properties, not that they are sufficient. [...] [W]ithout sensory properties, there would be no aesthetic properties." (Zangwill 2001, p. 127).

Put in these terms, what I will argue for is that sensory properties are *neither sufficient nor necessary* for aesthetic properties. In order to better understand Zangwill's claim, let us illustrate it by what he says about the beauty of literature. There is, of

a different defence with a different focus. There is some overlap between this chapter here and the last chapter of the earlier book.

²Zangwill, N. (2001). *The metaphysics of beauty*. Cornell University Press.

course, “the music of words” of a poem or a novel, and these are sensory properties of a literary work. But one could claim that these are not the relevant properties. Rather, it can be thought, the *semantic* properties of a literary work are those that matter—this is the *content* of the work. If this is so, since these semantic properties are not sensory properties, literature is a counter-example to the aesthetic/sensory dependence thesis. Zangwill replies that while of course there can be great value in the semantic content of a literary work, it is not an *aesthetic* value. Not every value of a novel or a poem is an aesthetic value. As he says, a novel can be clever, inspiring, or moving, via its semantic content, but these are other than aesthetic values. If a novel has *aesthetic* properties at all, Zangwill claims, they “derive from the particular choice of words, because of the way they sound” (Zangwill 2001, p. 137). Zangwill makes here a distinction between *aesthetic* value and *artistic* value: originality, for instance, is said to be an artistic value, but not an aesthetic one (see Zangwill 2001, p. 108)—in general, artistic value is a broader category, including aesthetic value as one of its components (see Zangwill 1998, p. 74–75, 2001, p. 11; 58; 137).

The case of literary works is highly relevant. Firstly, it is very useful in order to get a better understanding of what the aesthetic/sensory dependence claim amounts to—we can really see it at work here. Secondly, and importantly, the treatment Zangwill provides of this case can be doubted for the same reasons we will have to doubt the case of theories and the like. The reason why I will focus on theories rather than novels lies in the fact that counter-examples such as a metaphysical theory or a mathematical proof cannot be said to possess anything like a “music of words”. Their formulation is often very “non-musical”, often formal, and there is nothing like the particular choice of words that can play any significant role here “because of the way they sound”. Thus, they are sharper counter-examples than novels: in the case of novels, it is always possible, for the defender of the aesthetic/sensory dependence thesis, to claim that their beauty comes from the “music of words”, while this strategy is just not available in the case of theories, theorems, or proofs. The defender of the dependence thesis has then only one option available to her—namely, to claim that such objects are not (and cannot be) beautiful at all, that they do not (and cannot) possess aesthetic properties at all. Since there is nothing relevantly sensory in the way such objects are experienced/grasped by us, unlike in the case of novels, theories then either cannot possess aesthetic properties at all and do not constitute a counter-example to the aesthetic/sensory dependence thesis, or they can and the thesis is false.

As we will see, there are reasons to think that theories, theorems, and proofs *do* possess genuinely aesthetic properties. If this is true, and if as a consequence the aesthetic/sensory dependence thesis fails, then since it has to be abandoned anyway, it could/should perhaps also be abandoned in the case of novels, which would allow us to accept that semantic content of a literary work can exhibit genuinely aesthetic properties as well.

3.2 The Beauty of Theories

§1. The reason I will offer to think that theories, theorems, proofs, or particular steps in proofs³ (for the sake of brevity, I'll often just say "theories") can possess genuine aesthetic properties is simple: they have all the typical features that objects that we typically claim to possess aesthetic properties have. The strategy is here similar to the strategy I used in Chap. 2 to claim that gustatory and proprioceptive experiences are genuine cases of artworks. For now, I focus on the claim that theories possess aesthetic properties and I am not (yet) claiming that theories are artworks—I'll do so in due course below. Theories can exhibit features such as *unity*, *simplicity*, *harmony*, and *symmetry* (as we shall see shortly), they have the capacity to cause passion (or other responses), they are "fitted to give a pleasure and satisfaction to the soul" (as Hume 1975, p. 299) puts it). Importantly, they are often *said* and *judged* to be beautiful (or not). Quine (1948, p. 22) is among the most famous examples: "Wyman's overpopulated universe is in many ways unlovely. It offends the aesthetic sense of us who have a taste for desert landscapes [...]" Quine is far from being alone in attributing aesthetic properties to theories. Almost every conference or academic workshop contains such examples, where a theory, a theorem, or a philosophical argument is labelled as being beautiful or elegant (or not). This is no mere loose speaking during a talk, one finds such attributions of aesthetic properties to theories seriously expressed in published work. Here are two examples, one from physics: "The foundations of the [general relativity] theory are, I believe, stronger than what one could get simply from the support of experimental evidence. The real foundations come from the great beauty of the theory.[...] It is the essential beauty of the theory which I feel is the real reason for believing in it" (Dirac 1980, p. 10), and one from metaphysics: "It is easy to feel [...] an intellectual joy in contemplating a theory so elegant and beautiful as four-dimensionalism, and it is tempting to accept the theory simply on this basis, utilizing arguments to rationalize more than justify" (Sider 2001, p. 74). The list of examples could go on and on.⁴ On the one hand, such statements of course do not constitute any kind of proof of the fact that theories and the like do possess genuinely aesthetic properties, but on the other hand such explicit statements by serious practitioners seem at the very least to indicate that there is nothing wrong with the idea that they might.

§2. To have an example in mind, consider the *bundle-bundle-bundle theory* (for a detailed discussion of this view, see Benovsky 2006). I mention it here because I think that it nicely illustrates the first point stated above, namely the idea that theories (but also theorems, proofs, and the like) can exhibit features such as symmetry, harmony, and unity. Let us focus on its structure. According to the bundle-bundle-bundle theory, (i) ordinary material objects are bundles of properties (this is the first level of bundling), (ii) ordinary objects persist through time by having temporal parts, which means in this case that they are temporally extended bundles of the bundles that are the temporal parts (this is the second level of bundling), and (iii) ordinary

³Rota (1997) takes such steps to be the best examples of mathematical beauty.

⁴Derkse (1992) and McAllister (1999) feature a number of relevant quotes and references.

objects have their modal properties in a way similar in which they have temporary properties, that is, by having modal parts—in short, by being bundles of all of their modal counterparts (this is the third level of bundling). One may like this view or one may dislike it for many different theoretical reasons, but I think that it is undeniable that the theory's structure possesses a kind of elegant symmetry, unity, and harmony that makes it very beautiful, where these features lie in the fact that it appeals to the same notion of bundling to solve three different issues in the same way. It provides the same solution to three different puzzles: the problem of the nature of material objects, the problem of their persistence through time, and the problem of *de re* modality. One can then see this theory as being an abstract structure that is balanced, symmetrical, and harmonious, and that has a kind of unity that lies in the fact that the same notion is being used in different places to solve different problems. Here is an illustration of what this abstract structure could look like when schematically represented (on this figure, a person named “Cyrano” has, in the actual world, a big nose at t_1 , but he then undergoes plastic surgery and has a small nose at t_2 and t_3 ; in another possible world, Cyrano has a small nose all along).

§3. In addition to the fact that theories can possess features such as symmetry, harmony, and unity, and to the fact that they are often *judged* to be beautiful, it is also the case when it comes to theories that, as in the case of typical works of art such as paintings or symphonies, their aesthetic properties can be said to be grounded⁵ in their non-aesthetic properties such as (i) internal consistency, (ii) explanatory power, (iii) simplicity, (iv) parsimony, (v) preservation of our intuitions, or (vi) compatibility

⁵Grounding captures better what we want to say here than *supervenience*. See Benovsky (2012) for a detailed defense of this claim.

with other (philosophical and/or scientific) theories, to cite only the most common ones. To compare theories to paintings, for instance, such properties are akin to colour distribution on a canvas, the thickness and quality of the paint, the way it was placed on the canvas using brushes in such-and-such a way, and so on. These non-aesthetic features of theories are subject to controversies, they are weighted, evaluated, and attributed (or not) to the theories at hand, exactly as we can evaluate and appreciate non-aesthetic features of paintings and symphonies—precisely in order to attribute *aesthetic* properties to them.

§4. Such attributions of aesthetic properties to theories (and the like) are also, exactly as in the case of ‘typical’ works of art, context-dependent. Most artworks such as paintings or novels get a part of their aesthetic value from the context in which they were created. The first cubist paintings have great value precisely because they were the *first*. Milan Kundera’s novels written before 1989 get a part of their beauty from the political and historical context in which they were written. Of course, these are controversial claims in the eyes of the friend of the aesthetic/sensory dependence thesis, since she could argue that these values are not *aesthetic* values. But this is not really the point I want to focus on here and now—I am not arguing for or against the claim of context-dependence (even though I am strongly sympathetic to it). The point here is that in both cases—that is, whether one accepts the context-dependence claim or not—one can hold the same claim when it comes to theories. The context-dependence idea, if one accepts it, is simply that not only intrinsic properties of an object are relevant. Of course, they are—colours and shapes are central when it comes to paintings, for instance. But these are not the only relevant non-aesthetic properties of an object in which its aesthetic properties are grounded. Some extrinsic relational properties also need to be taken into account. Arguably, the context of creation of an artwork plays this role (see, *inter alia*, Walton 1970),⁶ or Levinson (1984, p. 93–94). Imagine two indistinguishable paintings that are qualitatively indiscernible—they are exact duplicates that consist of the same arrangements of paint. The idea here is then that they could still have different aesthetic properties depending, say, on the time at which they were created.

Again, the role context plays in the having of aesthetic properties is of course controversial, but were it to be accepted in the way suggested above, the same idea could then be applied to the case of theories, perhaps even more obviously. Regarding scientific or philosophical theories, the context in which they were created matters greatly, the relevant context being the state of scientific or philosophical knowledge at the time of the formulation of the theory. Ptolemy’s theory of the movement of planets was, at its time of creation, a tremendous achievement in systematic thought and careful observation. In this context, given the state of astronomical knowledge in the second century, there is no doubt that Ptolemy’s epicyclic model was highly beautiful and elegant (to anticipate the conclusion that theories do possess aesthetic

⁶Walton makes a distinction between *narrow* and *broad* non-aesthetic properties of objects, in which its aesthetic properties are grounded. The narrow properties are the intrinsic ones, like colors and shapes, and the broad properties are the relational ones, like, precisely, the context in which an object was created.

properties), and had great value. Not so much today, if evaluated from today's standards: there are now simpler, more efficient views with greater explanatory power, greater compatibility with other scientific theories, etc. (remember the incomplete list of the (i)–(vi) non-aesthetic properties in §3 above that theories possess and in which their aesthetic properties—if they have any—are grounded). The (rather trivial, I take it) point is: exactly as in the case of standard works of art, when it comes to evaluation of theories, context of creation can matter.

In this way, the suggestion here amounts to a 'broadening' of the grounding/supervenience base. This then solves a problem raised by Scruton (1974, p. 36), who criticizes the aesthetic supervenience thesis when he says that "different emergent 'properties' can depend on precisely the same set of 'first order' properties". What he has in mind here is that one and the same work of art can be context-dependently characterised as sad or as joyful, without contradiction. (For a discussion of this, see for instance Pettit 1987; Zangwill 1994; and MacKinnon 2001). We can now respond to this objection simply by pointing out that, once we include the context of production (*and* the context of evaluation—see more on 'taste' below) in the grounding base, it is *not* the case that 'different emergent properties could arise from the same base'.

Concerning theories, the kind of relevant context is the state of philosophical and scientific knowledge at the time of the formulation of the theory. Ptolemy's theory is a good illustrative case, as is for instance Thales' materialist conception of the world, based on the idea of water as the central element out of which all other existing material entities are somehow construed: such a view, evaluated in the light of today's scientific and philosophical knowledge, is certainly false and it is not very satisfactory with respect to several of the non-aesthetic evaluative criteria (i)–(vi) in §3 above. Does this mean that Thales' view cannot be said to be beautiful? It does not, for the reason mentioned above: the context of origin of this theory is to be taken into account when evaluating the theory's beauty. When we say that aesthetic properties of theories are grounded in their non-aesthetic properties, the grounding base has to be broadened to include their context of origin as well as the other non-aesthetic features—and, from the point of view of scientific and philosophical knowledge in the sixth century B.C., Thales' theory represents quite an achievement, in terms of systematization and philosophical reflection.

§5. There is a consequence of this approach which is welcome in the case of artworks such as paintings, but which might be distinctly undesirable in the case of metaphysical theories: Ptolemy's and Thales' views (and, of course, many an ancient, medieval, and modern view) could very well emerge from the evaluative procedure as being judged just as beautiful as the best scientific and metaphysical theories we have today. This state of affairs is acceptable in the case of, say, paintings since there is no good reason for claiming that today's paintings are in any principled way superior to older ones, but it is an unacceptable result in the case of scientific and philosophical theories, because it does not do justice to the progress of scientific and philosophical knowledge. Indeed, we want to be able to say that even if it is not always the case, generally speaking, our theories become better—more beautiful—over time (recall Sider's and Dirac's quotes; indeed, all this becomes crucially important if one takes

the *beauty* of a theory to drive one's choice in deciding which particular theory is supposed to be the *best*—in Benovsky (2016, Part II) I discuss this in detail). But it seems that, if aesthetic properties are grounded not only in their intrinsic non-aesthetic features but also in a wider base that includes the context of origin, it could perhaps even be possible to judge Thales' view as better (because more beautiful) than some of the most elaborate theories we have today.

But there is an easy remedy to this problem. For, unlike paintings or other art forms, science and metaphysics exhibit one important feature: their knowledge accumulates over time. Another way of bringing out this point is to say that the contemporary context of creation of scientific and metaphysical theories does, in a certain sense, include all past contexts, since it includes all the successful discoveries of the past. This is why the contemporary context is to be privileged over any other past contexts, and, consequently, contemporary theories can be said to be better than past ones (if they are beautiful enough) and claims about the progress of knowledge in science and philosophy can be secured.

This being said, the general idea I wish to put forward here still *is* analogous to the case of artworks like paintings. Its core claim is simply this: since the context of origin is part of the base in which aesthetic properties of theories are grounded, the context of contemporary theories is *richer* than the context of 'older' theories. Suppose I see a painting in the museum which I intuitively like and find beautiful without however knowing anything about its context of creation. Suppose further that a museum guide comes along and provides me with interesting background information about the relevant context, for instance, that the painting was created in the Czech Republic in the seventies and that it has a particular political significance as a metaphorically veiled rejection of the communist regime at the time. After I have been given this information, I might find the painting even *more* beautiful than before. Suppose the guide goes on to tell me about the painter's life and reveals to me even more about the context of the painting's creation, for instance, that the painting also offers a metaphorical reference to the day when the painter lost his child—I might again find the painting now *even more* beautiful. In short, what I want to express here is the general thought that, the richer the context, the (potentially) more beautiful the painting will be to the beholder. What is more, as we have seen, it seems that this applies even more clearly in the case of scientific and philosophical theories.

§6. In Chap. 2, section IV, we have seen how important it is that the evaluator of proprioceptive and gustatory artworks (as well as any artworks in general) should be a skilled expert in the given field. We have also seen how the individual taste of the evaluator matters. The former point is perhaps even more (and more obviously) the case when it comes to intellectual artworks. But let us first focus on the taste of the evaluator. Indeed, one can argue that not only, as we have already seen above, the context of creation of an object has to be included in the basis in which its aesthetic properties are grounded, but that the taste of the evaluator has to be included as well. As before (see Chap. 2, IV), the notion of 'taste' is here a rather technical one, and does not amount to a mere the-first-thing-which-comes-in-my-mind liking. Rather, the taste that matters here is a capacity of a trained evaluator to discern the aesthetic properties

of objects.⁷ Thus, taste is understood here as a rather sophisticated capacity, which is in line with what Hume thought when he said that not everybody's taste counts⁸ (in short, that not everybody is a good critic of art). As above in the case of the role context plays, when it comes to taste as I shortly described it here, its role is controversial. But here again, what matters mostly for my argument is that *if* one thinks that taste does play such a role, it can then very well play this role in the situation in which we find ourselves when it comes to theories, proofs, arguments, or theorems—it is actually more than obvious that only a trained specialist can discern and weight the non-aesthetic properties of such objects, and only such a competent evaluator can then use his taste to make a claim about their beauty (think of Quine's 'desert landscapes'). But not only this, since being an expert is not the same thing as having taste. Being an expert is here a necessary condition, but not a sufficient one. (To have an example in mind, perhaps the kind of "incredulous stare" that is many colleagues' reaction to David Lewis' modal realism is an expression of the idea that while Lewis is a great expert, he has poor taste.) Thus, perhaps even more clearly than in the case of works of art such as paintings, novels, symphonies, or in the case of proprioceptive and gustatory artworks, it is true to say that in the case of theories and the like only attributions of aesthetic properties by trained, qualified, and competent specialists, who have a "good sense" as Hume puts it,⁹ count. These attributions and judgments are then part of what aesthetic properties of such objects can be grounded in—they can enrich, together with context (see above), the basis in which aesthetic properties are grounded. In short, only a trained and perceptive philosopher or scientist will be able to notice and appreciate a theory's beauty, and her taste and judgement is crucially relevant to any attribution of aesthetic properties. There are two options here. First, one can include taste directly in the grounding base, which makes the aesthetic properties of theories response-dependent (that is, no appreciators, no aesthetic properties); or second, one can include taste only as a condition for the recognition of aesthetic properties. While I have sympathies with the first option, my main point does not depend on it: one can recognize the utmost importance of the role taste plays in the attribution of aesthetic properties to theories even under the second reading.

3.3 Theories as Artworks

§1. In the preceding section, we have seen that theories, theorems, proofs, and the like behave a lot like typical works of art such as paintings, symphonies, or novels (as well as less standard artworks like proprioceptive and gustatory artworks). First,

⁷Remember what Sibley (1959, p. 423) rightly remarks: "When I speak of taste [...], I shall not be dealing with questions which center upon expressions like 'a matter of taste' (meaning, roughly, a matter of personal preference or liking). It is with an ability to notice or discern things that I am concerned."

⁸Hume (1985, p. 240–241) also adds that such qualified judges also have to be *practiced* in the attribution of aesthetic properties, have to have a "*good sense*", and have to be *intellectually honest*.

⁹See Footnote 8.

as we have seen, they can exhibit features such as unity, simplicity, harmony, and symmetry. Second, they can cause appropriate responses (emotional or other) in their evaluators. Third, they are often said and judged to possess aesthetic properties by competent scientists and philosophers. Fourth, they possess relevant non-aesthetic features in which the having of aesthetic properties can be grounded. Fifth, the context of their creation matters, as well as the taste of competent evaluators.

Thus, I submit, there is no doubt that theories and the like have all it takes to be able to have aesthetic properties. There just is no reason to think the opposite. In the relevant sense, they behave exactly like other objects which possess aesthetic properties do. The only reason to resist the idea that they can genuinely instantiate aesthetic properties would be to say that they violate the aesthetic/sensory dependence thesis, but that would be question-begging.

It is now a short step to take in order to claim that theories not only possess aesthetic properties but that they are artworks. To repeat, they exhibit features standardly shared by works of art such as harmony, unity, balance, intensity, and complexity. With no doubt, they give rise to passion and pleasure. They behave like artworks and are often treated as such by skilled and serious practitioners. Remember our (non-necessary, but still highly relevant) criteria from Chap. 1:

- (1) Artworks possess aesthetic properties
- (2) Artworks are subject to aesthetic judgements
- (3) Artworks have the capacity to trigger aesthetic experiences
- (4) Artworks have the capacity to trigger emotions
- (5) Artworks have the capacity to convey meanings and ideas
- (6) Artworks are challenging (both for the artist and the observer)
- (7) Artworks require skill to be produced
- (8) Artworks *qua* objects can have relevant non-aesthetic features and a non-aesthetic function.

(1), (2), (3), (4) and (8) have already been established by the discussion above in this Chapter. (5), (6) and (7) are just utterly obvious in the case of intellectual artworks such as theories, proofs, theorems and the like. In the same manner as in the case of proprioceptive and gustatory artworks from Chap. 2, I thus submit here that there is no reason to deny that there are intellectual artworks such as scientific and philosophical theories.

§2. Zangwill himself rejects any attributions of aesthetic properties to theories or theorems (which would then deprive them of the possibility of being artworks) because he takes such attributions to be merely *metaphorical*. Again, a comparison with what he says about novels is useful: “Contents have purely structural properties. The *Odyssey*, for example, has a harmoniously proportioned overall construction.[...] It might be suggested that we can appreciate such structures in themselves, in the way that we appreciate the temporal structure of a piece of music or the visual structure of an abstract pattern.[But w]hen we value structural properties of content, it is because of its role in the presentation of a story which has an independent moral,

political, religious, or emotional appeal. So if we use words like “beautiful” and “elegant” to describe properties of a plot, *that use is metaphorical.*” (Zangwill 2001, p. 139–140), my italics) He then mentions the case of theories and asks: “But why should we agree that the properties we appreciate here are *aesthetic* ones? There are *intellectual* pleasures, of course, but that should not encourage us to deem these pleasures *aesthetic* pleasures.” (Zangwill 2001, p. 140) Thus, he accepts that theories or theorems are often said and judged to possess aesthetic properties by competent scientists and philosophers, but he claims that such attributions and judgments of aesthetic properties are merely metaphorical. The reason he provides to think that this is so is that such theoretical objects have a *purpose*. Theories, theorems, and proofs are here to accomplish something, they are created to do some scientific work. They are not, as I understand Zangwill, created to be beautiful, they are created with something completely different in mind—perhaps something like scientific truth. Suppose, for the sake of argument, that this is so.¹⁰ But why does having a purpose prevent anything from being able to possess aesthetic properties? Should we perhaps be tempted to accept the general idea that artworks always lack functionality (“*l’art pour l’art*”) and that, therefore, theories cannot be artworks? Look again at (5) above and also especially at (8)—these are part of a normal understanding of what counts as being a work of art. We have also seen these criteria at work in the case of proprioceptive artworks (martial arts have the purpose of defending oneself, rock climbing has, or at least can have, the purpose to get to a summit of a mountain, and so on) as well as in the case of gustatory artworks (food provides nourishment). Perhaps you could say that my own strategy is here question-begging and that I am making things too easy for myself by including (8) in the list of criteria for what counts as an artwork. So, let me just try to say that (8) is simply highly plausible. Many traditional craftsman’s tools are built for a reason and with a purpose, but many of them are genuinely beautiful works of art themselves. Having a purpose *does not prevent* anything from being beautiful—and why would it then prevent something from being an artwork? Indeed, having a purpose and fulfilling it in an efficient and elegant way *can itself be beautiful*—a craftsman’s tool’s simplicity and elegant efficiency is something to be aesthetically appreciated. The same, I submit, is true of theories—the way they do their work, the simplicity and parsimony, say, with which they are able to explain some complex phenomena, is exactly what one can find genuinely beautiful about them. And, precisely because of the way they accomplish their purpose, they certainly are “fitted to give a pleasure and satisfaction to the soul”, as Hume¹¹ puts it. Why deny then theories and the like the status of an artwork? As we have seen, they exhibit all of the typical features standard works of art possess—and the fact that they do indeed have a practical purpose does seem to be simply irrelevant to invalidate the claim that they can be artworks themselves. Is it question-begging to say that saying otherwise would be question-begging? I hope to have conveyed a high plausibility to the claim that it is not.

¹⁰In Benovsky (2016) I offer reasons to doubt that, but I shall not press this point here.

¹¹Hume (1975, p. 299).

§3. To come back to the claim that attributions of aesthetic properties to theories are *metaphorical*, Zangwill says, when it comes to scientific theories, that a theory couldn't be said to be beautiful if it did not explain the data. This is why he says that we only metaphorically say that it is beautiful while what we are doing is just to appreciate that it explains a lot of data in an efficient way. One way to resist this claim is to remember the case of Ptolemy. When evaluated from today's point of view, his theory of the motion of planets certainly does not explain the data and certainly is not very efficient. But it still can, I submit, be found beautiful. It has a beautiful structure, it has an elegant and sophisticated way of accomplishing its task, it aims at simplicity and harmony—in short, it has many of the non-aesthetic features in which aesthetic properties can be grounded. Take another example, a contemporary one: very few philosophers accept that David Lewis's modal realism is true and that it really works as an acceptable metaphysics of modality. But this does not take away the theory's beauty and elegance, probably grounded in its simplicity, straightforwardness, and boldness. If you have a certain taste (qualitative rather than quantitative) for desert landscapes, you'll be struck by the theory's beauty in a very clear way.

So, why to insist that attributions of aesthetic properties to theories and the like are merely metaphorical? Again, one could think so precisely because it would be at tension with the aesthetic/sensory dependence principle, but that *would* be, quite clearly, question-begging. In Zangwill's own terminology, one could perhaps want to say that that theories and the like merely have *artistic* value, but not *aesthetic* value, but there does not seem to be a (non-question-begging) reason for such a claim—there just does not seem to be a reason to discard the aesthetic properties of such theoretical objects as being genuinely aesthetic. When we appreciate, say, a structure of a theory (or a novel, for that matter), we are not just appreciating the role it plays in how the theory manages to explain the data in order to get to a scientific or philosophical truth (or the role it plays in the story which has an independent moral, political, religious, or other appeal). We can appreciate it for itself, for how elegantly structured it is, for how nicely it makes things fit together, or for the baroque complexity it can have (if you have a taste for the baroque rather than for desert landscapes).

§4. Thus, I submit that (a) scientific and philosophical theories, theorems, proofs and similar can possess genuinely aesthetic properties, and that (b) given the relevant ways in which they are similar to other kinds of works of art, it is at the very least highly plausible to say that they count as artworks themselves. They have all it takes. How do we come to the conclusion that paintings, say, can have aesthetic properties and that they are artworks? *First*, they have non-aesthetic properties in which their aesthetic properties can be grounded (such-and-such a distribution of paint on a canvas, for instance), and these can be discussed from many points of view, their merits can be weighted and debated, and so on. Thus, paintings can exhibit symmetry, harmony, unity, as well as many other non-aesthetic relevant features. *Second*, they can produce relevant responses in their spectators. These can be emotional, intellectual, or other—and by all means they are “fitted to give a pleasure and satisfaction to the soul”. *Third*, they are often said and judged to possess aesthetic properties by competent judges. *Fourth*, the context of their creation matters. *Fifth*, the taste of the competent evaluator matters. These—and as we have seen other—are the criteria

that make us say that paintings can have aesthetic properties and that they are works of art. And, as we have seen, theories and the like do satisfy all of these criteria as well. This is why I think we should say that they can possess genuinely aesthetic properties and that they are genuine cases of intellectual artworks.

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