

# Depicting Properties' Properties

*ABSTRACT: Little has been said about whether pictures can depict properties of properties. This article argues that they do. As a result, resemblance theories of depiction must be changed to accommodate this phenomenon. In addition, diagrams and maps are standardly understood to represent properties of properties, so this article brings accounts of depiction closer to accounts of diagrams than they had been before. Finally, the article suggests that recent work on perceptual content gives us reason to believe we can perceive properties of properties.*

**KEYWORDS:** depiction, picture, diagram, higher-order property, perception

## Introduction

In the fairly large body of literature on pictorial representation, almost nothing has been said about the depiction of properties' properties. Yet this is an important topic in the study of depiction.

While there are many competing accounts of depiction, they are built around a thin but readily articulable consensus, which suffices for framing the question of whether there is depiction of properties' properties. In the next section, I unpack the consensus view and in section 2 offer some examples that show the range of properties' properties and explains some controversy about them. Section 3 shows how the consensus about pictures makes room for the depiction of properties' properties. Section 4 is a discussion of some very plausible examples of the phenomenon. My hope is that by the end of section 4, the reader will acknowledge this as a phenomenon, even if it is unclear why it is significant.

Section 5 explains what lessons should be learned from this, with a focus on resemblance theories of depiction. In particular, resemblance views of many stripes are formulated so as to exclude the depiction of properties' properties. That is a problem, but it is one that can be fixed fairly easily, if in different ways depending on the theory. This provides a new perspective on what resemblance accounts of depiction are doing. Section 6 focuses on maps and diagrams. Most theories of diagrammatic representation insist that they share structure with what they represent, and it turns out that diagrammatic content is typically understood to include properties' properties. The thoughts about diagrams and their contents readily apply to pictures, and this offers a new way of thinking about pictorial content, according to which depiction of properties' properties is pretty much ubiquitous. The examples presented in section 4 provide an important way into

I thank two anonymous reviewers for very helpful comments.

the phenomenon because in those cases the communicative point of the picture is getting viewers to notice properties of properties. In the general case, even though the point might not be getting people to notice such things, at least some properties of properties figure in pictorial contents.

All accounts of depiction suggest that their contents relate closely to what we can perceive. Section 7 is a discussion of whether we perceive properties' properties. I suggest that we do. While this is not the place to unpack an account of the perception of properties' properties, showing why we should think that it happens ties the philosophy of depiction to the philosophy of perception.

## 1. The Consensus View

Consensus concerning pictures is thin, but it is meaty enough to raise the possibility that we can depict properties' properties. That the consensus is thin should not be surprising: there are many competing theories of pictorial representation on the market. That there is an interesting consensus in the first place is moderately surprising. Not absolutely everyone will agree with every claim below, but enough do to make calling this a consensus perfectly reasonable. It pays to articulate this consensus because the questions about properties' properties are really questions for every theory of depiction.

First, pictures are representations. It makes sense to ask what pictures are about, what their accuracy conditions are, and perhaps even whether they are true or false. This makes pictures similar to linguistic representations, maps, and diagrams.

Second, pictures have attributive contents. They represent spatial patterns of features, such as colors or shades of gray. Perhaps they represent and express much more, but about that there is no consensus. Theorists differ concerning exactly what features pictures represent, which ones they *pictorially* represent, and whether they represent particular individuals as well as patterns of features. They also differ concerning just how we come to understand pictures as representing what they do. For present purposes, call the spatial color and lightness patterns that theorists agree pictures represent their *minimal contents*. Dominic Lopes's (1996: 145) 'content recognition', Robert Hopkins's (1998: 124) 'seeing-in content', John Hyman's (2006: ch. 5) 'internal subjects', my (Kulvicki 2006: 122) 'bare bones content', and Catharine Abell's (2009: 209) 'recognized intention-based resemblances' are all versions of what pictures, in some minimal sense, represent. These contents are minimal in two ways. First, they are purely attributive, involving no particular individuals, like Richard Nixon or Batman. Second, they reflect the thin consensus and thus constitute a fairly thin set of features.

Third, pictures have the minimal contents they have in virtue of instantiating their own patterns of features, namely patterns of color, light, and dark. Call the features instantiated by pictures that are relevant to them representing what they do their *syntactic* features. (Not everyone would agree that there is an interesting sense in which these features are syntactic, but that is not important for present purposes.)

Sentences, too, represent what they do by instantiating patterns of features. They are structured assemblies of words, written out with letters. What makes a mark this or that letter, this or that word, is in part the pattern of features it instantiates. So, the

third point of consensus does nothing to distinguish pictures from languages, maps, and the like. It does, however, set up another point of consensus that pulls pictures away from language.

Fourth, pictures' syntactic features interestingly constrain their minimal contents. In languages, a pattern of letters can, in principle, stand for anything. Not so for pictures. As point two suggests, pictures' minimal contents are patterns of color, light, and dark. Point three suggests that pictures' syntactic features are themselves patterns of color, light, and dark. By consensus, a spatial pattern of syntactic features represents spatial features. A color mosaic represents a pattern of color, a hueless mishmash of light and dark represents light and dark. Get more specific than this, and one is apt to find a lot of disagreement, even though there is agreement about the in-kind relationship between minimal contents and syntactic features.<sup>1</sup>

Corollary to the fourth point is that the syntactic features of pictures are themselves possible contents of pictures. That is not to say a picture represents its own syntactic features, or that these features constitute minimal contents of pictures, but just that such features are within the scope of what can be depicted. So, there is an interesting relationship between the syntactic features pictures can have and the patterns that they can represent. There is much more that can be said about this, but doing so moves into territory about which there is not much consensus.

Fifth, there is a distinction between what a picture *depicts* and what it represents in other ways. Minimal contents, as unpacked above, are what the consensus says that pictures depict, or represent *pictorially*. Different accounts of depiction have different commitments concerning what they depict beyond minimal content, and they all acknowledge that pictures can represent more than they depict. Erwin Panofsky, for example, suggests that in certain Western paintings 'a female figure with a peach in her hand is a personification of veracity' (1955: 29). Such paintings represent veracity without depicting it. There is no consensus about what these non-depictive aspects of content are or how they are fixed.

This minimal thread of consensus about pictures is a helpful frame for a new series of questions: Can pictures represent properties of properties? If they can, do they depict such features or represent them some other way? Are there examples of this phenomenon? Are properties' properties syntactic features of pictures? Critical discourse about pictures rarely mentions properties' properties explicitly, but the examples below suggest that the phenomenon is real and relevant. Before any of

<sup>1</sup> Some, for example, suggest that syntactic features constrain pictorial interpretation insofar as they enable the deployment of recognition responses (Schier 1986; Neander 1987; Sartwell 1991; Lopes 1996). Others suggest that the syntactic features enable experienced resemblances (Hopkins 1998), or a special state of seeing in (Wollheim 1980), a make-believe engagement (Walton 1990), a recognition-seeing-in mix (Newall 2011). Others suggest that the syntactic features just are, in some interesting sense, the features represented by the picture (Hyman 2006; Kulvicki 2006; Abell 2009; Blumson 2014; cf. Greenberg 2013). See Kulvicki (2014) for an overview. They all, however, agree on the basic point made here. Nelson Goodman (1976) argues for a constraint that was more structural than substantive: syntactic features of pictures are organized in a way that mirrors the organization of depicted features. This is what he means when he says that pictures are both syntactically and semantically dense.

this can be shown, however, it is important to understand just what properties' properties are and consider some controversies about them.

## 2. Properties' Properties?

While there is limited consensus concerning pictures, there is little concerning properties and their properties.

Imagine a red spot surrounded by green. Redness is instantiated within a surrounding instantiation of greenness. That is a property that redness happens to have, being instantiated thus and so. Perhaps red is also your favorite color. In that case, redness is your favorite color property.

In *The Structure of Appearance* (1951) Nelson Goodman discusses various features of predicates. Goodman was a mereological nominalist, so he denied that there are properties. But he did think that there are predicates and that predicates differ from one another in a number of interesting ways. Setting aside Goodman's worries about the existence of properties, we can recast his examples in terms of properties' properties. He says, 'A one-place predicate is said to be dissective if it is satisfied by every part of every individual that satisfies it' (1951: 38; cf. Armstrong 1978: 68). So, a property is dissective just in case every part of something that has the property also has that property. David Hilbert (1987), for example, suggests that Locke and Berkeley thought of color properties like redness as dissective, and then goes on to argue that they are not. Squareness, by contrast, is not dissective. From the fact that a piece of wood is square, one cannot conclude that all of its proper parts are square, too. Nor is being in Utah, since you can keep feet in two states at once.

Consider, by contrast, 'That a one-place predicate is collective means that it is satisfied by the sum of every two individuals (distinct or not) that satisfy it severally; examples are "is pure gold", "is in Utah", "is owned by Shakespeare"' (Goodman 1951: 39). So, if two things are in Utah, then their mereological sum is in Utah, too. The sum of two bicycles, by contrast, is not a bicycle, so being a bicycle is not collective.

The first examples above are relational properties of properties, and they seem contingent. Greenness might never be instantiated within a field of red. The latter examples are not relational, and they seem essential. Redness is not dissective sometimes, under certain circumstances, but not otherwise. If it is that way, it must be so. In fact, it might be that properties just do not have nonrelational, contingent features (Lewis 1986: 205n6; Egan 2004: 52), but that is not my concern here.

As mentioned, there is not much consensus regarding the existence or extent of properties' properties. Some deny that there are properties altogether, and so would also deny that there are properties of properties (Goodman 1951, for example). Those who defend properties are split on whether and to what extent properties have properties (see, for example, Bergmann 1968 and Armstrong 1978). These issues touch on both metaphysics and the philosophy of language, because talk about properties is relevant to our commitments concerning their existence. For example, if talk about properties' properties can all be paraphrased

without loss in terms of talk about properties, this would at least partly undermine the motivation for adding the former to the inventory of What Is. If such paraphrases fail, as Frank Jackson (1977) and Armstrong (1978: ch. 23), among others, suggest they do, then one might be committed to the existence of higher-order properties alongside the rest.

I am not offering a new argument for either the (non)existence or extent of properties' properties. The points made herein are significant regardless of how those arguments pan out. To see this, notice that participants to these debates do not fault talk of properties' properties as being meaningless. They think, for example, that it is perfectly intelligible to say that being in Utah is collective. It is just that some of them would resist the claim that this is a higher order property in favor of the view that being collective amounts something about first-order features, or, for a nominalist, about individuals. Not even a nominalist victory would undermine the claim that pictures have attributive contents, for example. It would just require analyzing the claims about attributing properties to things in a way that respects nominalist scruples. This is part of what Goodman tried to do in his *Languages of Art* (1976).

One might worry that my main claim would be rendered trivial if, for example, there are no properties of properties. We already believe pictures have attributive contents, and so are happy to say they represent properties. It should not be hard, then, for pictures to represent properties of properties, because they can be analyzed without remainder in terms of first-order properties. I disagree, and responding to this worry helps make my two main claims more explicit.

First, in some cases the appropriate way to express what a picture represents appeals to properties' properties. Perhaps it is possible to paraphrase all or most higher-order property talk in terms of first order features. If so, then in such cases it is appropriate to use those paraphrases in expressing what a picture represents. Just from the fact that pictures represent properties, one cannot derive the claim that those contents include the paraphrases of higher-order property talk. That would need to be shown, and examples below show this. The important point is that pictures seem to have representational contents that include properties of properties, whatever you think of their ultimate status. By itself, this point is nontrivial, but perhaps it is not surprising. Communication is complicated, and to the extent that we can talk about properties of properties it should be possible to communicate something about them using pictures. This point gets much more interesting, however, in light of the second main claim.

Second, pictures can represent properties' properties in a manner structurally analogous to the consensus view about how they have first-order attributive contents. More specifically, it is in virtue of having syntactic features that are higher order properties that they represent the higher order features of scenes. In that sense, pictures *depict* such features and do not just represent them in some other way. The representation of properties' properties is not like the representation of Christ via depiction of a lamb, but more like the depiction of a lamb. That, at least, is the claim, which will be defended in what follows. In light of that claim, the representation of properties' properties proves relevant to understanding some recent accounts of depiction.

### 3. Depicting Properties' Properties

A painting depicts a red-spotted green wall from an oblique angle in raking warm light. It succeeds in doing so by instantiating a pattern of colors on its surface. The surface need not be the color of the dot it depicts, since the dot is bathed in warm raking light. Similarly, the shape of the surface depicting the round dot will be elliptical because it is depicted from an oblique angle. Nevertheless, the picture surface instantiates properties responsible for depicting the round red spot on a green wall.

Syntactic properties have their own non-relational properties and, given how they are organized, they have relational properties too. So, the picture instantiates redness and greenness, albeit not the same shades as those on the wall. Being surrounded by an instantiation of greenness is a property of redness, given the picture's structure. If redness is disjunctive, then this higher order property characterizes the properties of the picture surface too. Is redness collective? Perhaps, but the point is not to decide, so much as point out that if it is, then the picture's redness, like the depicted scene's, is collective.

An elliptical part of the painting represents a round dot from an oblique angle. Being elliptical is spatially, projectively related to being circular. That is another property that relates two properties. This point does not presuppose that pictures must resemble their scenes in this perspectival way in order to depict them. Nor does it insist that the scene depicted—a wall with such and such a pattern, from such an angle, in this kind of light—is the picture's minimal content. These are points of controversy in the study of depiction. Nevertheless, in this example we have a picture with spatial features that are projectively related to those in the scene it depicts.

Pictures have syntactic properties, per the consensus, and these properties have properties themselves, modulo worries about the existence of properties discussed in the previous section. We can say the same for sentences, but in those cases there is no reason to think that higher-order features play any role in what sentences represent. By consensus, pictures' syntactic properties interestingly constrain their minimal contents. It is by having certain features, like colors, that pictures represent colors. By having shapes of this or that sort, pictures represent shapes. This makes it natural to suggest that, by having properties with such-and-such properties, pictures can depict such higher order features of scenes. Put differently, it is not just that pictures' syntactic properties have properties, but that those higher-order properties might play a role in determining what pictures represent. In that sense, pictures *depict* such features. The process by which pictures come to have those contents is the same as that by which they come to have their minimal contents. It is by having properties with such and such properties that pictures come to represent properties of properties. Those higher-order properties are syntactic, in the sense adumbrated above.

The picture manifests greenness surrounding redness, just like it is an instance of a red patch surrounded by green. So the painting can represent both. It is not important to insist that pictures are usually interpreted as depicting properties' properties. What something represents is a complex function of its syntax, semantics, and the communicative roles it plays. There is also no reason to insist

that such higher-order features are aspects of pictures' minimal contents. There has been no discussion of this in the literature, after all, so it is presumptuous or trivial to claim consensus. All of the consensus pictorial prerequisites for representing such properties are in place, however (with caveats to come!). The picture manifests a pattern of red and green, and these properties of the picture have properties themselves. Those higher-order properties can play a role in determining what the picture represents. Or, at least, the mechanics seem to be in place for this to happen, but are there compelling examples of the phenomenon?

#### 4. Examples

A specific shade of red has been trademarked by a company, a shade of green taken by another. Green Co. trolls its competitor by painting a wall in its green, surrounding a sad spot of its competitor's red. Press photographs appear on the front page of the business section. 'Green Co. Taunts Red Co., Claims Market Dominance'. The point of the wall is to taunt a competitor. The point of the photo is to show a shade of red instantiated within a surround of competing green. The photo depicts properties of properties.

The photo need not instantiate either company's trademarked shade. Given the presser's sunset hour, the picture's colors are warmer than the wall's. Maybe sometimes pictures represent shades of color by instantiating those very shades, maybe not. Without settling controversies about mimesis, this case still constitutes an example of a picture representing, indeed depicting, properties' properties. A newspaper limited to black and white photos might represent the spatial pattern on the wall, but it would not pictorially represent either the colors or the properties of those colors.

'An angular coffee table would undermine the smooth lines of the room!' Perhaps not. Consider this photo of the table in a similarly wavy space. The photo shows how angularity, of the sort instantiated by the table, affects a room's curvy remainder. Here, too, we have pictures whose appropriate interpretation depends on noticing properties of depicted properties. Angularity amid the curves is not off-putting.

Perhaps Goodman's *Structure of Appearance* would have been more captivating if it had been illustrated. Just before his discussion of collectivity imagine seeing a sketch of two bicycles in a shed. Being within a space is collective, being a bicycle is not. You can see the cycles together in the shed and see that they are not, together, a bicycle. This interpretation is supported by the syntactic complexity of the sketch. Two patterns standing for bicycles are within a region of the picture surface, and, individually, each manages to represent a bicycle. Taken together, they might represent two bicycles, but not one bicycle, so being a bicycle-representing pattern is not a collective property. Withinness, by contrast, is depicted via a property that is collective. The bicycle-representing parts are, in some sense, within the pattern tracing the shed's boundaries. That property is collective. The sketch does not just depict objects and properties, but also properties of those properties.

Finally, Magritte's famous 1955 painting, *Promenades of Euclid*, in the collection of the Minneapolis Institute of Art, depicts a painting of a conical tower beside a receding street. The tower top's shape is projectively related to the road's, and the part of

Magritte's painting depicting the tower is syntactically a mirror image of the one depicting the street. That is the point of the painting, made clear by the fact that the depicted painting stands before a window and is supposed to be a picture of the scene beyond. Arguably, those higher order features figure in the painting's content. Indeed, one misses the point of the painting by restricting oneself to its first-order attributions. This example is both compelling and instructive, as the next section shows.

Before moving on, notice that in all of these cases one might be able to paraphrase talk of properties' properties in first-order terms. So, perhaps one can prescind from higher-order talk in expressing the pictures' contents, but that does not mean one can avoid the paraphrases without missing the point of the pictures. In many contexts there is no point in focusing on higher-order features when unpacking the relevant aspects of a picture's content. But keep in mind that pictures, by consensus no less, have fairly rich contents and that in just about any case there will be aspects of content that do not matter given what someone intends to communicate. Also remember that the explanation for why the pictures have the contents they do is in terms of higher-order syntactic features of the pictures, or the appropriate paraphrases. So, these are all examples of pictures depicting higher-order features of scenes and not just representing them some other way. It remains to be seen whether these considerations can put pressure on existing accounts of depiction.

## 5. Lessons on Euclid Boulevard

Consensus has it that pictures' syntactic features interestingly constrain their minimal contents. Projection offers one way of filling out what such interesting constraint amounts to, and it has been central to some resemblance theories of depiction. For example, many agree on the following:

Pictures' attributive contents (partly) consist in features that are projectively related to their surface features.

The picture represents a rectangular table from an oblique angle by instantiating a trapezoidal region colored differently from its background. A rectangle and a trapezoid have a relational spatial property in common, which can be characterized in any number of ways. They both fit completely and without remainder into an oddly shaped cone, for example. Or, from some point, they can be aligned so that one completely, and without remainder, occludes the other. Hyman (2006), Gabriel Greenberg (2013), and I (Kulvicki 2006) all endorse this claim but fill it out in different ways. In fact, we all think that there is a fundamental kind of pictorial content that only includes features projectively related to features of the picture surface.

Others, like Malcolm Budd (1992, 1993) and Robert Hopkins (1995, 1998), suggest that we *experience* pictures as having features with such projective relationships, even though they often do not. And it is experiencing them in such a way that matters. So, the trapezoidal picture is appropriately experienced as resembling a rectangular thing in outline shape, and that is why it is appropriate to say that the picture represents a rectangular thing from a certain angle. But a



not-quite-trapezoidal picture is not doomed to represent a not-quite-rectangular table. It might be appropriate to experience it as resembling a rectangular table.

Notice that the accounts just mentioned each go well beyond the consensus view of depiction. Consensus and some interesting examples got to the conclusion that pictures can depict properties' properties. Now the question is whether depiction of properties' properties puts any pressure on views that go beyond consensus, namely those that appeal to resemblance with respect to some projectively specifiable properties.

Enter Magritte. His painting is interesting because the higher-order properties it makes salient are related to perspective projections. The represented tower and street occupy space differently, one soars and the other recedes. But both relate to a point in that represented space similarly. That they are similar in this projective manner is made clear by the fact that the depicted painting represents each thing by using the same, albeit mirrored, surface pattern. And just to drive the point home, because Magritte's canvas depicts a *painting*, it also shows a third shape—the shape of the painting's surface—that is different from both the road and the tower, but relationally indistinguishable from them. This picture represents the property that the tower's shape, the road's shape, and the painting's shape share.

By Hyman's and Greenberg's lights, and by mine (Kulvicki 2006: ch. 3), these projective properties of properties should *not* figure in content. Or, at least, they should not figure in the content that resemblance theories isolate as fundamental. The property of being projectively related to some shape is not itself the kind of thing that can be projectively related to anything, so it fails to meet the basic condition around which such accounts are built. Similarly, by Hopkins's and Budd's lights, *being projectively related to something* is not going to be experienced as resembling anything projectively.

One might think that this is no bother, since representation of properties' properties never seemed terribly fundamental anyway. So, perhaps these examples are more like other cases of pictures representing something without depicting it, like being a pope, being energetic, being a white pine, being in motion, and so on. Remember that, by consensus, there is a distinction between what pictures depict and what they represent in other ways. And while the foregoing has been at pains to stress that pictures depict properties of properties, perhaps the resemblance views provide a new reason for resisting that claim. But, as shown below, properties' properties do not behave like the other examples, for two reasons, and so the resemblance theorist is pressured to emend her view.

First, while the picture represents an energetic pope, it does so by depicting features constitutive of caffeinated papal appearance. Ditto for white pines in motion. In all of those cases there is a move from readily perceptible properties to others that are at one remove from them, in the following sense. Things can look just like pines but be impressive cell phone towers, so the properties diagnostic for being a pine are not essentially related to being one. That is the sense in which popes and pines are at one remove from what pictures capture most fundamentally. Properties' properties do not fit this pattern. The first-order properties that the picture depicts do not constitute the appearance of the higher-order properties.

Second, being the pope and being a white pine are not candidates for being syntactic features of pictures. One motivation for placing such features at one remove from distinctively pictorial content is that pictures typically cannot resemble their subjects in these respects. But the properties of properties we have been considering are not like this. No, they are not instantiated by the picture, because they are higher-order properties. They are, however, instantiated by the syntactic properties of the pictures, and in that sense determine content on the model endorsed by the consensus view. These contents are pictorial contents, not at one remove from them, in the way that Christ is at one remove from the lamb, the peach from veracity. The resemblance views we have been considering in this section go beyond consensus, but they are views about which resemblances matter for determining what pictures *depict*.

The simplest lesson to draw from these considerations is that if one thinks that properties' properties are constitutive of pictorial contents, then resemblance accounts of how syntax constrains what pictures represent are uniformly inadequate. That is not to say they are wrong, as far as they go, but they must at least be supplemented with something else. How this is done depends on the details of the view.

For Hyman (2006), this would amount to adding a condition on the kinds of resemblance that matter. It is not just resemblance with respect to occlusion shape and aperture color, but also resemblance with respect to higher-order properties that accounts for what gets included in pictorial content. Greenberg (2013) is in a similar situation, even though he does not insist that it is just respects of *resemblance* that matter. On his view, projective relationships and all the (dis)similarities they entail are the keys to understanding pictorial content. Since these properties of properties are not projectively related to anything, however, they would need a rider to be included. In both cases, a rider might be plausible because they can insist that at the ground level the properties that matter are those that can be projectively related to a scene, and perhaps it is just properties of *those* properties that wind up also being included in pictorial content. This would have to be shown in detail, but it is a plausible way to amend each account.

My view suggests that pictures are transparent (Kulvicki 2006), in that a picture of a picture under the right circumstances is syntactically identical to its object, given roughly the sense of 'syntax' I have been using here. It is a consequence of this that pictures generally resemble their objects with respect to many projective features, but it is also compatible with the view to notice that properties of properties can be syntactic. If they are, then it makes sense to ask whether a picture of a picture has properties with the same higher-order properties as its object. In that sense, I could just include these higher-order properties in what I call pictures' *bare-bones contents*.

Experienced resemblance theorists like Hopkins and Budd would have to take a different approach. For them, the fundamental level of pictorial content is determined by what viewers can experience pictures as resembling. So, they would need to claim that pictures are experienced as resembling scenes in terms of these higher-order properties, in addition to outline shape and other features. There is room to argue about whether we experience such resemblances, of course, but for

now the point is that the path to amending their accounts seems clear. If they deny that viewers experience pictures as resembling their scenes in this way, they could, at greater cost to their views, suggest that it is not only experienced resemblances that matter, but something else as well.

The theories that have the easiest time accommodating this phenomenon are due to Abell (2009) and Ben Blumson (2009). Though the views differ (Blumson 2014: 44–49), for both, what a picture represents depends on what kinds of similarities you can notice and regard as those that the picture's maker wanted you to notice. To the extent that pictures' properties have properties, it should be uncontroversial for them that we could notice such things and they could play a role in what pictures represent.

It might be tempting to regard the lesson on Euclid Boulevard as being that Abell and Blumson are right. No riders required! Their accounts seamlessly incorporate the depiction of properties' properties. But that would be hasty. The other resemblance views considered above are built around the thought that there is more than just conversational context behind the interpretation of pictures. While Abell and Blumson regard pictorial content as primarily pragmatically fixed, the other theorists suggest that interpretation is more constrained. In effect, they suggest that there is room for a *semantics* of pictures, but unpacking just what that means is controversial, and not directly relevant here. Projective relationships are plausible sources of constraints on pictorial interpretation. Perhaps we need to add more. Adding more, however, is far from claiming that the respects of resemblance that matter are open-ended. This phenomenon therefore does not show that pictorial interpretation is as unconstrained as Abell and Blumson suggest it is.

The most general lesson we can draw seems to be this. Look to the consensus view. According to it, pictures' syntactic features interestingly constrain their contents. That should form the core of a resemblance theory. Openness to expansion of the range of such features is a virtue. While it's natural to think that projective features and their ken are the best candidates for fixing pictorial content, other mechanisms might be at work too. This does not leave one in Abell's or Blumson's camp, but it does offer another perspective on why their openness to different possibilities is appealing. Interestingly, properties' properties are not the only case that suggests we might need to make our resemblance theories more catholic. The other recent example concerns the pictorial representation of temporally extended scenes.<sup>2</sup>

Finally, it is important to note that while each of the views mentioned above can probably accommodate the depiction of properties' properties, the amendments

<sup>2</sup> It is common, on resemblance grounds, to suggest that still pictures cannot depict temporally extended scenes (Warburton 1988; Currie 1995; Friday 1996; Abell 2010; Benovsky 2012). Others disagree (Le Poidevin 2007; Walton 2008; Kulvicki 2016; Young and Calabi 2018). Le Poidevin aligns his proposal with the recognition theory, and Walton with his own pretense theory. My view, however, opts for a straightforward resemblance account while Young and Calabi offer an explanation along the lines of an experienced resemblance theory. In the latter two cases, the suggestion is that projective properties do not capture all the relevant respects of resemblance. Some of them also relate to time. Though neither I nor Young and Calabi put things this way, these accounts suggest that resemblance views need to be expanded. This article provides another reason, in another direction entirely, for thinking that this is true.

change what we have in mind when talking about resemblance. The picture instantiates properties. Its properties have properties, but it is not quite right to say that the picture instantiates properties of properties. The *picture* is not disjunctive, or collective, or instantiated in a field of green. Its properties are. And, as mentioned above, it is a matter of controversy how we should understand properties of properties in the first place. So, I suggest that resemblance accounts be expanded to accommodate resemblances between *properties* of pictures and *properties* of their scenes.

## 6. Isomorphism in Pictures

While resemblance accounts might be appealing when applied to pictures, they are implausible when graphs and diagrams are at issue. Instead, many suggest that in those cases isomorphism and homomorphism are the relevant explanatory tools (Shepard and Chipman 1970; Larkin and Simon 1987; Barwise and Etchemendy 1995; Stenning 2002; Kulvicki 2006). Work on scientific images stresses that they are structured so as to enable 'surrogative reasoning' (Swoyer 1991), which requires, basically, that they share structure with what they represent, even if they do not share properties with it. And work on maps also suggests that their contents are underwritten by shared structure (Casati and Varzi 1999; Camp 2007, 2018; Heck 2007; Kulvicki 2015b).

Isomorphism has often been characterized as a sharing of higher-order properties, even though that is slightly misleading. As mentioned, pictures do not instantiate higher order properties, even though their properties do. Recognizing that pictures can depict properties' properties reveals an interesting link between pictures and these other non-linguistic representations. In fact, it has been common, though not explicit, to think of graphs and diagrams as representing higher order properties all along.

The heights of a mercury column are isomorphic to the temperatures they represent. Heights, like temperatures, can be ordered. In an ordinary thermometer, when one height is taller than another, the temperature corresponding to the former is greater than the temperature corresponding to the latter. Mercury columns *have* temperatures, of course, but they do not use those temperatures to stand for other temperatures. Instead, they use heights. So the thermometer does not represent temperature with its temperature, but with the height of its column of mercury. While the thermometer need not share temperatures with the locale it represents, it must have syntactic properties that share properties with the properties it represents. Heights of mercury relate to each other in ways similar to how temperatures do.

But does the thermometer represent only temperature, or does it represent temperature at a time and place? Both proposals fall short. Thermometers represent temperatures as locations in a space of possible temperatures, one structured like a magnitude. Being a magnitude is a property of temperature, a property of a property. In that sense, the thermometer represents such higher-order features. John Haugeland points out that graphs and diagrams are such that their 'elements are always organized relative to one another in some regular structure that every representational token of the pertinent scheme essentially presupposes' (1998: 192). Token representations have syntactic

properties, which matter for their representing what they do. It is just that properties of those properties are also relevant to the content of such representations.

Now consider some related points about pictures. Yes, color photographs can represent a large range of colors, and they do this by instantiating colors on their surfaces. Those properties are parts of ensembles that have structure. Vermillion is more yellowish, for example, than crimson, while neither color is greenish or bluish. Just as it does not do justice to the thermometer to say that it only represents temperatures, one fails to capture photographic content without recognizing that it places colors within a system of relations. Websites that sell paint, for example, are getting better and better at showing pictures of rooms painted with one's choice of color. This allows users to notice relationships between these properties, and it is more useful than comparing the names of these colors—forest green, glen sage, alien yuck—because the names just pick out the colors without saying anything about the relationships between them.

Similar remarks apply to spatial properties. Yes, pictures can represent things as square, or rhomboid, but they do so in a way that makes relationships between different spatial possibilities manifest. Spatial properties have properties, and these figure in how we interpret pictures. The earlier example concerning the angular furniture in a wavy room made this point, but in light of graphs and diagrams it seems like this is an absolutely ordinary thing for pictures to do, rather than something exceptional.

Magritte and the imagined Goodman illustrations are cases in which the representation of properties' properties is the main communicative point of the picture. But to the extent that pictures represent colors as occupying locations in spaces of color, or shapes as being related to other spatial possibilities, it seems like the depiction of properties' properties is completely ordinary and ubiquitous. This suggests that pictorial content looks a lot more like the contents of diagrams and maps than has previously been noticed. It is not just this or that color at this or that location in space, but this color as part of an ensemble of possibilities, at a location that is part of a range of locations, which amounts to pictorial content.

Perhaps there is room for thinking that some properties' properties can be depicted while others cannot. Many might agree that red is depicted as being part of a structured assembly of other colors but deny that being a bicycle is depicted as non-collective, for example. Answering these questions in all their detail is best done from within a specific theory of depiction, and it is possible that different views will go in different directions. It is well beyond the scope of this article to flesh that out. However, it pays to consider one point that brings this discussion into contact with the philosophy of perception.

## 7. Do We Perceive Properties' Properties?

Pictures are usually tied tightly to perception. In fact, one could easily add the following claim to the consensus view without too many people getting off the bus:

All properties constitutive of depictive content are perceptible.

If that is right, and pictures depict properties' properties, then it had better be that we can perceive them. All along, in fact, when a property of a property was offered as a pictorial content, the evidence is that viewers can 'notice' this or that about the picture. How might such things be noticed if they are imperceptible?

There is a view, which runs through the mental imagery debates (for example, Block 1981), the nonconceptual content debates (Crane 1992; Gunther 2003) and recent work on non-propositional representation (such as the contributions in Grzankowski and Montague 2018), to the effect that perceptual states have something interesting in common with pictures, diagrams, and maps. Surprisingly little has been said about whether we perceive properties' properties, however, even though there is a decent amount of talk (for example Siegel 2006, 2011; Prinz 2006) about the range of properties that is represented perceptually. Doing justice to this topic requires another essay, so my goal here is much more modest. First, it is to point out that it seems perfectly natural to talk about the examples presented earlier in terms of noticing higher-order features. And second, to sketch, briefly, that there is some reason for thinking that such features can figure in the contents of perceptual states.

Here is the sketch. That long-standing view about perceptual states and pictures is often unpacked in terms of structural similarity. Perhaps, that is, perceptual states have syntactic features that work, vis-à-vis their contents, in a manner similar to what is found in artifacts like pictures or maps. That vague thought gets unpacked in many ways. In the early days of the imagery debates the analogy was a halfhearted comparison with pictures or diagrams (see, for example, Block 1981; Tye 1991). More recently, comparisons with maps have proven fruitful (Camp 2007; Heck 2007; Rescorla 2009), as has an idea that Jerry Fodor (2008; cf. Sober 1976) made somewhat popular, which focuses on how parts of pictures relate to whole pictures (Quilty-Dunn 2019; Kulvicki 2015a). And Jacob Beck (2015) has made helpful arguments about the structure of what psychologists call analog magnitude representations.

The point, for now, is not a deep dive into any of these proposals. To the extent that perceptual states share what looks like a syntactic and semantic structure with pictures, maps, or diagrams, then they are decent candidates for representing properties of properties. The foregoing provides reasons, based on a consensus view about pictures, for thinking that they represent properties of properties. It then shows that the contents of diagrams have often been taken to include properties of properties. So, to the extent that mental states are like these artifacts, it's plausible that they have similar kinds of contents, which is just to say that it is plausible we can notice higher-order features of scenes. Of course there is a lot more to be said here, but saying it would turn this into a different essay. As with depiction, which properties of properties get included in the mix is an open and interesting question.

## 8. Conclusion

My goal in this article is to show that a neglected issue deserves a place at the table when thinking through depiction, and perhaps even perception. The consensus view

of pictures, though limited, is open to the depiction of properties' properties. Moreover, there are compelling examples of the phenomenon. With a nod to the literature on diagrams and maps, we can see that it might even be a completely ordinary feature of pictorial representation. If this is true, then most resemblance accounts of depiction must be changed to accommodate this phenomenon. And the phenomenon forces us to think differently about what a resemblance theory is. This brings discussion of pictures more into line with recent discussions of diagrams and maps. And finally, if it is convincing that we can depict properties' properties, then it ought to be the case that we can perceive them as well. There are good indications that we can do this, though the extent of the phenomenon deserves more attention than it can be given here.

JOHN KULVICKI

DARTMOUTH COLLEGE

[John.v.kulvicki@dartmouth.edu](mailto:John.v.kulvicki@dartmouth.edu)

## References

- Abell, Catharine. (2009) 'Canny Resemblance'. *Philosophical Review*, 118, 183–223.
- Abell, Catharine. (2010) 'Cinema as a Representational Art'. *British Journal of Aesthetics*, 50, 273–86.
- Armstrong, David M. (1978) *A Theory of Universals*. Vol. 2 of *Universals and Scientific Realism*. Cambridge: Cambridge University Press.
- Barwise, Jon, and John Etchemendy. (1995) 'Heterogeneous Logic'. In Gerard Allwein and Jon Barwise (eds.), *Logical Reasoning with Diagrams* (Oxford: Oxford University Press), 179–200.
- Beck, Jacob. (2015) 'Analogue Magnitude Representations: A Philosophical Primer'. *British Journal for the Philosophy of Science*, 66, 829–55.
- Benovsky, Jiri. (2012) 'Photographic Representation and the Depiction of Temporal Extension'. *Inquiry*, 55, 194–213.
- Bergmann, Gustav. (1968) *Meaning and Existence*. Madison: University of Wisconsin Press.
- Block, Ned. ed. (1981) *Imagery*. Cambridge, MA: MIT Press.
- Blumson, Ben. (2009) 'Defining Depiction'. *British Journal of Aesthetics*, 49, 143–57.
- Blumson, Ben. (2014) *Resemblance and Representation: An Essay on the Philosophy of Pictures*. Cambridge: Open Book Publishers.
- Budd, Malcolm. (1992) 'On Looking at a Picture'. In James Hopkins and Anthony Saville (eds.), *Psychoanalysis, Mind, and Art: Perspectives on Richard Wollheim* (London: Blackwell), 259–80.
- Budd, Malcolm. (1993) 'The Look of a Picture'. In Dudley Knowles, John Skorupski, and Flint Schier (eds.), *Virtue and Taste: Essays on Politics, Ethics, and Aesthetics* (London: Blackwell), 154–175.
- Camp, Elisabeth. (2007) 'Thinking with Maps'. *Philosophical Perspectives*, 21, 145–82.
- Camp, Elisabeth. (2018) 'Why Maps Are not Propositional'. In Alex Grzankowski and Michelle Montague (eds.), *Non-propositional Intentionality* (Oxford: Oxford University Press), 19–45.
- Casati, Roberto, and Achille C. Varzi. (1999) *Parts and Places: The Structures of Spatial Representation*. Cambridge, MA: MIT Press.
- Crane, Tim, ed. (1992) *The Contents of Experience: Essays on Perception*. Cambridge: Cambridge University Press.
- Currie, Gregory. (1995) *Image and Mind: Film, Philosophy, and Cognitive Science*. Cambridge: Cambridge University Press.
- Egan, Andy. (2004) 'Second-Order Predication and the Metaphysics of Properties'. *Australasian Journal of Philosophy*, 82, 48–66.

- Fodor, Jerry A. (2008) *LOT 2: The Language of Thought Revisited*. New York: Oxford University Press.
- Friday, Jonathan. (1996) 'Transparency and the Photographic Image'. *British Journal of Aesthetics*, 36, 30–42.
- Goodman, Nelson. (1951) *The Structure of Appearance*. Cambridge, MA: Harvard University Press.
- Goodman, Nelson. (1976) *Languages of Art: An Approach to a Theory of Symbols*. 2nd ed. Indianapolis: Hackett.
- Greenberg, Gabriel. (2013) 'Beyond Resemblance'. *Philosophical Review*, 122, 215–87.
- Grzankowski, Alex, and Michelle Montague, eds. (2018) *Non-propositional Intentionality*. Oxford: Oxford University Press.
- Gunther, York H., ed. (2003) *Essays on Nonconceptual Content*. Cambridge, MA: MIT Press.
- Haugeland, John. (1998) *Having Thought: Essays in the Metaphysics of Mind*. Cambridge, MA: Harvard University Press.
- Heck, Richard. (2007) 'Are There Different Kinds of Content?' In Brian McLaughlin and Jonathan Cohen (eds.), *Contemporary Debates in the Philosophy of Mind* (Malden: Blackwell), 117–38.
- Hilbert, David R. (1987) *Color and Color Perception: A Study in Anthropocentric Realism*. Stanford: Center for the Study of Language and Information.
- Hopkins, Robert. (1995) 'Explaining Depiction'. *Philosophical Review*, 104, 425–55.
- Hopkins, Robert. (1998) *Picture, Image, and Experience: A Philosophical Inquiry*. Cambridge: Cambridge University Press.
- Hyman, John. (2006) *The Objective Eye: Color, Form, and Reality in the Theory of Art*. Chicago: University of Chicago Press.
- Jackson, Frank. (1977) 'Statements about Universals'. *Mind*, 86, 427–29.
- Kulvicki, John V. (2006) *On Images: Their Structure and Content*. Oxford: Clarendon Press.
- Kulvicki, John V. (2014) *Images*. London: Routledge.
- Kulvicki, John V. (2015a) 'Analog Representation and the Parts Principle'. *Review of Philosophy and Psychology*, 6, 165–80.
- Kulvicki, John V. (2015b) 'Maps, Pictures, and Predication'. *Ergo*, 2, 149–74.
- Kulvicki, John V. (2016) 'Timeless Traces of Temporal Patterns'. *Journal of Aesthetics and Art Criticism*, 74, 335–46.
- Larkin, Jill H., and Herbert A. Simon. (1987) 'Why a Diagram Is (Sometimes) Worth Ten Thousand Words'. *Cognitive Science*, 11, 65–100.
- Le Poidevin, Robin. (2007) *The Images of Time: An Essay on Temporal Representation*. Oxford: Oxford University Press.
- Lewis, David. (1986) *On the Plurality of Worlds*. Oxford: Blackwell.
- Lopes, Dominic. (1996) *Understanding Pictures*. Oxford: Clarendon Press.
- Neander, Karen. (1987) 'Pictorial Representation: A Matter of Resemblance'. *British Journal of Aesthetics*, 27, 213–26.
- Newall, Michael. (2011) *What is a Picture? Depiction, Realism, Abstraction*. Houndmills: Palgrave Macmillan.
- Panofsky, Erwin. (1955) *Meaning in the Visual Arts*. Garden City: Doubleday.
- Prinz, Jesse. (2006) 'Beyond Appearances: The Content of Sensation and Perception'. In Tamar Szabó Gendler and John Hawthorne (eds.), *Perceptual Experience* (Oxford: Oxford University Press), 434–60.
- Quilty-Dunn, Jake. (2019) 'Is Iconic Memory Iconic?' *Philosophy and Phenomenological Research*, 101, 660–82.
- Rescorla, Michael. (2009) 'Cognitive Maps and the Language of Thought'. *British Journal for the Philosophy of Science*, 60, 377–407.
- Sartwell, Crispin. (1991) 'Natural Generativity and Imitation'. *British Journal of Aesthetics*, 31, 58–67.
- Schier, Flint. (1986) *Deeper into Pictures: An Essay on Pictorial Representation*. Cambridge: Cambridge University Press.
- Shepard, Roger N., and Susan Chipman. (1970) 'Second-Order Isomorphism of Internal Representations: Shapes of States'. *Cognitive Psychology*, 1, 1–17.



- Siegel, Susanna. (2006) 'Which Properties are Represented in Perception?' In Tamar Szabó Gendler and John Hawthorne (eds.), *Perceptual Experience* (Oxford: Oxford University Press), 481–503.
- Siegel, Susanna. (2011) *The Contents of Visual Experience*. Oxford: Oxford University Press.
- Sober, Elliot. (1976) 'Mental Representations'. *Synthese*, 33, 101–48.
- Stenning, Keith. (2002) *Seeing Reason: Image and Language in Learning to Think*. Oxford: Oxford University Press.
- Swoyer, Chris. (1991) 'Structural Representation and Surrogate Reasoning'. *Synthese*, 87, 449–508.
- Tye, Michael. (1991) *The Imagery Debate*. Cambridge, MA: MIT Press.
- Walton, Kendall L. (1990) *Mimesis as Make-Believe: On the Foundations of the Representational Arts*. Cambridge, MA: Harvard University Press.
- Walton, Kendall L. (2008) 'Experiencing Still Photographs: What Do You See and How Long Do You See It?' In Walton, *Marvelous Images: On Values and the Arts* (New York: Oxford University Press), 157–92.
- Warburton, Nigel. (1988) 'Seeing through "Seeing through Photographs"'. *Ratio*, 1, 64–74.
- Wollheim, Richard. (1980) *Art and Its Objects*. 2nd ed. Cambridge: Cambridge University Press.
- Young, Nick, and Clotilde Calabi. (2018) 'Can Movement Be Depicted?' *Phenomenology and Mind*, 14, 170–79.