

Spatial Awareness

One of the key ideas in Kant's argument for the transcendental ideality of space is that the objects of outer experience are distinct from us - and open to be experienced by us - by taking up a different part of space than us (cf. Kant (1990, B 38); Strawson (1959); Evans (1996)). One need not follow Kant in drawing his conclusion about the non-empirical priority of our intuition and concept of space to acknowledge that (human) objectual experience does not occur without spatial experience. We recognise something as an external object distinct from us, or from other external objects, partly by recognising it as spatially located and extended. So, to experience something as an external object means, partly, to experience its spatial features. Interestingly, something similar seems to be true of time and internal objects - that is, mental occurrences in the stream of consciousness (cf. Kant (1990, B 46f.)).

The goal of this sub-project is to investigate the nature of our perceptual recognition of spatial features. Although the other sub-project concentrates instead on the study of our awareness of temporal objects, many of the topics to be addressed will be the same - for instance, the investigation of the relationship between metaphysics and epistemology and the focus not only on ordinary, but also on aesthetic experience. Indeed, we expect there to be important similarities in how the two kinds of experience relate us to space and time, and hope that the interaction of the two sub-projects can help us to get clearer about each of these.

While the main focus in this sub-project will be on ordinary visual perception of spatial properties, some parts will also be concerned with other sense modalities, as well as with our experience of depictions of spatial properties. The perception of space - just as that of time - has always been a central topic in the philosophy of mind and in epistemology. It is a basic fact about human cognition that we gain access to the world by being acquainted with spatio-temporally located objects and their properties. Indeed, it is this acquaintance which enables us to identify objects, refer to them, interact with them and so successfully navigate our way through our environment. Object awareness is, fundamentally, spatio-temporal awareness (cf. Smith (2002)). But the perception of space and its temporal counterpart are perhaps also of metaphysical significance. It has been forcefully argued that what it means for something to be an object is to be an object of awareness (cf. Kant (1990); Strawson (1959)). Hence, the investigation of what it means for something to be an object of awareness may shed light on what objects are. Identifying the fundamentality and structure of spatial awareness may therefore perhaps contribute to a better understanding of objecthood.

The sub-project consists of three parts. The first is concerned with the investigation of three important kinds of perceivable spatial features: size, volume (or depth) and orientation. The main issue will be how best to account for the fact that we acquire visual knowledge of the constant and objective instantiations of the properties by being visually presented with their variable and subjective counterparts. Both the detailed elucidation of the three kinds of spatial features and the resulting consideration of which account of them is best will then serve as reference points for the extension of the discussion from visual perception to tactile and auditory perception, and to pictorial experience. The second part of the sub-project is therefore meant to study the similarities and differences in spatial awareness among the various sense modalities, while the third part addresses the question of how to account for the fact that we can have visual experiences of three-dimensional objects when looking at (almost) two-dimensional surfaces with marks on them. These two extensions of the discussion are in fact further test cases of the views assessed in the first part. Accordingly, since the first part will serve as their foundation, it will take up more space than the other two.

1 State of the art

1.1 Visual perception

One important aspect of the perception of three-dimensional space and its depth is the distinction between apparent size and constant size. The Eiffel Tower in the distance looks to be very high,

but it occupies a much smaller portion of our visual field than the tree in front of us on the Butte Montmartre. That is, while the tower looks to be much higher than the tree, its apparent size is much smaller than that of the latter. This phenomenon is well-known, also with respect to other perceivable features of objects (cf. Hume (2000); Noe (2005); Martin (2000)). A coin looks to be round, even though its apparent shape is oval; while a wall looks to be white, even though it is seen under artificial and slightly coloured light. While the apparent features vary all the time relative to subject's point of view or his viewing conditions, how the things concerned look remain constant. For that reason, it is the latter which really matter for our acquisition of spatial knowledge and our consequent interaction with the objects in question. None the less, there is a sense in which we are aware of the apparent properties and, moreover, rely on this kind of awareness when acquiring information about the constant properties. We see the coin as round in part because it occupies an oval shape in our visual field.

The same is true of the volume or depth of three-dimensional objects, as well as their related perceivable higher-level features, such as being a house, a bottle or a tomato (cf. Noe (2005)). When we are perceiving objects, we are aware of their visible surfaces facing us. But we are also aware of their hidden backsides - though in a different manner since the backsides do not occupy any part of our visual field. It is difficult to deny that the latter kind of awareness is involved in perception: we perceive things as houses, and not merely as facades; or as balls, and not merely as bowls. Again, there is a contrast between the constant properties of being a house, a ball, and so on, which we acquire knowledge about, and the apparent properties of merely having certain surfaces, which are presented in the visual field and which vary when we walk around the objects concerned.

Another similar kind of perceivable spatial properties are orientational features (cf. Martin (2003); Dorsch (2010b)). Objects are in front, or to the left, of each other. But they are so not by themselves, but only relative to a certain location in space from which they might be viewed. Relative to the spot where the Eiffel Tower is, Montmartre is left of Montparnasse; but relative to the spot where the Opera Bastille is, Montmartre is to the right of Montparnasse. However, when we see Montmartre as being left of Montparnasse while looking down from the Eiffel tower, we do not see them standing in a spatial relation to the location at which the tower and we are located. For that location is the point of view from which we perceive - and not a location that enters our visual field. So although Montmartre looks to be left-of-Montparnasse-relative-to-our-perspective, it is given to us simply as being to the left-from-Montparnasse (cf. Campbell (1995)). Moreover, when we travel to the Bastille, Montmartre is presented as being to the right of Montparnasse; while of course the orientational aspects of the world, which are relativised only to points in space, remain unchanged (e.g., the two locations still stand in the same relationship to the Eiffel Tower).

What these three cases have in common is not only the contrast between variable and constant properties and between objects of knowledge and objects given in the visual field, but also the related contrast between objective and subjective properties - that is, whether their instantiation is independent of their being experienced (cf. Martin (2003); Dorsch (2010b)). The Eiffel Tower is higher than the tree, there is a house, and Montmartre is to the left of Montparnasse relative to the Eiffel Tower, independently of whether we perceive them or not. But if no one is looking at them from a certain point of view, there is no sense in which we would say that the Eiffel Tower is smaller than the tree, that there is a mere facade, or that Montmartre is to the left of Montparnasse. These variable properties are subjective aspects of the objects as they are given in the visual field, and not as they are in reality. The objects 'possess' them only as long as they are perceived.

The reconciliation of these two kinds of properties of objects, and of how the presentation of one can give rise to knowledge about the other, has been labelled the problem of perceptual presence (cf. Noe (2005); Marelli (2010)). Several solutions have been proposed to this problem. One idea is to argue that, at least in some cases, what is central to the experience of the constant features are some conceptual elements (cf. Budd (1991); McDowell (1998)). For instance, that we see something as a house, and not as a mere facade, is a matter of how we conceive of it while visually experiencing it.

A closely related view identifies this thought with some kind of imagination (cf. Sellars (1979)). When seeing the front of the house, we imagine its hidden backside and thus are aware of all aspects of its three-dimensional nature. Both proposals have in common that they treat the extra element

as something more active than passive sense impression: conception and imagination are, in some sense, something that we do.

This link of experience to activity is even more highlighted by a third view, which takes the additional element to be some kind of expectation or anticipation (cf. Husserl (1992); Noe (2005); Soldati (*)). When we look at the front of an object, we have certain expectations about how its apparent features would change in response to a change in our perspective on it, or about how its apparent features would be if experienced in a different sense modality (e.g., when touched and acted upon). Accordingly, we see the building as a house, and not as a mere facade, in part because we would be surprised if, after walking around it, we would discover it to be nothing more than a facade.

A final proposal is more a supplement than an alternative to the previous views. For it acknowledges the presence of an active element (whether it is a thought, expectation or something else, such as a motor intention), but interprets it partly in normative terms (cf. Merleau-Ponty (2002); Kelly (2004, 2008); Marelli (2010)). The central idea is that constant properties - in contrast to apparent ones - are such that, if we want to enjoy full awareness of them, we should take up simultaneously all possible perspectives on their bearers. Being fully aware of something as a house, for instance, requires being aware of all of its sides in one and the same experience. Of course, we cannot completely live up to this demand, since we are restricted to a single perspective in a given moment (cf. also Kant's observation on the mathematically sublime). But we still can be aware of the locations surrounding the object at issue as possible points of view on that object, and of other entities in its background as occupying those perspectives. This awareness of how the object is related to possible perspectives and to the surrounding objects occupying these points of view makes the difference between, say, seeing a house and seeing a mere facade.

1.2 Tactile and auditory perception

We can not only see, but also feel and hear spatial features of external objects. But there are several important and related differences concerning the representation of space between vision, touch and hearing. Let us start with some of the most important differences between visual and tactile experiences of spatial features:

(i) The basic difference is perhaps that seen objects are always in some distance from us, while felt objects are always in contact with us (cf. Hopkins (1998)). (ii) This has consequences for which spatial features we may perceive objects as having. We see - but do not feel - objects as having a certain distance from us. And we are able to visually recognise the extension and size of even very large objects by looking at them from a sufficient distance, while we cannot do the same in respect of objects of touch. (iii) Relatedly, touch provides us with hardly any access to the spatial relations between objects (cf. Martin (1992)). We can discover by touch that two objects are next to each other (e.g., two books in a bookshelf). But apart from such special cases, we cannot have a tactile perception of the distance between objects, or of how they are spatially orientated to each other (e.g., whether one is in front or to the left of the other). But of course, these features are open to visual recognition. (iv) One further result of this is that vision comes with a continuous spatial field in which the perceived objects are located; while touch lacks a comparable tactile field (cf. Martin (1992)).

The situation is a bit more complicated with respect to hearing. It has been suggested, for instance that sounds need not be experienced as spatially located (cf. Strawson (1959); Evans (1996)) - which raises then the question how they could still be experienced as entities distinct from us.¹ But it seems undeniable that we at least sometimes do hear sounds as having spatial features. So it is worthwhile to compare auditory experience in this respect with their visual and tactile counterparts.

(i) Sounds are often experienced as coming from a certain direction. Environmental features may mislead us about the correct direction of a sound (e.g., when walls echo a sound coming from the opposite direction). But in this respect, such cases of hearing do not differ from cases of seeing things in a mirror, say. (ii) It is more controversial whether we also hear sounds - at least sometimes - as having a certain distance from us (cf. O'Shaughnessy (1957)). But both psychological evidence

¹Cf. the discussion of this issue between Strawson (1959) and Evans (1996). A related issue is, of course, whether there can be non-spatial sounds (cf. Casati and Dokic (1994)).

(cf. Bregman (1994)) and phenomenological considerations point to a positive answer. Consider the case of the occurrence of a distant and loud sound and the simultaneous occurrence of a near and low sound, to the effect that how they sound does not differ with respect to their apparent volume (just as a large tree in the distance may have the same apparent size as a small bush closer to us). If we were not able to hear their distance, it should be expected that we cannot distinguish relative to their locations. But we often can identify such a difference and so must be aware, not only of their direction, but also of their distance from us (cf. Casati and Dokic (1994)). This means, of course, that the experience of direction and distance amount to an experience of location, given that the recognised direction and distance enable us to determine the location of the sound (e.g., we know where to go, and for how long, to get closest to the sound). (iii) None the less, hearing space differs from seeing it in that the localisation of sounds is far less determinate than that of visible objects. This has the consequence that we do not really get the impression of a continuous field of sound. (iv) Moreover, hearing does not give us access to some orientational features. While we can hear one sound as being more distant than (i.e., spatially behind) another, sounds do not seem to be orientated themselves. For instance, they do not have fronts or backsides, as visible or tactile objects do. (v) Besides, it is not clear whether we hear the same kind of objects as we see or touch. Of course, we can see or feel a vibrating membrane. But how this membrane is linked to the sound it produces is heavily debated. Some claim that the sound is a property of the membrane (and perhaps the air around it; cf. Pasnau (1999)). This would mean that we can see, feel and hear properties of one and the same object. But others take the sound to be an event or repeatable entity in its own right (cf. Casati and Dokic (1994); Nudds (2010)). And even if such sounds can be said to be located where the membrane (and the air around it) is located and also to include the latter (cf. Pasnau (1999)), it would still follow that audible entities are not the same as those accessible to sight or touch.

1.3 Pictorial experience

A theory of depiction is generally expected to answer the question (among others) of how pictorial representations of objects differ from abstract paintings, drawings, and so on (cf. Walton (1990)). In particular, it needs to be explained how marks on (more or less) two-dimensional surfaces manage to represent three-dimensional scenes.² What fundamentally differentiates representational paintings, drawings, and so on, from abstract ones seems to be that the former depict depth, volume and similar aspects of three-dimensional space, while the latter do not. That is, an abstract configuration of coloured lines and patches becomes representational once it gives the impression of things having three spatial dimensions and being in front of or behind others (cf. Wollheim (1990); Walton (1990)). Accordingly, we recognise something as a picture by recognising it as a depiction of objects in space. And our experience of depicted objects is always partly a matter of our experience of depicted space. When we are looking at a picture, we visually experience some kind of depth and volume, where in reality there is none.

The different accounts of pictorial experience that have been put forward are often divided into two groups, depending on whether they do, or do not, maintain that the property of being a depiction of objects in space has to be elucidated in terms of the experiences by means of which we typically recognize something as a depiction. According to non-experiential accounts, the status of something as a picture is solely due to the fact that it stands in a certain, mind-independent relation to what it depicts. Following this proposal, whether something is a picture - say, a representational rather than an abstract painting - does not depend on us and our experiences. The two classical non-experiential accounts make reference to the relations of resemblance and convention, respectively. While the first states that something is a depiction just in case it visually resembles what it depicts, the second claims that pictures are linked to their objects in virtue of conventions similar to those that govern the use of words (cf. Gombrich (1960); Goodman (1976)).

In contrast, experiential theories claim that something counts as a picture because we normally experience it as one. The property of being a picture is thus conceived of as mind-dependent. It is common to identify three main variants of the experiential approach (cf. Hopkins (1998)). According to the first, we undergo an illusion of really seeing the person or scenery portrayed

²The texture of paintings, say, or their inclusion of paper, wood or other materials renders their depicting surface not completely flat. We will ignore here three-dimensional pictures, such as holograms.

while looking at a picture (cf. Gombrich (1960)). The second account characterises the pictorial experience as the recognition of a visual resemblance between the picture and what it depicts (cf. Hopkins (1998)). The third account is based on the idea that, since pictorial experience involves the visual awareness of something 'absent' (i.e., what is depicted), it has to involve some form of visual imagining which is usually described as 'imagining seeing' the depicted entities (cf. Walton (1990)).

One constraint on any account of depiction is the fact that an experience of depicted depth may be an instance of aspect seeing, as the example of the Necker cube illustrates: we can switch between seeing different sides of the depicted cube as being in front. A theory of the depiction of depth has to be able to accommodate this fact (cf. Dilworth (2005)). Recent discussions have shown that seeing an aspect is best understood as a *sui generis* kind of experience which cannot be reduced to other types of experience (cf. Budd (1991)). The experience of seeing an aspect is clearly partly perceptual in nature. It involves, for instance, perceiving the shape and colour of the respective object. But seeing an aspect is more complex than mere visual perception: we can usually actively influence whether we notice a certain aspect, while we cannot decide whether to notice a certain shape or colour (without deciding to look away, of course); and the perceived shape and colour remains the same when we switch from not seeing an aspect to seeing it. The experience of seeing an aspect is also partly conceptual (or interpretative) in nature since it involves a conceptualization of the experienced aspect. But again, it differs from conceptual seeing (i.e., seeing that) and from the mere conjunction of a visual perception and a thought: while the latter two allow for the misapplication of a concept to what is perceived, the former does not. The reason for this is that, in the case of seeing an aspect, the perceived shape and colour determine which aspect we can perhaps recognize in them - but not under which concept we may see or think about them. This indicates that seeing an aspect - and, in particular, seeing depicted depth - is a non-reducible, *sui generis* kind of experience which is both perceptual and conceptual.

2 Own research

[* Soldati]

Flavio Marelli, who is currently employed as an assistant of Prof. Soldati at the department of philosophy of Fribourg, wrote his MA dissertation on Husserl's phenomenology. Since then, he has been working on a dissertation on bodily awareness and its relevance for self-awareness and self-knowledge (cf. Marelli (2010)). Especially the writings of Merleau-Ponty and their contemporary reflection in the texts by philosophers such as A. D. Smith or Sean Kelly are central to Marelli's studies.

Although Dr. Fabian Dorsch is currently on leave from his position at Fribourg university and spending a couple of years abroad at the Universities of Berkeley, Glasgow and Warwick, he will be able to return from time to time to Fribourg to support the project and take part in some of its activities - such as some of the regular ProDoc workshops and conferences, or some of the more local and smaller research meetings in Fribourg. His past and recent research has been focussed on topics in the philosophy of mind, epistemology and aesthetics, among them theories of perception (cf. Dorsch (2010a,b)), imagination and depiction (cf. Dorsch (2010c)). He co-wrote a couple of papers on the nature of perceptual experience with Prof. Soldati (cf. Dorsch and Soldati (2010a,b)).

3 Research proposal

3.1 Visual perception

The main task in the first part of the proposed research will be to compare and assess the various accounts of perceptual presence or constancy introduced above. The conceptual view threatens to over-intellectualise our perceptual awareness of the spatial features at issue. Our experiences of objects as being to the left or right of each other, as having backsides or as having a constant size are instances of object awareness, not thought (cf. Merleau-Ponty (2002)). While it is true that these experiences have to play a rational role as providers of epistemic reasons, and that the

same form of rationality has to be involved in the judgements and beliefs which they are reasons for (cf. McDowell (1998)), we aim to argue that this still leaves room for rational differences between the two kinds of state (cf. Dorsch and Soldati (2010b)). In particular, experiences only provide epistemic reasons, while judgements and beliefs are also responsive to them. It is part of this combination of rational dependence and difference, we suggest, that seeing a house rather than a mere facade requires the possession of some concept of a house (i.e., the ability to respond to the provided reason by means of a suitable judgement), but not its employment. This is further reflected in the fact that the experience of a house is more specific and distinctive in its phenomenology than a thought of there being a house.

The proposal to account for perceptual presence in terms of imagination, on the other hand, faces the problem that, while imagining is neutral about how the actual world is like, perceptual experience is not. Seeing a house commits us to judge that there is actually a house in front of us (e.g., when the issue arises); but imagining a house does not. Besides, the kind of imagining in question cannot be visualising, since the hidden backside of the house, say, is clearly not given visually (cf. Merleau-Ponty (2002)). But the imagining can also not be imaginative thought, for the reasons rehearsed during the rejection of the conceptual view.

Hence, we intend to argue that the expectation-based view is more promising than its two rivals - but only if supplemented by the normative element (cf. Soldati (*); Marelli (2010)). The reason for this is that the expectations of how the object's appearance would change in response to changes in point of view, direction of gaze or sense modality do not yet transcend our subjective perspective. For these expectations concern only the variable subjective features of the objects concerned - for instance, whether the portion which the object occupies in the visual field is to increase, or move to the left. What is still needed is an awareness of what stays constant during these perspective-relative changes. And this, we aim to argue, is partly constituted by a simultaneous awareness of multiple perspectives on the object.

This raises, of course, the question what this latter kind of awareness amounts to. Of course, it cannot be an awareness of the object as seen from several perspectives at the same time. And, as the preceding considerations have shown, it also cannot be a kind of thought or imagination. Instead, we would like to propose that it consists in being motivated to adopt other points of view in order to come to a fuller experience of the object (cf. Merleau-Ponty (2002); Kelly (2004, 2008); Marelli (2010)). The points of view in question differ relative to the perceivable properties concerned. The proper experience of a house may require walking around it and having an equal look at it from all sides. By contrast, mere facades clearly privilege the frontal perspectives. Similarly, the Eiffel Tower - but not the tree - invites gazes from a distance; and this is partly due to the much greater height of the former. This also explains the link to expectations: the latter are in fact motivational in nature. We are surprised when moving around a building and discovering that what we took for a house is really a mere facade because our adoption of a new point of view has not led to a fuller experience of a house - indeed, it has completely undermined it, contrary to our expectations.

One further goal in this section is to investigate whether our proposed view - as well as its main rivals - can account for the results of relevant empirical studies of our awareness of space. What is here of particular interest for us is the existence of pathological cases in which people are unable to identify the shape or orientational properties of objects on the basis of seeing them, but still can respond differentially to them in action (e.g., they still can orientate objects so that they fit into suitable slots; cf. Milner and Goodale (1995)). This suggests the presence of a basic form of awareness of spatial features which is linked, not to conscious cognition, but to motivation and action. Our hypothesis is that it in fact be the element which, in combination with our awareness of the subjective spatial features of objects, leads to the perception of objective properties.

Our hope is that this also helps to to explain how the three co-extensional contrasts identified earlier - between objects of knowledge and aspects of the visual field, between constant and variable features and, finally, between objective and subjective properties - are fundamentally linked to each other. Our suggestion is that the spatial features given in the visual field are variable and subjective because of their relativity to the subjective perspective; while the knowable properties of objects possess their constancy and objectivity because they are independent of any particular possible perspective on them.

3.2 Tactile and auditory experience

In this part of the sub-project, we aim to show how touch and hearing fit into the picture of perception developed in the first part. As suggested above, our tactile experience of space does not really inform us about the distance of objects. But it still helps us to detect their size, volume and orientation (as well as their shape). And here, as we intend to argue, the same contrast as with visual perception comes into play. What we are touching may appear to be to our left, and this may inform us about its location relative to our actual position. Similarly, it may appear to be three-dimensional solid with some sides that are currently 'hidden' to our touch. And finally, although we do not feel distance, we can feel the extension of an object by moving our hands over its surface. And, in this way, we may come to know its size, despite feeling only a small and varying portion of it at a given moment. Hence, the same question as with visual perception arises, namely how to account for the difference between the awareness of the subjective features and the recognition of the objective ones

The first step of our answer is to show that the thought- and the imagination-based views can be ruled out for very similar reasons than in the case of visual perception. Similarly, while the expectation-based view shows more promise, it needs to be supplemented by a normative account of the relationship between the perceived objective properties and our experience of them. Indeed, the similarity with visual perception, together with the fact that we can see and feel the same instances of spatial features, suggests that our visual and tactile experiences offer complementary perspectives on spatial objects. The thesis to be defended by us is therefore that a full recognition of the properties concerned requires the adoption of tactile perspectives as well as visual ones. The two forms of access to spatial properties are epistemically unified.

This raises the interesting question whether they are also metaphysically unified - whether they are indeed one complex sense involved, rather than two distinct senses. In particular, there is good reason to assume that the senses cannot be distinguished by means of the external entities or cognitive mechanisms involved, and that our distinction of them is, ultimately, a distinction between social rather than natural kinds (cf. Nudds (2004)). But our intention is to show that this last conclusion is not forced on us. For the main phenomenological difference between vision and touch - namely that one of them presents us with distant objects, and the other with close ones - suffices to warrant talk of two distinct senses.

Moreover, hearing cannot be so easily accommodated in the developed framework. It provides us with access to (seemingly) spatially located entities (i.e., sounds) that are not directly accessible in any other way.³ And since sounds - in contrast to sources of sounds - lack three-dimensionality, the corresponding aspect of spatial awareness is missing. But we can still adopt different spatial perspectives on sounds. Listening to them from various distances enables us to distinguish their apparent volumes from their constant volume. And by moving around, their appearance as being to the left may change to one of them as being to the right. So we want to argue, again, that the normative view captures best the transition from an experience of subjective volume and orientation to an experience of their objective counterparts.

3.3 Pictorial experience

The first goal of the third and final part of the sub-project is to show that non-experiential theories of depiction cannot account for the depiction of depth. The resemblance account faces the problem that the two-dimensional surfaces do not resemble the three-dimensional depicted objects in respect of their depth or volume. Hence, other features of pictures have to be referred to to account for how they can depict objects with a third dimension. The conventionalist theory, on the other hand, seems a bit better placed, since artists can use very different methods to depict perspective (e.g., linear perspective, foreshortening, reverse perspective, etc.; cf. Gombrich (1960); Goodman (1976)). So the depiction of depth seems to involve some conventional elements. But our contention is that this cannot be the full story. For this does not suffice to explain why these, and not other, methods lead to the depiction of depth. If it were entirely conventional, there should be many other possible ways of depicting three-dimensional space (even if other conditions - such as the

³Deaf people may feel the vibrations causing or caused by sounds. So they may make inferences about their presence and features. But this does not enable them to become acquainted with sounds.

repleteness of the marks on the surface - are held fixed). And, in the end, whether any of these or other methods counts as a method of depicting space depends solely on whether it enables us to experience the depiction of objects in space. The suggested explanation is therefore that the limitation to certain methods is due to the nature of our visual system and, in particular, our ability to recognise depth and volume. Besides, the conventionalist view faces other objections, such as its inability to distinguish pictures from graphs, diagrams and other non-pictorial, but drawn representations (cf. Hopkins (1998)).

So although convention may play some role, depiction of space is primarily a matter of how our perceptual apparatus works. This fits well with the experiential approach, according to which objects count as pictures of objects in space because they are experienced as such in normal circumstances. It also links up well with the idea that the recognition of depicted depth, volume, and so on, by looking at marks on a two-dimensional surface is an instance of Gestalt perception (cf. Arnheim (1954)). In particular, this promises an explanation of why certain artistic methods lead to the depiction of space, while others do not: the configuration of the marks is not of the right kind as to give rise to a suitable Gestalt effect. The illusionist account has no chance to accommodate this phenomenon, however, since it likens the experience of depicted depth to the experience of real depth and thus applies only to *trompe-l'oeils*.

Instead, the aim is to show that the two other experiential theories of depiction - which are formulated in terms of experienced resemblance and imagining, respectively - can, when combined in a single account, elucidate the nature of pictorial experience and the depiction of depth, even though they fail to do so on their own. Each of the two theories faces two main challenges. The idea that pictures look like what they depict seems to reach its limits when applied to schematic, distorted, exaggerated or multi-perspectival depictions, and can also not explain how we experience pictorial depth (for similar reasons as the non-experiential resemblance account); while the idea that pictorial experience involves imagining seeing the depicted entities remains at best unilluminating and at worst mysterious, since the nature of the imaginative experience has been so far not further elucidated, and it is unclear how it is determined that a given picture represents a certain object, and not another. But, as it will be argued, the four problems may be solved when the two theories are united.

The key move will be to demonstrate that the recognition of pictorial depth is in fact an instance of seeing an aspect (tackling the second problem in the list above). This will then - in the light of a respective analysis of aspect perception - allow the identification of the experience of seeing pictorial depth as the imaginative aspect of pictorial experience (the third problem). Furthermore, the idea will be put forward that the experienced visual resemblance determines which objects are depicted by a given picture (the fourth problem). And it will be suggested that the problems stemming from the lack of a high degree of outline resemblance may be solved by substituting this kind of resemblance with a kind of perceivable structural similarity (the first problem). The main reason for the conclusion that having (or establishing) pictorial depth is a matter of a perceived aspect is that the experience of pictorial depth possesses the features discovered to be essential to the experience of seeing an aspect: (i) it is both perceptual and conceptual in nature; (ii) it cannot be reduced to seeing a two-dimensional surface under a certain concept, or to combining the perception of the surface with a respective thought; and (iii) we can decide whether to focus on our experience of pictorial depth, or whether instead to attend merely on seeing the two-dimensional surface.

The second goal of this third part of the research sub-project is then to link this account of our pictorial experience of volume and depth in terms of aspect seeing with the theory of spatial awareness proposed and already defended in the first two parts. The initial difficulty for this move is that, with some notable exceptions (e.g., the depiction of the skull in Holbein's *The Ambassadors*), pictorial experience is relatively indifferent to changes in point of view. Accordingly, a full experience of depicted spatial properties cannot require the spectator to adopt many different perspectives relative to the depiction.⁴ Our proposal is to explain this fact about pictorial experience by reference to the further fact that depictions themselves are perspectival: they present a

⁴Indeed, this effect is not limited to canvasses to be faced in a straight manner and at roughly the height of our eyes. For while many ceiling frescoes, for instance, require the adoption of particular points of view to see the depicted space properly, the works by Tiepolo show that this need not be: that even paintings on a ceiling allow the free movement of the spectator.

perspective on the depicted objects which is itself part of the depicted scene (cf. Martin (2003); Dorsch (2010b)). So the depicted spatial properties are such that their full experience would require different pictorial perspectives. That is, we experience the depicted objects in the light of an awareness of how they would look like when depicted from other locations within the depicted scene.

This raises the question of whether our - ordinary or aesthetic - experience of temporal features works in a similar fashion. Hence, our aim is to compare the results of this sub-project with those of the other and see whether it is possible to unify spatial and temporal awareness in a more general account of perception. Of course, fully developing such a theory would require a third sub-project and therefore is not our aim. But we still hope to be able to highlight some significant commonalities between the two types of experience.

One last issue to be addressed is the nature of abstract paintings and abstract photographs. In particular the latter are puzzling, since photography always involves some kind of causal representation (cf. section * in the other sub-project). To render a photograph abstract requires to negate its intrinsic representational power (e.g., by zooming in on details or structures). But even abstract paintings may come into being by similar processes as, for instance, the development from landscape paintings to abstract compositions in Mondrian's work illustrate. So one issue to investigate is whether - at least in some cases - the value and experience of abstract visual art may properly be spelled out only by reference to the representational powers of the artform in question. A related issue is whether something similar is true of, say, music (i.e., sequences of sounds), the representationality of which is not spatial in character.

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