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Title of the project: Experience of space and time
ProDoc title: Mind & Reality

0. Summary and preliminary remarks

The present project is composed of two sub-projects, each to be carried out by one doctoral student. In this preliminary section we wish to emphasize the most obvious connections between the two subprojects.

We would however like to insist on the fact that the project, as it stands, contains a number of different, closely connected, research lines. We do not think that the two PhD students we intend to employ will be able to cover all that ground. So the project is formulated in such a way that evaluators as well as possible applicants (who would apply on the basis of this project) can have a clear idea of the kind of topics and methodology the planned research should be about. But we explicitly wish to leave enough room for the PhD students involved to develop their own view and claims. We do think that in the humanities, and especially in philosophy, this latter task is an essential part of learning how to do research. Since this project is not constructed for PhD students we are already acquainted with, but in order to attract new students to our university, restricting and focussing the project on some of the topics we mention would mean to curb in a substantial way the number of possible applications.

The starting questions of subproject A are metaphysical: how should time be thought of, what is the relation between change and time and what does it mean for an object to persist in time. Different, opposing views have recently been formulated on these issues. The main question for the project would now be to understand how our experience of time, and of object extended in time, is related to and impinges on our metaphysics of time. There surely is a metaphysical question concerning the nature of experience and of its extension in time. But this question cannot be addressed without bearing in mind the fact that experiences are precisely about objects extended in time and in some sense even simply about time (awareness of the passage of time). The question then is not simply how experiences are extended in time, but how does their way of being temporally extended impinge on the way we experience objects as extended in time. Depiction, as used in art, may prove useful in this respect. As it is often noticed, pictorial representations are constrained both, by our conception of the features of the depicted scene (here mainly temporal), and by our conception of the experience, (e.g. visual) we could have of it. Still (e.g. photographs) and moving depiction (movie) might be relevant in this respect.

If subproject A moves from a metaphysical perspective, subproject B moves rather from an epistemological one. This is rather unsurprising, since experiences are generally not considered to be extended in space as much as they are in time. The central question might thus be formulated in broadly kantian terms: what features of perceptual experience of spatially extended, orientated and distributed objects allows for an objective conception of space? Contrary to dominant kantian orthodoxy, and in line with a rather phenomenological approach, the project intends to insist on the feature of perceptual experience that do not depend essentially on judgement and yet contribute to its rational foundation in the quest of knowledge. Issues at the centre of such an approach concern perceptual constancy, the relation between perception and imagination and, most prominently, the integration of different sensory modalities, mainly visual, tactile and auditory. Just as much as in subproject A, the questions raised in subproject B can profit from considerations concerning the pictorial representation of space and spatial properties.

Both subprojects concern the analysis of experience. If the first intends to elucidate the nature of temporal awareness, the second concentrates on spatial awareness. But space and time and very different dimension of reality and of experience,

and so one cannot simply apply the results from one side to the other one. In fact, we expect very different results and we hope that our research will contribute to a better understanding of the nature of that difference and on the way that difference is to be accounted for in a unified theory of perceptual experience.

The two subprojects also move from a different methodological perspectives. The first one starts from a metaphysical perspective and asks how issues related to the analysis of experience impinge on it. The second one moves from an epistemological perspective and inquires into it's the ontological commitments. The applicant hopes that by including these different methodological perspectives the project will offer a contribution to a better understanding of the kind of elements that should be taken into consideration in the choice of one's methodology.

Members of the group involved in the conception of this research module (Soldati, Benovsky, Dorsch and Marelli) have already done research on issues related to the metaphysics of time and space (see especially Benovsky), on issues related to aesthetic judgement and aesthetic experience (Dorsch) and on space and body (Marelli). Soldati has recently worked on different aspects of the analysis of experience, mainly perceptual.

SUBPROJECT A: TIME, EXPERIENCE, AND ART

1. Summary of the research plan

This project concerns the intersection of three questions :

- the metaphysical question : what is time ?
- the epistemological question : what is our experience of time in general and what role does it play in our knowledge about time or about temporal features of the world?
- the aesthetic question : what is our experience of time in depiction, especially in art ? How is time represented in artworks ?

Thus, the project is an interdisciplinary one where three domains of philosophy are united around the notion of time. In this research project, we will consider these three questions for themselves but focus on the interactions between them.

2. Research plan

2.1. Current state of research in the field

2.2. Current state of your own research

While these questions (see (1)) are typically studied separately, the links between them are generally ignored. This is surprising, especially since metaphysics alone does not seem to answer the question of the nature of time in a satisfactory way – the metaphysical debate seems to be somehow at the end of its possibilities and the answers it provides are at least partly sterile. Indeed, in some of the publications of Jiri Benovsky (co-applicant for this project), namely

- forthcoming, 'The relationist and substantivalist theories of time : foes or friends ?', in *European Journal of Philosophy*
- 2009, 'Eternalist theories of persistence through time : where the differences really lie', in *Axiomathes*, Vol. 19, No. 1
- 2009, 'Presentism and persistence', in *Pacific Philosophical Quarterly*, 90:3

- 2009, 'On (not) being in two places at the same time: an argument against endurantism', in *American Philosophical Quarterly*, 46:3
- 2007, 'On Presentist Perdurantism', in *Sats*, Vol. 8, No. 2
- 2006, 'Persistence through time and across possible worlds', *Ontos Verlag*.
- 2006, 'Four-dimensionalism and modal perdurants', dans Paolo Valore (ed.), Topics on General and Formal Ontology, in *Polimetrica Publisher*.

it is argued that the results metaphysics alone provides us with respect to the question of time are not very satisfactory. Indeed, the first two publications show that some theories about time that we usually thought to be competing views actually turn out to be mostly terminological variants, and thus we have here a debate that does not really enlighten us on the nature of time.

In the context of the recent debate in meta-metaphysics, this situation is typically formulated as one where there are two possible answers that are given to the question of whether metaphysical debates are really substantive or whether they are merely verbal. This question has received various answers, giving rise to two 'extreme' and two 'moderate' views. On the two opposite sides of the spectrum of the debate lie the two 'extreme' views : first, the realist view recently defended by Sider (2001, 2007, 2008) defends the claim that metaphysical disputes are substantive and that metaphysical questions have objective answers, while the sceptical anti-realist view defended in the recent debate in different ways by Chalmers (2008) and Yablo (2008) claims that metaphysical questions do not have objective answers, they can be formulated and answered in different frameworks and there is no fact of the matter as to which framework is correct – thus, metaphysical claims lack truth-value. In between these two 'extreme' views lie two 'moderate' ones. Bennett (2008) defends an epistemicist view that claims that at least some metaphysical questions have genuine objective answers but that often we cannot discover them and that consequently there is often little reason or no reason at all to go for one side rather than the other, and Hirsch (2005, 2007, 2008) defends a moderate anti-realist view that claims that many metaphysical debates are merely verbal disputes where the disputants seem to claim different things but in fact they are making the same claims only formulated in different ways, or different languages.

2.2.Direction experience of doctoral theses

Soldati has directed about 15 PhDs during the last 20 years. He has been a member of several PhD commissions in Switzerland, Germany and Italy. 6 PhDs are being written under his supervision at present. Dorsch and Benovsky are senior researchers and members of Soldati's research group. Benovsky has a background in metaphysics, Dorsch has been working on aesthetics. Soldati's main contribution in this research project would concern the epistemological aspects of the relation between the metaphysics of time and space and their aesthetic experience. More on this in the detailed description of the project. A list of recent supervision can be obtained at: http://perso.unifr.ch/gianfranco.soldati/Directed_Thesis.html.

2.3. Detailed research plan

As we have seen above, the nature of time seems to elude a purely metaphysical enquiry. The question of time seems to be more complex than what metaphysics alone is able to recognize. It is more complex because we ourselves are in time and we cannot conceive thoughts or experiences without these being located in time – and this is where the question of the *experience* of time comes into the picture, and completes the metaphysical question. Parallel to this, it is also important to note that 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. This latter aspect is addressed in the second sub-project of this research proposal, while this sub-project focuses on the temporal issue.

We will thus analyze these questions and pay special attention to analyzing the connections between these debates, as well as with an aesthetic issue: many forms of art exhibit interesting, and sometimes surprising, features that test our conception of time and our experience of time. Especially in music, photography and cinema, can we find many puzzling cases that can enlighten us and help us understand our conception of time. Of course, it is not only time but our experience of space that we will need to study as well, which is the subject of the second sub-project of this research plan.

Thus here are the three domains that we plan to investigate :

<u>Metaphysics</u>		<u>Epistemology</u>		<u>Aesthetics</u>
The nature of time, and the way objects persist through time.		Our normal experience of time, and our knowledge of time.		Experience of time in artworks (painting, music, photography, cinema).
Are material objects extended or not? (Perdurantism VS endurantism)	↔	Is our experience of time extended or not ? (Atomism VS Molecularism)	↔	How do we experience temporal extension through artworks, and how is temporal extension (duration) represented in artworks ?
What is time ? (Substantivalism (Newton) VS Relationism (Leibniz) Eternalism VS Presentism)		What is our conceptual and psychological representation of time in ordinary experience ?		What is our experience of time in artworks ? How is time represented in artworks ?

Let us now see two examples where the interaction of these three domains, or the interaction between two of these domains, is fruitful.

2.3.1 Extended or momentary ?

The first 'point of contact' between the three domains – metaphysics, epistemology, aesthetics – can be articulated around the problem of temporal extension. In each of these debates, the problem appears in a central way.

In metaphysics, the problem of temporal extension concerns the issue of whether material objects perdure or endure. The perdurantist view (Lewis (1976, 1983, 1986), Heller (1990, 1992, 1993)) defends the idea that objects are like events : they are, literally, extended in time. Thus, numerically one and the same concrete particular cannot wholly exist at more than one time; rather ordinary material objects are aggregates of temporal parts and it is by having temporal parts at different times that they persist (perdure) from one time to another. The endurantist view (Van Inwagen (1981, 1985, 1990, 2000)), on the contrary, insists on the fact that ordinary objects are wholly there at any time of their existence – they persist (endure) through time by existing completely at different times and they don't have temporal parts (but they do have spatial parts). Thus, in a sense, objects behave, according to endurantism, like universals (see Benovsky (2009b)).

It will be interesting for us to explore the interaction between this debate, and the debate about whether our *experience of time* is itself extended or momentary. Temporal experiences are themselves located in time, and there is a disagreement between realists (Phillips (2008, 2009), Dainton (2000, 2001, 2003, 2009), Foster (1979, 1982, 1984,

1991)) and anti-realists Mabbott (1951, 1955), Plumer (1985), Kelly (2005) and Dennett (1991) about the nature of these experiences. As far as our project is concerned, the problems related to temporal experience touch directly the question of our experience of artworks of a certain kind, and of music in particular. One of the main problems that arise in philosophy of music concerns the question of how a melody can express emotions. But a first condition that is necessary to be even able to ask this question is to be able to have an experience of a melody – and thus we have to ask ourselves how it is that we can have such an experience. A melody is extended in time, but how can we perceive it if our experience is only momentary? Is it so that *memory* plays a crucial role in perception, and thus plays a role in the genesis of emotions associated with aesthetic experience of music? Brentano explored this idea: "People believe that they see something moving, they believe that they hear the melody; yet, they do not believe that they hear what was spoken yesterday. But when they believe that they hear the melody, they believe that they still hear what was immediately before. This is due to the vivacity and the associations. [...] Upon the appearance of memory imagination then further forms presentations of the future." (Brentano (2008, p.36)) Or is it rather that the experience itself of a melody is temporally extended and so that memory plays no part here? Is there an important role played here by inferences that we make to 'connect' different momentary perceptions in order to make up a whole – the melody? (On this issue see of course Husserl 1966 and Husserl 2001)

We can now start to see the connections there are between these three debates, and in particular between the metaphysical debate and the epistemological debate. Consider the case of a traffic light. I observe a traffic light, and I observe it for 'its whole life': in the morning it is built, then it is installed at a crossroads, then it is red for some time, then it is green for some time, then it is red again, and then it is destroyed in an accident. This is what the traffic light (the material four-dimensional object) is (a collection of numerically distinct and qualitatively distinct temporal parts, according to the perdurantist theory of persistence) :

built	installed	red	green	red	destroyed
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"Molecularism" is the view that perceptual experience is itself a temporally extended process, while "atomism" is the view that perceptual experiences are momentary. The distinction that is relevant here is the one between a *succession of experiences* and an *experience of a succession*. With respect to the former, both atomists and molecularists agree, but with respect to *experience of succession* it is often ask how can we individuate such experiences, according to Molecularism. For instance, how can we say that this

red	green
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is an experience, or that this

installed	red	green
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is an experience, or that this

red	green	red
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'counts' as an experience, and so on ? If temporal experiences are temporally extended entities, how are they individuated, how is their temporal extension given ?

This is where a useful comparison with theories about the temporal extension of material objects can be made. Typically, in this debate about objects, there are three views about composition :

- allthingism (unrestricted composition)
- nihilism (composition never happens)
- restricted composition

The same three options can be applied to the case of a succession of experiences :

- any bunch of experiences is an experience of succession
- there are no experiences of succession
- some bunches of experiences count as successions, some don't, according to some criteria

In the case of experiences of successions, the molecularist, analogously to many endurantists, goes for restricted composition: sometimes composition occurs (and we have an experience of a succession) and sometimes it doesn't. The molecularist also provides some criteria for restricted composition:

- upper limits to the duration of experiences (for example, limits of attentional capacity)
- lower limits to the duration of experiences

Now, in order to make the interaction between the two debates fruitful, we can observe that, typically, in the case of objects, it is argued (Lewis, Sider) that restricting composition does not work very well. Indeed, restricting composition famously leads to accepting ontic vagueness, and to worries about arbitrariness, and it generates worries since any criterion of restriction will be subject to objections (for instance, one can say that I can very well have experiences without paying any attention to anything, so attention cannot be the right criterion for determining the upper limit). Molecularism then inherits all these problems, and ontic vagueness seems a big price to pay, while atomism does not raise such worries. Indeed, atomism is actually analogous to nihilism about objects – where a nihilist in the debate about objects can easily answer all of the worries that arise from restricted composition. An atomist can still do justice and account for the psychological empirical data; but since she does not take them as criteria for composition, she has no problems with, typically, ontic vagueness. Thus, strategies developed in the field of analysis of the nature of material objects, can help us articulate and evaluate views about the nature of temporal experience.

2.3.2 Time and change

Suppose you are watching a movie. Suddenly, "time stops". That is, the movie rests on a frame, and does not continue. What is our experience when we watch such an event? Is this an experience of time as having stopped in the represented scene, or rather an experience of time as continuing to flow even if 'nothing happens', even if there is no change?

Such questions concerning the relation between time and change relate to the Aristotelian idea that time *is* change. The thought experiment that is the most discussed nowadays concerning this issue is the one from Shoemaker (1969) of the 'frozen universe'. Take a world W divided into three spatial zones A, B, and C. There are local freezes: at regular intervals, in each of the zones all changes come to a stop for a certain period of time, while at least one of the other two zones remains unfrozen. This happens for one hour every 2 years in zone A, for one hour every 3 years in zone B, and for one hour every 5 years in zone C. Thus, the inhabitants of W who can be aware of local freezes when they occur in a different zone than the one they are located in, and who have made the calculation, have a good reason to believe that every 30 years there is a one hour global freeze. To make their reason stronger, it can be added into the example

that in every zone just one minute before a local freeze occurs some visible changes occur to 'announce' the freeze – for instance, just before a local freeze occurs all things located in the zone in question turn red. Every 30 years, it is then not only a simpler theory (it is simpler to say that local freezes occur with a regularity rather than to say that there is an exception in the regularity every 30 years) but also the fact that everything, in all zones, turns red one minute before the expected global freeze, that indicate that indeed such a global freeze is about to take place. It is thus, in *W*, reasonable to believe that there are regular one hour periods where time continues to flow while no change at all occurs.

This argument actually does not show that it is possible that there can be time without change, since local freezes are simply presupposed without argument. What is interesting then about this argument is not so much what it shows, but that it provides a useful metaphysical scenario that has traditionally been taken to have important implications with respect to the debate about the nature of time. Indeed, if global freezes are possible (or if we could have good reasons to think that they are possible) then this would show that *substantivalism* has to be true (since relationism construes time out of changes), whereas if such global freezes were shown to be impossible this would leave room for both substantivalism and *relationism* to be true.

A useful and standard way to introduce the substantivalist theory of time (Shoemaker (1969), Oaklander & Smith (1995)) is by the use of 'the container' metaphor and the two central arguments in its favour: the possibility of 'empty time' and the possibility of 'time without change'. According to substantivalism, time is like a container in which events and things are placed, a container that exists independently of what is placed in it. While I am typing this sentence the container is not empty but, importantly, it might very well be: a container is perfectly capable of not containing anything. Less metaphorically, time is a substance that exists independently of events and things located in time, and consequently it is such that it allows straightforwardly for the possibility of there being periods of time during which time continues to pass even if no changes occur (so that the universe is 'frozen' during this period of time) or even if nothing at all occupies it (so that time is 'empty' during this period).

Contra substantivalism, the relationist theory of time (Forbes (1993), LePoidevin (1990)) rejects the idea of time as being independent of events and things placed in it. Rather, relationists claim, time is nothing over and above temporal relations among events and things located in it. Thus formulated, relationism sounds probably too circular, so let us try to put it in a different way: if there were no objects and events, there would be no time, for time is not a thing (a substance) but rather a system of relations among events and things. A particular instant of time is thus, according to relationism, a collection of simultaneous events and things (a simultaneity class of events and things), and a time-series is all the collections of simultaneous events in the order in which they occur. It is at least a *prima facie* consequence of this view that it cannot accommodate the idea cherished by substantivalists that there could be 'empty' periods of time or periods of time without change.

How should we then conceive of the nature of time? As a substance, or as supervening on objects and events? As Benovsky (forthcoming b) argues, the debate between relationists and substantivalists does not provide us with an answer. This is where it can be useful to test our concept of time thanks to observations about some forms of depiction. For instance, when looking at a photograph, one who is not familiar with photography may have the naïve impression that it depicts an instantaneous part of reality – a 'frozen' moment of the world. But of course, this is not so, since taking a photograph takes time, even if often a very short one, and a photograph thus depicts not



an instant but an interval of time. While the naïve mistake is an easy one to make with respect to, for instance, holiday landscape photographs that are usually taken at a high shutter speed, the error becomes easily apparent on photographs that include moving subjects where the exposure time is longer, such as on the photograph on the right (2.5 second shutter speed).

On photographs such as this one, the point appears obvious: it depicts a temporally bigger portion of reality than just an instant of it. Given that the objects depicted by photographs are represented as something that persists (and changes!) through the whole interval of time depicted by the photograph, there is not only an interesting parallel between the case of photographs and the problem of time and change, but also between the case of photographs and a discussion of theories of persistence through time (endurantism and perdurantism).

2.4. Schedule and milestones

2.4.1. Contemporary theories of ordinary experience of time	8 months
2.4.2. Contemporary theories of the nature of time and persistence through time	8 months
2.4.3. Contemporary theories of aesthetic experience and aesthetic judgement	8 months
2.4.4. Experience and representation of time in artworks	12 months

Since this project is strongly interdisciplinary and relates three fields of research, it will be left to the Candoc responsible for carrying our this project to choose which part s/he will decide to put special weight to. But all three fields will have to be studied in order to be able to explore the interactions between them.

2.5. Importance and impact

The main importance and impact of this project is its inter-disciplinarily. Indeed, while the three fields addressed in this project are typically studied separately, the links between them are mostly ignored. We think that by studying the interactions between them, real progress can be made with respect to our understanding of the notion of time.

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SUBPROJECT B: 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)). 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 (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

¹ Cf. 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)).

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

² The 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.

seeing the person or scenery portrayed 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

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)).

Soldati has worked and published i.a. on perception and on bodily awareness.

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 (2008); 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 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 there is 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 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 -

³ Deaf 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.

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 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.

⁴ Indeed, 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.

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.

4. Schedule

Visual perception of: (i) size; (ii) volume/depth; (iii) orientation	18 months
Auditory and tactile perception of spatial properties	6 months
Pictorial experience of spatial properties	6 months
Writing up	6 months

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