*dialectica* Vol. 60, N° 3 (2006), pp. 209–222

# Introduction

Vivian Mizrahi[†] and Martine Nida-Rümelin[‡]

In November 2003, the University of Fribourg hosted a symposium on the ontology of colors. The invited participants included Justin Broackes, Alex Byrne, David Chalmers, Larry Hardin, Joe Levine and Barry Maund.[1] The points of view presented by the participants in their thought-provoking papers were highly divergent. The presentation of each paper was followed by a long and intense discussion. Despite the divergence of the views proposed, the discussion during the symposium was highly focused. Several specific issues came up repeatedly in the debate and illuminated the puzzle about the nature of colors in a thought-provoking way from different angles. This intense debate took place in a comfortable and friendly atmosphere of searching and serious joint reflection. We would like to take this opportunity to thank all the participants of the symposium once again for their rich contributions. We also would like to thank the National Swiss Science Foundation (FNS) for its kind support of the meeting, which was part of a research project on the philosophy of color and color science supported by the FNS. Our work for the project has gained a lot from the exchange of ideas in these two days.

Some of the papers presented in the symposium have appeared in other places. We include these papers in our brief description in the present introduction to present to the reader all the different viewpoints that have nourished the debate throughout the symposium. We are glad to be able to include one further invited paper by Jonathan Cohen in the present volume. In an attempt to transfer some of the atmosphere of the meeting to the reader and in order to make this collection still more stimulating we invited each participant to contribute comments on the other papers. Given the schedules of people towards the end of last year, only a few people could still fit this into their schedule. Many thanks to Alex Byrne, Larry Hardin and Barry Maund for having accepted our invitation!

Philosophers are interested in the nature of colors for many reasons. Some of them have to do with the fact that colors play a major role in our lives. Our visual

[†] Department of Philosophy, University of Fribourg, Avenue de Beauregard 11, CH-1700, Fribourg, Switzerland; Email: vivian.mizrahi@unifr.ch;

[‡] Department of Philosophy, University of Fribourg Avenue de l'Europe 20, CH-1700, Fribourg, Switzerland; Email: martine.nida-ruemelin@unifr.ch

[1] The paper by Vivian Mizrahi unfortunately could not be presented by herself but was presented and discussed in her absence.


Published by Blackwell Publishing Ltd., 9600 Garsington Road, Oxford, OX4 2DQ, UK and 350 Main Street, Malden, MA 02148, USA

exploration of the world is guided by colors. Colors help us to localize, identify and reidentify objects. They also help to detect chemical or physical transformation of objects through color changes of their surfaces. Colors are crucial in our life as social animals: perception of emotion and face-recognition are heavily dependent on colors and so is communication in e.g. art or marketing. But there are also more theoretical reasons that make colors interesting from a philosophical point of view. The question of the nature of colors condenses an astonishing number of traditional philosophical problems.

Some of them concern the puzzling question of how we should think of the relation between the world as it is independently of the way it is perceived and conceptualized by some conscious individual and the world as it is presented in experience, – the relation between the objective world and the manifest world. On the one hand, it is obvious that any conceptualization and any perception of the world is dependent on the cognitive and sensory make-up of the perceiving and conceptualizing subject and that therefore, in some sense, the world cannot possibly appear to someone in the way it is 'in itself' independently of any perceiver. On the other hand, it seems obvious that we often represent the world veridically in our experience and this clearly seems to imply that we do perceive it exactly like it is independently of the point of view of any experiencing subject. The conflict might appear to be due to some simple mistake. But it is not. There is no obvious solution to the problem just sketched and the problem may become more puzzling the more one thinks about it. Color perception is an interesting specific case of the general puzzle at issue. It appears quite obvious, on the one hand, that our color experiences depend on contingent properties of our sensory make-up and that there are indefinitely many other possible ways to see the world as colored. It also appears quite obvious that there is no non-arbitrary way to choose one of these possible ways to see the world as colored as the only one that represents the world as it really is. Therefore, colors do not seem to be among the properties that things have independently of any perceiver. On the other hand, it appears quite obvious too that color experiences are sometimes or even in the majority of cases veridical. But if so, then we seem to be forced to believe that they do represent the world as it is in itself independently of any perceiver. Which route should we take to resolve the conflict? Should we deny that there are many equally appropriate ways to see the world as colored and claim that colors exist independently of any perceiver? Or should we admit the great variability of possible and equally appropriate visual systems and conclude that there are no colors out there in the world as we seem to perceive them? Are there any other alternatives? To explore the logical space of possible solutions in the color case is likely to help to develop a better understanding of the general problem about the objective and the manifest world.

One might however think that insights with respect to color cannot carry over to the general problem since colors are special: they are only so-called secondary qualities and not primary qualities like shape or temperature. But the distinction between primary and secondary qualities is itself problematic. If the distinction can be defended and clarified, then colors are surely a clear and typical case of secondary qualities. Therefore, reflection on colors must be central for any theory about the distinction at issue.

A second bundle of philosophical problems closely related to color ontology concerns the much-discussed puzzles about the status of phenomenal consciousness. Some believe that the problem of phenomenal consciousness can be solved by reducing differences in phenomenal character to differences in representational content. Colors are again central in the debate about this general proposal. If the representationalist is right then there can be no difference in phenomenal character without a difference in intentional content. One way to spell this claim out is to say something like this: if two perceptual experiences are different in phenomenal character then the two perceptual experiences are veridical under different conditions. In many cases this claim has a high initial plausibility. For instance, in the case of the perception of spatial properties, it is difficult to imagine phenomenal differences that do not go along with differences in the conditions of veridicality. If I see something as spherical and your perceptual experience is phenomenally different from mine with respect to this particular aspect, then you see it as having some different shape. If this is so, however, then there also is a difference in the conditions of veridicality: my experience is only veridical if the object is spherical while yours is only veridical if it has the other shape at issue that you see it as having. According to the representationalist an analogous reasoning is correct in the case of colors. If I see an object as greenish blue while you see it as reddish blue then we represent the object as having different properties. So our color experiences are veridical under different conditions. My experience is veridical only if the object is greenish blue and yours is veridical only if the object is reddish blue. So here again, or so it will seem at first, the phenomenal difference is paralleled by an intentional difference. But in the case of colors, doubts will soon arise. Contrary to the case of space perception, it is easy to imagine phenomenal differences with respect to color in beings with different visual systems that do not appear to be paralleled by a difference in veridicality conditions. It seems plain that there could be and there even are cases where one being recognizes a particular objective property by having one phenomenal kind of color experience while another being recognizes the same particular objective property by having some other phenomenal kind of color experience. Contrary to the case of shape perception, there does not seem to be any necessary connection between the represented objective surface property (when described in physical terms) and the phenomenal character of the corresponding visual experience. But if this is correct, then the

case of colors plausibly provides counterexamples to one of the most influential contemporary solutions to the problem of phenomenal consciousness. This is only one example of the way in which colors and color sensations rightly play a prominent role in the debate about phenomenal consciousness and thus in the controversy about materialism and dualism within the philosophy the mind.

If the picture just given is adequate, then reflection on colors can greatly contribute to the understanding of our relation to objective external reality as well as to the understanding of the nature of our own mind. In addition, reflection on colors is also revealing if we begin to think not about consciousness itself, but about our epistemic access to our own conscious states (the topic of self knowledge) and those of others (the topic traditionally called the 'other minds problem'). According to a wide spread idea we have access to our own mind by an activity called 'introspection'. According to this idea we know of phenomenal character and differences in phenomenal character regarding our own experiences by somehow directing our attention 'inwards' upon our own mental states. But consider the case of a person who tries to find out whether a given patch of blue appears in pure blue to her or whether there is – according to her experience – some tiny reddish or greenish component. This mental activity clearly is a typical case of reflection on the phenomenal character of one's own experience. Yet, it seems clear that the person at issue directs her attention upon the surface and its apparent properties. There is no 'looking inside' involved: attention is directed outside, onto the surface of the thing perceived. Some have concluded that, in such a case, there are therefore no intrinsic phenomenal differences there to be detected in the first place. This conclusion, however, would be hasty (or so one of the authors of this introduction would like to say). It is clear, however, that this simple concrete case casts doubt on the idea that knowledge of our own mind is generally based on 'introspection'. As this example illustrates, theories about self-knowledge can be tested by the concrete case of knowledge about one's own color experiences. The case of colors is also a concrete example to think about if we try to clarify the way beliefs about conscious states of other sentient beings can be justified. Skeptical doubts about whether we really know that other people see red things as red are common even to the naïve mind. Most children spontaneously come up with this question at some point. Skeptical doubts (like the one about the existence of other minds) are often only of theoretical interest and need not be taken seriously. In the case of belief about color sensations the situation is different. Empirical results seem to support that there is much more variability in color vision than we might expect. The concrete case of beliefs about color sensations is an interesting and promising starting point to think about what we know about other minds, how this knowledge is justified, what concepts are involved in that knowledge and in what way empirical science may support or modify beliefs that are natural to hold in everyday life. Here again, of course, the issue depends on

other philosophical questions about color, color sensation and their relation. On some versions of representationalism, for instance, the other minds problem with respect to color sensation may appear to have a simple solution.

As these brief remarks about colors and the other minds problem illustrate, philosophy of color is and has to be open to genuine interdisciplinary cooperation. Philosophers cannot conduct their work without an acute sensitivity to empirical work on colors and color vision. But, on the other hand, scientific research on colors, being completely fragmented into optics, material physics, neurobiology, psychophysics, linguistics and sociology, clearly cannot be expected to come up with a unitary account of colors that answers the philosophical questions at issue. Detailed philosophical work is necessary to clarify the problems and their interrelation, to explore the complex logical space of possible solutions and also to see how and in what way the available empirical results are relevant to them. The case of colors quite clearly illustrates that the philosophical issues may remain wide open even if all the empirical details about colors and their perception were clarified.

It is hard to deny that whenever we see an object in a particular color then we see the object as having a specific objective surface property. It therefore may appear obvious that colors are precisely those objective surface properties that things appear to have in our color experiences. If we assume, in addition, that our color experiences are, by and large, veridical, then we can conclude that colors are those objective and often instantiated surface properties that objects appear to have in our color experiences and we are thus quite naturally led toward an objectivist view about colors. According to objectivist theories of colors, colors, like the other properties instantiated by material objects, are objective: they do not depend in any way for their existence and for their instantiation on observers or conscious subjects. On the other hand, as mentioned before, the color seen in a particular case by some observer obviously depends on contingent properties of the subject's visual system and there does not seem to be any non-arbitrary way to choose one and only one particular color experience among the many possible color experiences as veridical in a given case. Also, and perhaps more importantly, to say that a person experiences a specific color on a given occasion, e.g. that she experiences a darkish but highly saturated reddish blue, *is* to describe the phenomenal character of her experience. Seen in this way, the color is something phenomenally present in the experience, something that clearly belongs to the subjective realm. It seems obvious that we refer to colors in order to describe the intrinsic phenomenal character of visual experiences. But if we accept this idea then we are driven toward some version of subjectivism about colors. The subjectivist claims that a careful analysis of colors and color experiences reveals colors to be essentially dependent on the existence of experiencing subjects. According to the subjectivist, colors are, unlike shape or solidity, mind-dependant

properties. According to some subjectivists colors are properties of experiences, for others they are properties of what is given in experience (e.g. properties of the visual field); another version of subjectivism claims that they are 'apparent' properties, properties that things appear to have in experience but that need not ever be instantiated. According to introduced terminology, subjectivists and objectivists about colors are both realists about colors: they agree that colors exist and only disagree about their nature. However, if a subjectivist holds that colors are apparent properties that are never actually instantiated then he or she is quite near to what has been called eliminativism about colors. Eliminativists are defined by their belief that there are no colors and they are often described as saying that the world is completely colorless. Note, however, that a subjectivist might agree that the world is colorless (no colors are ever instantiated) and still claim the existence of colors as never instantiated properties. The subjectivist of this kind agrees with the eliminativist that color experiences are nothing but illusions: objects appear to be colored, but a careful examination of reality shows that they are not. The main task for the philosopher of colors according to the eliminativist version of this claim is not to elucidate the real nature of colors, but rather to explain why we are under this illusion and why we are tempted to believe in the existence of colors.

Like the eliminativist, Maund claims that 'the world contains no colours, as traditionally conceived',[2] but he insists at the same time that his anti-realist view about colors should not be understood as implying color eliminativism. According to Maund, color experiences are illusory, but these illusions play a major role in our life. They help us to identify and re-identify objects and they play a major role in our social and cultural life as well as in aesthetic experience.

> [Colors] are used in social life to amuse, to entertain, to delight, to shock, to impress, to astound, to warn, to attract, to be enjoyed, and so on, in contexts having to do with pageantry, ceremonial, courtship, painting, lighting, plays, clothing, dining, drinking, and so on. In the visual arts, in paints, in design, in lighting, in fashion, in industry, as well as a whole range of other practices, colour is important.[3]

For Maund, color eliminativism should be resisted, because even though the world contains no colors, color concepts play a major role in our life. A radical revision of our conceptual framework, like the one implied by color eliminativism, would undermine the significant role colors have for us. Common talk on colors is – according to Maund – strictly speaking false, but still we have reason to treat the sentences at issue 'as if they were true'. Unlike the color eliminativist, Maund suggests to leave our usual way of talking and thinking about colors basically

[2] Cf. Maund this volume, 248.
[3] Cf. Maund this volume, 263.

intact. Maund more or less agrees with Levine, Byrne and Mizrahi about the transparency intuition according to which to have a color experience of a given kind is to see an object as having a specific property. In order to be able to do duty to this intuition, Maund introduces a distinction between phenomenal qualities (qualia) that are inherent to the experience and phenomenological properties that are the properties things appear to have in experiences of a given phenomenal kind. For instance, yellow experiences share a specific phenomenal quality and this phenomenal quality enters the representational content of yellow experiences. It determines which phenomenological property things that look yellow appear to have. So Maund agrees with the representationalist assumption that in having a yellow experience we see things as having some property (yellowness) but disagrees with the representationalist's further claim that it is possible to account for what it is to see something as yellow without reference to intrinsic qualitative properties of experiences.

Commenting on Stroud's *Quest for Reality*, Broackes' paper[4] is a perfect illustration of how the problems raised by color ontology have deep implications regarding metaphysics, epistemology and the philosophy of mind. According to Broackes, Stroud's attack against color eliminativism cannot succeed, because it is grounded on a mistaken conception of what is involved by realism in general and by a realist view on colors in particular. He argues for example that, contrarily to Stroud's conception, metaphysical questions should not be decided from an Archimedean point situated 'outside' our own epistemic situation. Instead of admitting, like Stroud, that we cannot settle the metaphysical question of the reality of colors, because 'we can never achieve the kind of detachment from our beliefs that the metaphysical question seems to require',[5] Broackes argues that metaphysical issues like color realism should be examined from the course of our own experiences. The only way to oppose color eliminativism lies therefore for Broackes in a better understanding of our own color experiences and of our own conceptual scheme.

Quite in contrast with color eliminativism, Levine's approach to color ontology is an attempt to reconcile apparently incompatible intuitions on the nature of colors. He acknowledges that colors are essentially subjective in the sense that 'color is a way of appearing to a conscious subject. It is a relation that holds between objects and conscious subjects, and without conscious subjects there is no color'. But he also admits that a subjectivist account of colors doesn't fit well with the transparency intuition according to which 'the what it's like to perceive the redness of the tomato' is nothing but 'the perception's representing the tomato

[4] Broackes in press.
[5] Stroud 2000, 193.

as possessing a certain property: namely, redness'. Levine thus accepts, and thereby agrees with most objectivists, that the qualitative aspect of our color experiences consists in the fact that the objects are presented to us in our color experiences as having certain properties, colors. According to Levine, any philosophical theory of color should account for both intuitions, the intuition that colors are mind dependent *and* the intuition that they are located on objects 'outside' the mind. To incorporate both intuitions, Levine proposes to think of appearing red as a primitive relation between an object and a conscious viewer and to identify colors with the disposition of an object to enter in that specific relation with a conscious subject. So to be red, for example, is a disposition to appear red to a conscious subject. Even though Levine's approach is a version of color dispositionalism, his view differs from classical color dispositionalism in an important way. Contrary to Locke for instance, the disposition of colors to look red is not defined by reference to an intrinsic property of experiences (the property of being a 'reddish experience' where this property is understood as an intrinsic phenomenal property). Looking-red, according to Levine's proposal, is a relation between a conscious subject and an object. So colors are dispositions but, contrary to classical dispositionalism, the manifestations of these dispositions are essentially relational. In stressing the relational nature of the manifestation of colors, and contrary to what is commonly assumed, Levine advocates that the transparency of color experiences does not lead to objectivism or eliminativism.

Objectivists about color are often also physicalists about color. According to color physicalism, colors are physical properties that can in principle be fully described in physical terminology. Some authors object that a reduction of colors to physical properties is impossible, because physics cannot account for some essential properties of colors such as the property of violet to be composed of red and blue.[6] But the sense of composition here at issue is *phenomenal* composition. Violet is composed of red and blue in the sense that you cannot have an experience of violet without having an experience of a reddish and bluish surface. But to have an experience of a color with a particular (e.g. reddish) component is to have an experience of a specific phenomenal kind. As this example illustrates, questions about the nature of colors often lead quite directly to issues about the phenomenal character of experiences. It is not surprising, therefore, that the question about the nature of colors appears for many philosophers to be only one aspect of the 'hard problem of consciousness':[7] the problem of explaining consciousness on the basis of the physical. The prevailing attitude in analytic philosophy is to consider the problems regarding *the nature of colors* as being problems related to the *nature of color experiences*. Levine, for example, writes in this volume:

[6] See for example Hardin and Maund.
[7] Cf. Chalmers, 1995.

> In this paper I want to argue that though one can, and for many purposes should, distinguish color from color experience, the problem with color, and the rest of secondary qualities, is inextricably bound up with the mind-body problem.[8]

Byrne's contribution to this volume intends to change this overall perspective on the relation between the mind-body problem and the nature of colors. To achieve his goal, Byrne proposes to compare our philosophical tradition to the philosophy in a possible world w', where the mind-body related problems have been substituted by color-body problems. To do this, Byrne does not need to imagine a conceptual framework very different from ours. In fact, Byrne argues that it is sufficient to imagine a world where philosophers take 'the claim of transparency seriously'.[9] Transparency of experience is sometimes defined as the thesis that the qualitative aspects of experience can be reduced to the qualitative properties of the actual objects which are presented in the experience:[10] what it is like to have an experience of rectangularity for example is nothing more than experiencing the rectangularity of a surface.

According to Byrne, if, as stated by this version of the transparency thesis, the qualitative character of experience is exhausted by its representational properties, all the problems regarding the nature of experience are transferred to the level of the properties represented in the experience. He claims, in particular:

> If we can provide a satisfying naturalistic explanation of the qualitative nature of colors, there will be no mysterious qualitative residue left in experience.[11]

According to the philosophers in w', all problems regarding the nature of color experiences will be solved once the question of the nature of colors is elucidated. In our world, on the contrary, the color-body problem is assumed to be parasitic on the mind-body problem. In imaging philosophy in w', Byrne challenges this accepted view by comparing it to the opposite stance where, for instance, the problem of finding a physicalistic account of experiences of yellow is considered to be derivative of finding a physicalistic account of the yellowness of the perceived objects. In confronting philosophy in our world and philosophy in w', Byrne can ask if there is 'one hard problem, or two'.[12] In other words, he examines whether the question of how consciousness can be explained in physicalistically respectable terms and the question of how color can be explained in physical terms should be treated as one single problem or two. Agreeing with philosophers in w', he concludes that the problem of color appearances is not at all about consciousness. The mind-body problem disappears, he claims, 'once we recognize

[8] Levine this volume, 269.
[9] Byrne this volume, 240.
[10] See for example Tye 2000, ch. 3, 45–51.
[11] Byrne this volume, 224.
[12] Byrne this volume, 240.

the source of the puzzlement' which lies in the real hard problem: the problem of finding a satisfying physicalistic account of the properties represented in consciousness, e.g. of colors.

Relying on numerous empirical researches, Hardin points out that physicalism faces serious difficulties.[13] He argues in particular that no physicalist theory of colors can give a satisfactory account of the fact that there is widespread interpersonal and intrapersonal perceptual variation with respect to colors. We know that color experiences vary according to the perceptual situation and that they depend on the visual apparatus of the observer: for example, a ripe banana can appear red in monochromatic light and some color differences visible for most human observers can be undetectable by colorblind people. The challenge for the physicalist approach is then to explain how colors, supposedly mind-independent and situation-independent physical properties, can vary while there is apparently no change in the object. Most color objectivists answer this challenge by contrasting real with illusory or merely apparent colors.[14] They claim that most color variations induced by changes of circumstances or observers do not correspond to real color changes and do not therefore threaten color physicalism. But Hardin, like Cohen, argues that 'the argument from perceptual variation' poses a serious problem to color physicalism because there is no non-arbitrary way for the color objectivist to identify the circumstances or the observers that give rise to veridical color perceptions. Physicalism therefore apparently leads to the highly implausible consequence that at most one apparent color of a given object is real, although there is no way to know which perceptual variant veridically represents the real color of a given object. According to Hardin, if the major appeal of physicalism is to present colors as physical properties directly accessible through perception, we have to conclude that most perceptions of these colors are mere illusions and that there is no way for us to determine which colors are real and which aren't:

> Much of the initial appeal of color realism was that colors seem to be presented directly to perception in all of their naked glory. Now, it appears that multitudes of us must content ourselves with knowing about colors indirectly. For us unfortunate souls, the veil of perception has been restored. Those of us who sometimes misperceive shapes and temperatures have recourse to instruments such as thermometers and rulers to correct themselves, but we who misperceive unique green have no alternative ways of rectifying our false judgements. Byrne and Hilbert are prepared to accept this result, and cheerfully tell us that they are prepared to countenance 'unknowable color facts'.[15]

Cohen's answer to the 'argument from perceptual variation' is to reject color physicalism and to propose instead a relationalist account of colors. Color rela-

[13] The paper presented by Hardin at the meeting in Fribourg has been published in the *Harvard Review of Philosophy* in 2004.

[14] For an exception, see Mizrahi (this volume) 283–306.

[15] Hardin 2004, 35.

tionalism, he argues, offers an attractive alternative to color physicalism because it does not distinguish perceptual variations in terms of veridicality. According to color relationalism, 'colors are not subject- and condition-independent properties of their bearers, but relational properties that are constituted in terms of relations to subjects and viewing conditions'.[16] In this perspective, a ripe banana can look both yellow to observer S under condition $C_1$ *and* red to observer S under condition $C_2$ and yet both perceptions may well be veridical. According to color relationalism there is no reason to choose between the perceptual variants, because ordinary objects have in reality infinitely many colors.

Like Cohen, Mizrahi thinks that 'the argument from perceptual variation' is a serious threat to classical color physicalism. She argues however that color physicalism is not committed to the 'color unicity principle', the principle which asserts that objects can have at most only one color locally. According to Mizrahi, to deal with perceptual variation, the physicalist must hold that objects have locally many different objective colors. Like Cohen in his color relationalism, Mizrahi argues that there is no ontological reason to distinguish between real and illusory colors to account for perceptual variation. We know for example that the colors perceived by an observer after his/her eyes have been exposed for a long time to a monochromatic light can radically change, without any change in the scene observed. Most color objectivists think that the color experiences resulting from the over-stimulation and fatigue caused by intense exposure to selective lights are illusory. In contrast, Mizrahi claims that the shifts in color induced by selective fatigue correspond to veridical color experiences. She holds that long exposure to a selective light changes the sensitivity of the observer's visual system, which results in a temporary change of the objective colors detected by the visual system.[17] As do many color objectivists, Mizrahi stresses the advantage of the color objectivist position with respect to the transparency of experiences. She thinks 'that the greatest strength of color objectivism is that it does justice to the phenomenology of color experiences in locating colors exactly where they appear to be, that is, on the surfaces of objects'.[18]

Chalmers[19] also subscribes to the transparency of color experiences by stressing the fact that colors appear phenomenologically as intrinsic qualities of objects.

> Phenomenologically, it seems to us as if visual experience presents simple intrinsic qualities of objects in the world, spread out over the surface of the object. When I

[16] Cohen this volume, 311.

[17] Mizrahi's objectivism is supposed to solve problems resulting from intra-personal color variations, like selective fatigue, but also color variation related to differences in color perception across species, individuals, and in different kinds of perceptual circumstances.

[18] Mizrahi this volume, 286.

[19] Chalmers 2006.

> have a phenomenally red experience of an object, the object seems to be simply, primitively, *red*.[20]

However, for Chalmers, the appearance of colors as intrinsic properties of objects does not support physicalism. He argues, on the contrary, that colors do not appear phenomenologically as microphysical properties.

> The apparent redness does not seem to be a microphysical property, or a mental property, or a disposition, or an unspecified property that plays an appropriate causal role. Rather, it seems to be a simple qualitative property, with a distinctive sensuous nature.[21]

Chalmers' position about transparency and the phenomenology of our experiences bears some resemblance with Johnston's Revelation thesis according to which the full nature of colors is revealed by standard experiences of color.[22] According to Chalmers, experiences are not only directed towards colors spread out over the surface of objects, they also give us access to their full nature.

Chalmers, like Hardin and Maund, accepts the transparency thesis about colors that holds, for instance, that any phenomenally red experience attributes redness to an ordinary object, like an apple. Like these authors, he also rejects physicalism about color by arguing in particular that any physicalist view is incompatible with our intuitions about color *inversion*.[23] However, unlike Hardin and Maund, Chalmers does not conclude that color experiences are illusory. To avoid this conclusion, which he considers to be implausible, Chalmers' strategy is to split the content of color experiences into two kinds of content and to distinguish two kinds of veridicality: perfect and imperfect veridicality. To capture the eliminativist intuition that colors are phenomenologically presented in our experiences as intrinsic properties with multiple structural relations which are not actually instantiated in nature, Chalmers attributes to color experiences an 'Edenic' content with perfect colors. *Perfect colors* can be specified, in part, by saying that they are objective, perceiver-independent, and that they fit together in characteristic ways to form a structured phenomenal color space. Edenic contents are supplemented with *ordinary contents* that capture our intuitions about the veridicality of our color experiences. Unlike Edenic content, ordinary content can be satisfied in *our world*. The Edenic content of our experiences is perfectly veridical in an Edenic world[24]

[20] Chalmers 2006, §6.
[21] Chalmers 2006, §6.
[22] Johnston 1992, 138.
[23] The first formulation of the 'inverted spectrum' thought experiment is attributed to Locke (1689/1975, bk. II, ch. xxvii, §15). Literature about spectrum inversion is abundant, cf. for example: Block 1990; Clark, 1985; Cohen 2001; Hardin 1997; Peacocke 1983; Shoemaker 1982.
[24] According to Chalmers, an Edenic world is a world where 'we [are] directly acquainted with objects in the world and with their properties. Objects [are] simply presented to us without causal mediation, and properties [are] revealed to us in their true intrinsic glory' (Chalmers 2006).

only. Regarding colors at least, our world is not Edenic, therefore our color experiences are not perfectly veridical. Even though our color experiences are not *perfectly veridical*, they are nonetheless (most of them) *imperfectly veridical*, i.e. veridical according to our ordinary standards of veridicality. Whereas Hardin, Maund, Levine and Mizrahi are looking for entities able to satisfy at the same time the transparency and the veridicality constraints of our color experiences, Chalmers proposes to split the problem by associating with each of these constraints a different kind of color properties. Perfect colors mirror the phenomenology of our experiences whereas imperfect colors account for the ordinary satisfaction conditions of our color experiences.

With respect to the nature of colors, we are pushed by our intuitions in different directions. Given this fact, it has been doubted that any philosophical theory of colors can do duty to all of our natural intuitions simultaneously. If this is correct, then even the best possible solution to the puzzle will still force us to give up some part of our initial pre-theoretic intuitions about colors. In a theoretical situation of this kind, it may be helpful to find an explicit formulation of those assumptions that underlie the problem: it may be helpful to find a series of claims that appear to be obvious and can be seen to be part of our intuitive reasoning about the topic, but that cannot be held together since they lead into a contradiction. To find a reconstruction of a philosophical puzzle in these terms, that is a formulation of a number of premises that are difficult to deny in isolation but jointly incoherent, can be valuable for various reasons: it can help to understand the puzzle itself, it can help to develop a useful systematic classification of possible solutions and it can thereby facilitate the intuitive evaluation of new proposals. One such possible reconstruction of the philosophical puzzle about the nature of color is proposed in M. Nida-Rümelin's contribution. The paper was developed on the basis of thoughts that emerged during and after the stimulating discussions that we had in Fribourg during the symposium, at the origin of this special issue of *dialectica*.

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