

CHROMATIC ILLUMINATION: CONSCIOUS INTENTIONALITY WITHOUT CONSCIOUS REPRESENTATION

*David Henderson, Terry Horgan, Matjaž Potrč,
and Vojko Strahovnik*

Abstract

We argue that introspection reveals a ubiquitous aspect of conscious experience that hitherto has been largely unappreciated in philosophy of mind and in cognitive science: conscious appreciation of a large body of background information, and of the holistic relevance of this information to a cognitive task that is being consciously undertaken, without that information being represented by any conscious, occurrent, intentional mental state. We call this phenomenon chromatic illumination. We begin with a phenomenological case study, involving an experience of joke-understanding in which the conscious aspect of chromatic illumination is especially vivid. Then we offer an account of the prototypical causal role of conscious intentional states (mental states that consciously represent their intentional contents), and we offer a contrasting account of the somewhat different prototypical causal role of conscious chromatic-illumination features of conscious intentional states. Finally, we describe the specific kind of physical-to-mental supervenience situation that needs to obtain in order for a chromatically illuminated conscious intentional state to figure as a supervenient mental cause that exerts both kinds of prototypical, content-appropriate, reasons-guidance vis-a-vis one's cognition and behavior.

In this paper we argue that phenomenological introspection reveals an aspect of conscious experience that hitherto has been largely unappreciated in philosophy of mind and in cognitive science: conscious appreciation of a large body of background information, and of the holistic relevance of this information to a cognitive task that is being consciously undertaken, without that information being represented by any conscious, occurrent, intentional mental state. We call this phenomenon *chromatic illumination*. We contend that this form of intentionality-involving conscious experience is ubiquitous, and that it plays a vital role in many conscious processes including belief formation, belief maintenance, common-sense practical rationality, and various other conscious phenomena such as understanding jokes. It is high time for this aspect of the intentionality of consciousness to be acknowledged in philosophy of mind and in cognitive science, and for its significant causal role in human cognition to be duly appreciated.

There is an active debate in contemporary philosophy of mind about whether or not conscious intentional mental states have a distinctive and proprietary kind of phenomenal character.¹ This debate sometimes is described as being about the existence or non-existence of “phenomenal intentionality,” often also called “cognitive phenomenology” – with ‘phenomenology’ here meaning *phenomenality*. (The familiar gloss on a mental state’s having phenomenal character is that there is “something it is like” to undergo the state.) We ourselves are firm advocates of the affirmative position in this debate.² In this paper we presuppose the reality of phenomenal intentionality, and we take ourselves to be arguing for chromatic illumination as a novel type of phenomenal intentionality, different in kind from phenomenal character that constitutes conscious mental representation. Accordingly, when we deploy the terms ‘phenomenology’ and ‘phenomenological’ to refer to introspectable aspects of consciousness (rather than to introspective inquiry as a methodology), we mean phenomenal aspects. But even those who are skeptics about phenomenal intentionality should be able to accept both the existence of chromatic illumination and the bulk of our case for its existence – by reinterpreting our claims about the “phenomenology” of chromatic illumination as being not about phenomenality but rather about an introspectively discernible aspect of consciousness that allegedly lacks any distinctive, proprietary, phenomenal character.

1. The Phenomenology of Joke-Getting

Consider the following cartoon by Danny Shanahan, which appeared in the January 8, 2001 issue of the magazine *The New Yorker*. Despite its dependence on specific aspects of life in the United States at the time of its publication, it has retained its humor-value strikingly well since then.

Getting this joke, or any joke, is experienced phenomenologically as occurring virtually instantaneously. In that experiential instant, normally one needs to appreciate quite a wide range of pertinent background information; also, one needs to appreciate why and how all this information combines, holistically, to constitute an instance of funniness. Each item of that information must be appreciated, together with the ways that all the pertinent items

1 Both sides of this debate are represented by papers in Bayne and Montague 2011.

2 The affirmative position is advocated, inter alia, in Strawson (1994), Siewert (1998), Horgan and Tienson (2002), Loar (2002), Horgan, Tienson and Graham (2004), Pitt (2004), Horgan (2013), and papers in the collection Kriegel (2013).

interact with one another to make for funniness – for, otherwise one would not be understanding the joke.



"What I don't, like, get is how she, like, figured out I was, like, having an affair with, like, the babysitter."

For any reasonably clever joke, typically it is possible to elaborate at some length upon the various items of background information all of which are pertinent. In the example at hand, for instance, probably the most salient such item – the item that one would mention first, in seeking to explain the joke to someone who does not yet get it – is that the practice of persistently inserting the word ‘like’ into one’s spoken English was a distinctive feature of the way *teenage girls* talked in the U.S., back when the cartoon appeared. (Supposedly the practice was initiated by teenage females in the San Fernando Valley, adjacent to Los Angeles – so-called “valley girls” – who are sources of numerous youthful fads in the U.S. Nowadays, regrettably, such ‘like’-talk is much more prevalent, so much more so that contemporary American undergraduates frequently don’t easily get the joke.)

But that is just the beginning, in terms of pertinent background information that must be grasped in an instant in order to get the joke. Additional such items of information can be made salient by posing suitable questions – questions that might be asked by someone who is persistently deficient at understanding jokes. Whose children did this babysitter care for? Roughly how old is the babysitter? Who is the “she” who figured out that the guy is having an affair with the babysitter? How did that person react, upon learning this fact? Why is the guy upset that she figured it out and reacted that way? Why

doesn't he himself understand how she figured it out? And, of course: What's so funny about all this? One could write a monograph about the pertinent background information and its holistic relevance. Likewise for most any even moderately subtle joke.

In the instant of joke-getting, very little of this kind of information seems to be overtly present in conscious awareness. Nonetheless, it seems that all of it somehow is being *appreciated* in conscious awareness, because otherwise one would not be getting the joke. Furthermore – and importantly – the “getting it” aspect of the experience is not some generic phenomenological feature, such as experiencing oneself laughing or inclined to laugh (perhaps without knowing why). Rather, it is quite tightly tethered to this particular joke: some item(s) of overtly conscious content (in this case, what the guy at the bar is saying, and his obvious consternation) are appreciated as funny by virtue of how that consciously represented content is relevantly interconnected with a rich body of pertinent background information. Thus, it seems that all the background content that is pertinent to this *particular* joke is somehow being appreciated in the joke-getting experience, by virtue of the *particular* character of one's joke-getting phenomenology.

Some of this background content is quite specific, like the fact that at the time the cartoon appeared, ubiquitous ‘like’-talk was primarily a distinctive feature only of the speech patterns of teenage girls. Other parts of the background content might be somewhat schematic – for instance, why the guy who is speaking has acquired this speech pattern himself. To some extent, two people who both get the joke might be understanding it in subtly different ways, tethered respectively to somewhat different bodies of background information that are being appreciated in the persons' respective phenomenologies. For example, perhaps one person only appreciates, quite schematically, that the guy has *somehow or other* picked up his ‘like’-talk from the babysitter while frequently in her presence – whereas another person also appreciates that there is a *common tendency* for this sort of thing to happen when someone spends a lot of time in the presence of someone else who exhibits a distinctive way of talking. Or maybe one person only appreciates, quite schematically, that the guy *somehow or other* has failed to notice that he himself is now deploying ‘like’-talk – whereas another person's hermeneutic construal of the joke also incorporates appreciation of the fact that *highly self-absorbed* people are apt not to notice certain features of their own behavior that are obvious to others. And so forth.

The joke-getting experience is rife with dispositional potential, in ways directly connected to the background content that needs appreciating. This includes the capacity to manifest such appreciation in various ways and to various

degrees. One kind of looming potentiality, for example, is the capacity to say something explanatory about why the joke is funny, in answer to a query from someone who does not get it. (But this is a matter of degree, differentially with respect to different components of the overall pertinent background that one is appreciating; some of that background might be very difficult to call to mind explicitly.) Another kind of looming potentiality is the capacity spontaneously to arrive at answers to suitable background-probing questions like those mentioned above. (But this too is a differential matter of degree; some probe questions might prove difficult to answer more than sketchily – e.g., “How exactly did she figure it out, and why exactly doesn’t he understand how she did so?”)

Importantly, the emergence in conscious awareness of answers to requests for explanation or to such probe questions is itself experienced phenomenologically as arising directly out of the (recalled) joke-getting experience. The answers are not experienced as arising “out of the blue,” as though unrelated to the initial experience of getting the joke and without any intuitive sense of why or how they are pertinent to the funniness of the joke. Nor are they experienced as being mere post-hoc *abductive hypotheses* about why the joke is funny and why one laughed at it; that would be quite different experientially from the phenomenological immediacy with which the answers seem to emanate straight out of the recollected experience itself, by virtue of the experience being already permeated with understanding.

2. Chromatically Illuminated Experience: Conscious Appreciation without Conscious Representation

Good jokes typically really do presuppose a substantial amount of pertinent background information. Understanding such jokes, therefore, typically really does require appreciating this presupposed information and how it figures holistically in making the joke funny. And people quite often really do understand good jokes. All of this is beyond serious dispute.

Introspection, however, is a fallible psychological process. In principle, therefore, the *introspectively apparent* nature of joke-getting experience might differ from its actual nature. Nevertheless, the vividness and immediacy of joke-getting experience confer a strong methodological presumption on the default hypothesis that the deliverances of introspection are reliable concerning both its phenomenal character and its causal role; likewise for other kinds of experience that have such vividness and immediacy. Our discussion here will proceed

on the basis of this default hypothesis about the evidential import of phenomenological introspection as a source of reliable data for theorizing about the nature of conscious experience. And as the discussion proceeds, the overall conception of conscious experience that emerges will exhibit theoretical virtues that reciprocally render all the more plausible the presumptive reliability of phenomenological introspection vis-à-vis those aspects of conscious experience upon which our discussion focuses. So let us get on with it.

When one attends introspectively to one's own experience of getting the babysitter joke, it seems apparent that (on one hand) the experience did include conscious *appreciation* of a substantial amount of pertinent background information and of the holistic funniness-relevance of all this formation, but (on the other hand) the experience did not include actual conscious *representation* of all of this background information and its holistic relevance. Put another way, it seems apparent that in the moment of joke getting, some items of information were being consciously appreciated even though (i) there were no occurrent mental states in one's consciousness whose contents were those items, and *a fortiori* (ii) one's consciousness did not include an occurrent mental state whose content was a complex proposition that incorporates all that information at once while also characterizing how it all jointly contributes to funniness. This appreciation-without-representation aspect of consciousness is what we call 'chromatic illumination'.³

Now admittedly, since the deliverances of introspection are fallible it is at least *possible* that joke-getting experience is a form of experience that actually does include conscious mental states that represent all the pertinent items of background information, and also represent how the relevant information hangs together funniness-wise, flashing through consciousness rapidly and peripherally without one's noticing these states. However, this construal of joke-getting experience not only goes deeply contrary to what such experience seems introspectively to be like (thus violating the methodological presumption in favor of the reliability of phenomenological introspection in such cases), but also is intrinsically extremely implausible on its face. An advocate of such an account therefore would bear a very heavy burden of proof; and meanwhile,

3 It is perhaps somewhat stipulative to deploy the word 'represent', as we are doing here, in such a way that an item of information *I* counts as being consciously *represented* just in case *I* is the content of an occurrent mental state that is present in consciousness. This usage, which is very common in recent and contemporary philosophy of mind, is here meant to be neutral regarding various specific empirical commitments that might get associated with the term 'representation' in the context of theorizing in cognitive science – e.g. commitment to the idea that the items one dubs "representations" are mental states with language-like structure and/or imagistic structure.

it is entirely reasonable to maintain that such a theoretical proposal about the nature of joke getting would itself be a joke.

So we take it that joke-getting experience really has the phenomenal-cum-functional nature that it introspectively appears to have, namely chromatic illumination. It is a form of experience in which *much pertinent background information and its holistic humor-relevance are being consciously appreciated without being represented by any conscious intentional mental state*. The expression ‘chromatic illumination’, originally introduced in Horgan and Potrč (2010) to characterize this aspect of conscious awareness, is a visual metaphor that is helpful in conveying its nature. Consider a visual scene that is illuminated in certain ways by light sources that are not themselves visible (from the observer’s perspective) within the scene, and that significantly affect the overall look of the scene. Think, for instance, of the famous 1892 painting by Toulouse Lautrec, “At the Moulin Rouge,” which hangs in the Art Institute of Chicago. Various figures in the painted scene are illuminated in strikingly different ways – e.g., the women more prominently than the men, one woman by lighting to the left but outside the scene, another woman by lighting from the lower right but outside the scene, a peculiar light-induced greenish tint to some of the illuminated faces that blends with the greens in the background of the scene, etc. The presumptive sources of these distinctive features – lighting of various kinds at various presumptive positions in the presumptive wider environment, producing light with various different chromatic characteristics – are not present in the visible scene. They are not represented. Nonetheless, they are *implicated* in the scene anyway, in the ways that the figures in the scene are chromatically illuminated by those presumptive light-sources.

The directly visible scene presented in a painting – or in a photograph, or on a stage – can be taken as a metaphorical stand-in for what is represented in one’s experience. By contrast, the out-of-view sources of the visible scene’s various presumptive aspects of illumination can be taken as a metaphorical stand-in for what is consciously appreciated without being consciously represented – appreciated by certain phenomenologically distinctive aspects of *how* what is actually represented is represented. And the specific, visible, coloration-features of various persons and objects in the scene – visible features that are presumptively caused by presumptive light-sources that are not themselves visible – are a metaphorical stand-in for features of experience that constitute conscious appreciation of information that is not itself being consciously represented.

The expression ‘chromatic illumination’ thus does double duty. In the *process* sense, it captures the idea that information outside of consciousness affects conscious experience itself: information that is not itself present in conscious-

ness nonetheless “chromatically illuminates” it. In the *product* sense, it captures that idea that intentional states that are present in consciousness, and thereby consciously represent their informational content, can have certain features that are conscious manifestations of further information that is not itself present in consciousness – “chromatic-illumination” features. Such features are *how* conscious intentional states represent their contents; the presence of these “how” aspects constitutes conscious appreciation of information that is not being consciously represented.

We maintain, and have argued elsewhere, that introspective attention to the phenomenological character of numerous kinds of everyday experience – including, *inter alia*, action-completion, planning, and belief-formation – seems clearly to reveal the pervasive and ubiquitous presence of what we call chromatic illumination; cf. Horgan and Potrč (2010), Henderson, Horgan, and Potrč (2020), and Henderson, Horgan, Potrč, and Strahovnik (in preparation). Joke-getting experience is just one example, albeit an especially vivid one. Yet this feature of mentality has gone largely unrecognized in philosophy of mind in the analytic tradition, and in recent and current cognitive science. The very idea of chromatic illumination is theoretically novel.⁴

3. Skeptical Doubts, and a Sketch of Our Reply

A reaction one might have, upon being confronted with this novel idea, is to question its intelligibility. The basic worry can be put as follows.

If an item of information *I* is not being represented by a conscious intentional state, then *I* itself isn't *in* consciousness. So, whatever occurrent mental states are in consciousness surely cannot themselves somehow include or constitute “conscious appreciation” of *I*. Thus, the notion of chromatic illumination is not really intelligible.

And a closely related further worry can be put this way:

Granted, if an item of information *I* is operative outside of consciousness without being represented within consciousness, then *I*'s opera-

4 At any rate, this idea is novel relative to analytic philosophy of mind and to cognitive science. Perhaps something like it can be found in Continental phenomenology in the tradition of Brentano, Meinong, and Husserl.

tiveness could include certain effects within conscious awareness itself – including, perhaps, a distinctive conscious feature *F* that would not be present in consciousness if *I* had not been operative *outside of* consciousness. But in such a scenario, *F* would be no more than an epiphenomenal side-effect of *I*'s operativeness, over and above whatever other effects *I*'s consciousness-external operativeness might be generating. *F* would be like the being-on property of a “motor on” light attached to an electric motor: although the presence of electric current makes the motor go and also has the side-effect of causing the light to be on, the light's being on is entirely epiphenomenal vis-à-vis the motor's behavior.⁵

These interconnected worries spawn a challenge, viz., to explain how a feature *F* of conscious experience, a feature that perhaps has a distinctive kind of phenomenal character, could constitute genuine conscious appreciation of certain information *I* without *I* being the content of one or more occurrent intentional mental states that themselves are actually present (however fleetingly or peripherally) in consciousness – i.e., without *I* itself being consciously represented. In the remainder of the present paper we will offer a partial response to this challenge, while leaving further components of our full response for another occasion. In Section 4 we will consider the prototypical functional role of occurrent intentional mental states that are conscious – states whose contents are consciously represented. In Section 5 we will characterize a significantly different prototypical functional role that could well be played by certain phenomenally conscious *features* of conscious intentional states – a role in virtue of which the instantiation of these features would qualify as conscious appreciation of

- 5 This worry is distinct from, and orthogonal to, the generic worry sometimes broached in philosophy of mind about whether *all* phenomenal aspects of mentality are epiphenomenal. Even on the assumption that phenomenal features of conscious experience often are causally efficacious – say, because they typically inherit the causal efficacy of the neurophysical phenomena upon which they supervene, and hence they have the status of supervenient causes – the specific worry here is that chromatic-illuminatory phenomenal features of conscious intentional states would not be related to underlying neurophysical phenomena in a way that would render these phenomenal features causally efficacious. Rather, the worry goes, the real psychological causal efficacy would accrue to *unconscious* mental phenomena that deploy the information *I* – mental phenomena that presumably are supervenient causes themselves, by virtue of the causal efficacy of the underlying neurophysical phenomena on which they themselves supervene – with the upshot being that the accompanying, chromatic-illuminatory, phenomenal features of consciousness are nothing more than epiphenomenal side-effects of the unconscious, *I*-deploying, mental phenomena that are playing a genuine psychological causal role.

background information *I* that is not itself being consciously represented. Such features would constitute a different kind of phenomenal character than the kind which, according to advocates of phenomenal intentionality (ourselves included), constitutes conscious mental representation. In Section 6 we will describe some remaining tasks that also need accomplishing in order to fully address the lately mentioned skeptical doubts, involving matters of physical-to-mental supervenience and supervenient causal efficacy.

4. Conscious Intentional Mental States and their Prototypical Causal Role

What is the prototypical causal role of occurrent intentional mental states that are present in conscious experience? Ned Block (1995) proposed a highly influential answer to this question. He called such states “access conscious,” thereby leaving open the question whether or not conscious intentional states sometimes or always have a distinctive kind of phenomenal character. (Appropriately enough, he used the label “phenomenal consciousness” for phenomenal character.) He characterized access consciousness this way:

A state is access-conscious (A-conscious) if, in virtue of one’s having the state, a representation of its content is (1) inferentially promiscuous (Stich 1978), that is, poised for use as a premise in reasoning, (2) poised for rational control of action, and (3) poised for rational control of speech. (I will speak of both states and their contents as A-conscious.) These three conditions are sufficient, but not all are necessary. I regard (3) as not necessary (and not independent of the others), because I want to allow that non-linguistic animals, for example chimps, have A-conscious states. I see A-consciousness as a cluster concept, in which (3) – roughly, reportability – is the element of the cluster with the smallest weight, though (3) is often the best practical guide to A-consciousness. (Block 1995, p. 231)

And he added this footnote to the end of the passage:

Poised = ready and waiting. To be poised to attack is to be on the verge of attacking. What if an A-unconscious state causes an A-conscious state with the same content?... What this case points to is a refinement needed in the notion of “in virtue of.” One does not want to count the inferential promiscuity of a content as being in virtue of having a state if that state can only cause this inferential promiscuity via another state. I will not try to produce an analysis of “in virtue of.” (p. 245)

Block’s remarks in these passages, we suggest, are very plausible in spirit but

also call for some elaboration and refinement. So we here undertake that task. We begin with several preliminary observations. First, we take it that his proposal concerns – or anyway, *should* concern – intentional mental states that are *occurrent* rather than merely dispositional. Although dispositional mental states might well be readily *accessible* for a given cognitive agent, in the sense that occurrent instances of them can readily occur under suitable elicitation circumstances, presumably a dispositional mental state as such is not a feature of conscious experience. Only occurrent mental states can be present in consciousness. (Being occurrent is necessary for a mental state's being conscious, but not sufficient; presumably, there can be occurrent mental states that are not in consciousness.) Access consciousness should not be conflated with accessibility.

Second, Block says in the first above-quoted passage that he regards his three stated conditions as sufficient, but not necessary, for access consciousness. And he distinguishes access consciousness from phenomenal consciousness in order to leave open the possibility that an occurrent mental state can be conscious in one of these ways without being conscious in the other way, and also to allow for the possibility that some or all kinds of phenomenality are non-intentional. We ourselves, however, are aiming to give a proposed refinement of Block's formulation as a characterization of the *prototypical* causal role of conscious *intentional* states. So the formulation we seek can advert just to consciousness per se, rather than adverting to "access consciousness." (Even if there could be intentional states that are phenomenally conscious without being "access conscious" in Block's sense, the causal role (if any) of such a state would not be prototypical. And even if there are forms of phenomenal character that do not accrue to conscious intentional states, such phenomenal character is not our concern here.)

Third, Block's talk of inference, and of rational control of verbal and non-verbal behavior, is meant to capture the idea that conscious intentional states are poised to produce cognitive and behavioral effects that are *rationaly appropriate in light of these states*, from the cognitive agent's own perspective. (Such effects can be rationally appropriate in this way – i.e., *subjectively*, to the agent – whether or not they qualify as rationally appropriate by suitably objective normative standards.) We will say, of any actual or potential cognitive or behavioral effects that are rationally appropriate in this subjective way, that such effects are *rationalizable* by the agent's pertinent intentional states. And when those intentional states produce such effects *because* these effects are thus rationalizable, we will call this kind of causal process *reasons-guidance*. So in our terminology, we take it that Block's talk of inference, and of rational control

of verbal and non-verbal behavior, is meant to capture the idea that conscious intentional states are poised for reasons-guidance of cognition, and of behavior, that is rationalizable by these intentional states.

Fourth, there is more to an intentional mental state than its content. Prototypically, an intentional mental state comprises two elements: (i) its content, which typically is expressible in public language by a ‘that’-clause, and (ii) what we will call its *intentional mode*, such as believing-so, desiring-so, doubting-whether, wondering-whether, etc. We will call such mode-cum-content states *simple* intentional states.

Fifth, multiple simple intentional states can occur together in combination, to constitute what we will call *compound* intentional states. (We will treat simple occurrent intentional states as limit-case compound intentional states.) A compound intentional state is conscious only if each of its component simple intentional states is itself conscious.

Sixth, reasons-guidance of cognition and behavior often is exerted by a compound conscious intentional state, and in a way that depends not only on the contents of the respective simple states within the compound state but also on the respective intentional modes of those component simple states. One very familiar case in point is the way conscious beliefs and desires, in combination, exert reasons-guided control of intention-formation and action.

Seventh, the following situation can sometimes arise: (i) a compound conscious intentional state M^- (i.e., “ M -minus”) is a proper part of a more inclusive compound conscious intentional state M ; (ii) a potential cognitive or behavioral event E is rationalizable relative to the full combination of the simple intentional states in M^- ; but (iii) E is not rationalizable relative to the full combination of the simple states in M , because of the import of additional simple intentional states that belong to M but not to M^- . (Perhaps these additional states count decisively against E , from the perspective of the cognitive agent who is undergoing M , despite the import in favor of E that comes just from the states that are also in M^- .) Suppose that in such a situation, M causes E , and does so because E is rationalizable by the combination of simple intentional states in M^- . Then in one way this is an instance of reasons-guidance: the states in M^- rationalize E , and these states are in M too. But in another way it is not an instance of reasons-guidance: the total state M includes decisive reasons *against* E . So, in order to characterize the thoroughly holistic kind of reasons-guidance we aim to invoke, we will say this: when a compound conscious intentional state M causes a cognitive or behavioral event, this effect-event is *M -sensitively* reasons-guided only if (i) it is rationalizable relative to the full combination of simple intentional states in M , and (ii) it is caused by

M because it is rationalizable this way. (Thus, in a situation of the kind just envisioned, the event E fails to be M -sensitive reasons-guided, despite occurring because it is rationalizable by M^- .)

Eighth, we take it that what Block calls “promiscuous” poisedness should be understood in the following, richly counterfactual, way. To be promiscuously poised for reasons-guidance is to be poised to combine with other conscious intentional states, *actual or potential*, to constitute compound states that then would be poised themselves to exert suitable reasons-guidance of cognition and action. Those compound conscious states also would be promiscuously poised in the same way – i.e., poised to combine with additional conscious intentional states, actual or potential, to constitute yet-more-complex compound states that then would be poised themselves for suitable reasons-guidance of cognition and action. And so on, iteratively. (Such iteratively promiscuous poisedness is subject to the cognitive system’s limitations regarding the size of compound conscious intentional states that it can instantiate, and might well tend to exhibit progressive performance-diminution as the size increases.)

In light of these observations, we propose the following characterization of the prototypical causal role of conscious intentional states. (This formula and subsequent ones are numbered, to facilitate cross-references.)

- (i) Prototypically, if M is a conscious intentional mental state, then
 - (i) M is defeasibly poised to exert M -sensitive reasons-guidance of cognition and behavior, and
 - (ii) M also is defeasibly poised to combine with any other conscious intentional mental state N (actual or potential) in the following way: if N were to be instantiated along with M , then $(M+N)$ would be promiscuously defeasibly poised to exert $(M+N)$ -sensitive reasons-guidance of cognition and behavior.⁶

Our purpose in giving this characterization is to provide groundwork for characterizing the related, yet importantly different, prototypical causal role of chromatic-illumination features of conscious experience – a matter to which we turn next.

6 The reason why ‘poised’ is modified by ‘defeasibly’ in clauses (i) and (ii) will emerge below, in light of what we will say about chromatic-illumination features.

5. Chromatic-Illumination Features and Their Prototypical Causal Role

In Section 2 we described chromatic illumination as conscious appreciation of background information that is not being represented by any conscious intentional mental state. The idea is that chromatic illumination is a conscious *feature* of occurrent intentional states that are themselves present in consciousness – a feature that is conscious even though the appreciated information is not consciously represented. Chromatic-illumination features, we maintain, have a distinctive kind of phenomenal character, and also have a distinctive kind of prototypical causal role in human cognition.

We will now undertake to characterize this causal role. An adequate characterization should meet two constraints. On one hand, it should make clear how this role differs from the prototypical causal role that would be played by a conscious intentional state that includes, as components, conscious simple intentional states that represent all the pertinent background information. On the other hand, the characterization also should make clear why, when one's experience instantiates a conscious property that plays the prototypical causal role of chromatic illumination, the experience thereby qualifies as conscious appreciation of the pertinent background information; thus, this causal role should suitably resemble the prototypical causal role of conscious intentional states, while yet also differing from it significantly.

To begin with, talk of chromatically appreciated “information” (or “content”) is really too crude, for essentially the same reason that arises regarding conscious intentional states – viz., the fact that a simple intentional state comprises not only a propositional content but also an attitudinal mode. It is more accurate to say that what gets chromatically appreciated are *intentional states* instantiated by the cognitive agent – states that are not conscious. Here too, suitable reasons-guidance of cognition and behavior will depend not just on the propositional contents of the simple intentional states that are being chromatically appreciated, but also on the respective attitudinal modes of those respective states.

We will use the label ‘non-conscious’ for any intentional states that a cognitive agent instantiates (at a time *t*) that are not conscious (at *t*). This category includes any dispositional intentional states of the agent (at *t*) that are not occurrent (at *t*) – since only occurrent intentional states can be conscious. The category also includes any occurrent intentional states (at *t*) that are not present in consciousness (at *t*). We are aiming to characterize the prototypical causal role of a conscious property – a chromatic-illumination property – whose

instantiation (at t) constitutes chromatic appreciation of certain intentional states that are non-conscious (at t).

We will apply the label ‘unconscious’ in a more restricted way, for any intentional states, dispositional or occurrent, that an agent instantiates (at t) that are neither conscious (at t) nor chromatically appreciated (at t). So, on our usage, all unconscious intentional states (at t) are non-conscious (at t), but not all non-conscious states (at t) are unconscious (at t). Rather, some non-conscious states (at t) are chromatically appreciated (at t). Also, on our usage, a compound intentional state is non-conscious (at t) just in case each of its component simple intentional states is non-conscious (at t).

Non-conscious intentional states, like conscious ones, can be either simple or compound. (We will count simple non-conscious intentional states as limit cases of compound non-conscious intentional states – just as we are doing for conscious intentional states.) Also – and importantly – a compound intentional state can be partly conscious and partly non-conscious, by virtue of having both conscious and non-conscious component-states.

We will use the expression ‘smooth reasons-guidance’ for reasons-guidance whose resulting cognitive and behavioral effects in oneself are experienced not as surprising or anomalous – i.e., not as arising “out of the blue,” so to speak – but instead are experienced as the products of one’s own rational agency. (When encountering a cartoon that causes one to laugh, for example, one does not experience one’s laughter-response as having arisen for no apparent reason; accordingly, one does not find oneself wondering why one has responded this way.)

In light of these observations, and with an eye on the above characterization of the prototypical causal role of conscious intentional states, here is our proposed formulation of the prototypical causal role of a conscious chromatic-illumination property F :

- (2) Prototypically, if
- (i) $(M+M^*)$ is a compound intentional state consisting of a conscious component-state M and a non-conscious component-state M^* , and
 - (ii) M , in virtue of instantiating a conscious property F , is chromatically illuminated by M^* ,

then

- (iii) M is poised for smooth, $(M+M^*)$ -sensitive, reasons-guidance of cognition and behavior, and

(iv) M also is promiscuously poised to combine similarly with any other conscious intentional mental state N (actual or potential).⁷

The poisedness and promiscuous poisedness cited in this characterization are different from – and richer than – the kinds of poisedness and promiscuous poisedness that were cited in formula (i) above, because those in formula (2) involve reasons-guidance that is sensitive not only to conscious intentional states but also to non-conscious ones that are being consciously appreciated via the chromatic-appreciation property F . (The reason for the modifier ‘de-feasibly’, in formula (i), is that certain potential cognition or behavior that is rationalizable by M alone might not be rationalizable by $(M+M^*)$, once the relevance of M^* gets accommodated.)

Formula (2) also assigns a kind of poisedness and promiscuous poisedness to the non-conscious state M^* – although, again, a kind that differs from the poisedness and promiscuous poisedness that formula (i) assigns to conscious intentional states. As we will put it: when conditions (i) and (ii) of formula (2) obtain, M^* is *poised for M -supplementation* in light of clause (iii), and M^* also is poised to supplement M *promiscuously* in light of clause (iv). (The chromatic-illumination feature F , instantiated by M , is the conscious manifestation of this promiscuous supplementary poisedness.)

The characterization in formula (2) of the prototypical causal role of a chromatic-illumination property meets the two adequacy-constraints set out above. First, the key *similarity* between (α) the prototypical causal role of a chromatic-illumination feature F whose instantiation by a conscious intentional state M constitutes chromatic appreciation of a non-conscious mental state M^* , and (β) the prototypical causal role that M^* would play if it were itself conscious, is this: the conscious intentional state M is promiscuously poised, by virtue of instantiating F , for smooth reasons-guidance that is content-sensitive not just to M alone but rather to the compound, partially conscious and partially non-conscious, intentional state $(M+M^*)$. This richer, M^* -respecting, promiscuous poisedness accrues to M only because M instantiates the conscious feature F – which is why instantiating F constitutes conscious appreciation of M^* .

Second, the key *difference* between these two prototypical causal roles is

7 A more precise rendering of what is meant by clause (iv) of formula (2) is this:

(iv) if it were the case that

(iv.1) N is instantiated along with M , and

(iv.2) N , in virtue of instantiating a conscious property G , is chromatically illuminated by a non-conscious intentional mental state N^* ,

then it would be the case that

(iv.3) $(M+N)$ is poised for smooth, $(M+M^*+N+N^*)$ -sensitive, reasons-guidance of cognition and behavior.

this: in role (α), M^* *by itself* does not have either of the two poisedness features which, according to clauses (i) and (ii) of formula (1) above, accrue to a conscious intentional mental state. Rather, in role (α), the non-conscious state M^* instead is poised only in a different way – viz., to supplement M in reasons-guidance of cognition and behavior.

For illustration of this difference, consider again the joke-getting experience cited in Section 1 above. In the instant that one comprehends the joke, one's conscious experience becomes chromatically illuminated by numerous items of pertinent background information, at least some of which are not actually being represented in consciousness. To get a sense for this, begin by reflecting on the range of pertinent background information to which hearers would commonly be sensitive. (Individuals may differ somewhat on the specific informational background they possess that comes into play in their specific joke-understanding experience, but the following list probably reflects some common elements.)

1. Teenage girls commonly serve as babysitters.
2. The guy is speaking in a manner recognizable as common and distinctive among some teenage girls.
3. Speech affectations are commonly picked up in periods of extended casual interaction – and particularly from others who are capturing one's special interest.
4. Sexual attraction and the ensuing desire for sexual liaison can occasion the relevant form of special interest and attention.
5. Affairs can make for extended periods of such attention to specific others.
6. The speaker at the bar doesn't realize that he is speaking in a manner that is common and distinctive among teenage girls.
7. This manner of speaking would be somewhat striking in a person of such an age and gender.
8. The person who is said to have figured out that the guy is having an affair with the babysitter is the guy's wife.
9. She would be well placed to notice the recent changes in the guy's speech affectations – and presumably their similarity to those of the babysitter and other teenage girls at the time.
10. The key clue by which she figured out the affair is that he now speaks in a manner that is common and distinctive among teenage girls (and, we may surmise, specifically of the babysitter).
11. One can easily be oblivious to speech patterns that one has acquired by recent interaction with others who exhibit such patterns.

12. The reason he doesn't understand how she figured it out is that he doesn't realize that he now speaks in a manner that is common and distinctive among teenage girls.

Now, as we noted, individuals may vary in the specific background they have. They also may differ in just what elements of this background come to be consciously represented in the course of the (virtually immediate) processing by which they get the humor. But in such processing, some background – including much (or most, or even all) of the information listed above – typically will not be consciously represented and yet will consciously appreciated chromatically in an individual's conscious joke-getting cognition. (Yet further background information – perhaps differing somewhat between different individuals who each understand the joke in subtly different ways – might well figure in such chromatic conscious appreciation too. These could include, for example, subtle possibilities about the speaker that might be suggested by the character of the bar that is pictured in the cartoon. Or the disinterested demeanor of the person subjected to the rant, or the speaker's disheveled business clothing. Or the kinds of conversations typical of after-hours watering holes.) Any such chromatically appreciated information-item is the content of some non-conscious doxastic state M^*_i that is a component of a compound non-conscious intentional state M^* that chromatically illuminates one's conscious joke-getting experience M , and does so via M 's instantiation of a conscious chromatic-illumination feature F .

Very plausibly, one important aspect of the prototypical poisedness-for-reasons-guidance that accrues to any simple intentional state Ψ that is present in consciousness (at a time t) is the following: Ψ is apt to persist in consciousness into the short-term future, in such a way that its presence in consciousness (at t) is accurately ascertainable subsequently, at a moment $t+\Delta$ shortly after t , via recollective introspection. Such accurate recollective ascertainability has a negative aspect too: the *absence* from consciousness (at t) of a token of Ψ also is apt to be detectable subsequently (at $t+\Delta$) via recollective introspection.

One way to trigger such a recollectively introspective assessment, concerning whether or not certain specific simple intentional states were present in one's consciousness at a time t in the very recent past, is to consciously consider this issue introspectively. So, suppose that shortly after you first see the babysitter cartoon and undergo the pertinent joke-getting experience, an interlocutor asks this question: "In the instant that you understood the joke, did your joke-getting experience include conscious thoughts that are expressible by each of the sentences I–12?"

Now, of course the experience of contemplating this question will bring into consciousness occurrent thoughts expressible by each of sentences 1–12. And this contemplative experience will also bring into consciousness the further thought that in the original instant of joke-getting one must have *consciously appreciated* the contents of many of (although perhaps not all of) 1–12, since otherwise one would not have understood the joke. Nonetheless – and this is the crucial point – recollective introspection also delivers the verdict that in that original instant of joke-getting, one was not actually undergoing conscious thoughts expressible by *all* or *most* of 1–12 (even if *one*, or *a few*, of these sentences might express a thought that did enter one’s consciousness in that instant). The verdict would have been different if thoughts expressible by each of 1–12 had all been present in consciousness during the joke-getting experience.

Our remarks in the preceding four paragraphs have focused on how joke-getting phenomenology illustrates a key difference in prototypical causal roles between (on one hand) features of conscious experience that constitute chromatic illumination by simple intentional states that are non-conscious, and (on the other hand) simple intentional states that are present in consciousness. But despite this difference, chromatic-illumination features of conscious mental states certainly still do contribute significantly to the reasons-guidance for which conscious intentional states are promiscuously poised. In the case of the babysitter joke, for example, one’s conscious experience of the joke would not generate amusement if the original experience lacked chromatic-illuminatory appreciation of facts like 1–12. And such chromatic illumination is also the causal basis for the quick and easy generation, within consciousness, of correct answers to probe questions like “Approximately how old is the babysitter?”

We acknowledge that there might be reasons to quibble with the specifics of either or both of our accounts of the two prototypical causal roles we have addressed in this sub-section and the preceding one: that of conscious intentional states (formula 1), and that of chromatic-illumination features (formula 2). But this should not matter for our purposes here. The key thing is that the two respective kinds of prototypical causal role are importantly distinct (while yet being pertinently similar), and that the second role makes good conceptual sense of the notion of chromatic illumination.⁸

8 We acknowledge too, as we remarked at the beginning of this paper, that some in philosophy deny that the intentional aspects of consciousness have any distinctive kind of phenomenal character. (To adapt a famous remark of Max Planck about physics, progress in philosophy proceeds one funeral at a time.) These skeptics about so-called “cognitive phenomenology” (i.e., cognitive *phenomenality*) presumably would also deny that there is a such a thing as chromatic-illumination phenomenality. Nonetheless, they could still accept our contention that conscious intentional states sometimes instantiate conscious features that play the proto-

6. Physical Implementation and Supervenient Causal Efficacy

The upshot of Sections 4 and 5 is that the idea of chromatic illumination is indeed intelligible. But if chromatic illumination actually occurs in human conscious experience, then it needs to be somehow physically implemented in the human brain. I.e., some combination of physical states must occur in the brain that constitutes a physical supervenience base for the presence of a conscious, occurrent, compound intentional mental state M and for M 's instantiation of a conscious chromatic-illumination feature F .

In addition, if chromatic-illumination features actually play the prototypical causal role described in formula (2) above, then the pertinent supervenience relation must ground this kind of causal efficacy. I.e., the pertinent form of supervenience must make it the case that M , *by virtue of instantiating* F , is promiscuously poised to cause smooth reasons-guidance of cognition and behavior that is $(M+M^*)$ -sensitive – where M^* is a compound intentional mental state that is not itself occurrent in consciousness.

Two questions now arise. First, is such physical implementation of chromatic illumination a genuine possibility? Second (and assuming an affirmative answer to the first question), is there a plausible way for such physical implementation to occur? We will call these the “How possible?” question and the “How plausible?” question, respectively.

One important issue here, highly relevant to both questions, is whether mental states and mental properties of any kind can be causally efficacious by virtue of their supervenience on underlying physical phenomena in the brain. It is widely held in philosophy of mind that the answer is affirmative – that mental phenomena often have supervenient causal efficacy, inherited from the causal efficacy of the underlying physical phenomena on which they supervene. Advocates of this position typically defend the view by invoking one or another metaphysical account of causation and causal efficacy. For instance, one prominent account treats causal efficacy as a matter of “difference-making,” understood as diachronic counterfactual dependence. The basic idea is this: barring unusual circumstances (e.g., causal overdetermination, or the presence of a pre-empted potential cause), phenomenon A is causally efficacious vis-à-vis phenomenon B when it's true that if A had not occurred then B would not have occurred.⁹

typical causal role characterized by formula (2). Such an approach might construe a chromatic-illumination feature of a conscious intentional state not as a distinctive kind of phenomenal property (as we ourselves do), but rather as a distinctive kind of *functional* property.

9 One important and influential version of the “difference-making” approach to causation is Woodward (2004).

We ourselves maintain that something along these lines is right, and thus that mental phenomena – including *phenomenal* mental phenomena – can, and do, have supervenient causal efficacy that is inherited from the underlying causal efficacy of the physical phenomena on which they supervene.¹⁰ Given such a difference-making approach to causal efficacy, physical-to-mental supervenience relations can then be a basis for the supervenient causal efficacy of mental phenomena, in the following way. If (i) physical state P physically realizes mental state M on a given occasion (so that M is supervenient on P), and (ii) P causes a certain cognitive or behavioral event E , then (iii) if M had not occurred then P would not have occurred (since M is supervenient on P) and hence (iv) if M had not occurred then E would not have occurred (since P is the physical cause of E). Thus, since E 's occurrence is counterfactually dependent on M 's occurrence, M qualifies as a supervenient mental cause of E .

But, even assuming that phenomenal mental features can, and often do, have supervenient causal efficacy, residual versions of the “How possible?” and “How plausible?” questions still arise about chromatic illumination specifically. Formula (2) of Section 5 says that it is *in virtue of* M 's instantiating F that M is poised for reasons-guidance of cognition and behavior that is not only M -sensitive but also $(M+M^*)$ -sensitive. In order for this to be so, the pertinent kind of supervenience situation, taking place in a cognitive system S with a specific physical morphology (e.g., the physical morphology of a human brain), would need to satisfy the following conditions.¹¹

- (i) S instantiates an occurrent physical state Φ that itself includes an occurrent physical state P .
- 10 The philosophical literature on this topic is voluminous. Much of it involves various proposals for resisting Jaegwon Kim's infamous problem of “causal exclusion,” originally articulated in Kim (1989) and thereafter frequently revisited by Kim himself in many of his subsequent papers and books. One of us, Horgan, in a number of papers has defended a contextualist account of the supervenient causal efficacy of the mental; see, for instance, Horgan (1989, 1999, 2001), and Maslen, Horgan, and Daly (2009).
 - 11 Insofar as mental intentionality might be constitutively dependent on certain features of a creature's past or present ambient environment, such factors would remain fixed in in the pertinent kind of supervenience situation. Our focus is on the *intrinsic* physical supervenience base for the instantiation of an occurrent conscious mental state M and for M 's instantiation of a chromatic-illumination feature F . Also, we intend all our talk of physical-to-mental supervenience, and of supervenient causation, to be construed as compatible with, although not presupposing, psychophysical type-type identity theories. (To the extent that such an identity theory were to obtain, supervenience would really be a relation between physical and mental *concepts* rather than between distinct state-types or distinct properties, and the so-called supervenient causal efficacy of mentality would really be just a species of physical causal efficacy.)

- (ii) An occurrent, conscious, instance of the compound intentional state M is supervenient on P in S , with P physically realizing M .
- (iii) M 's instantiating phenomenal feature F is supervenient on Φ in S .
- (iv) Φ does *not* include any occurrent physical state that physically realizes an occurrent conscious instance of the compound intentional state M^* .
- (v) Φ in S has the causal-role features, vis-à-vis potential cognition and potential behavior, that formulas (1) and (2) attribute to an F -instantiating instance of M .
- (vi) If M had been physically realized by P in S without the co-presence of the further aspects of Φ , and/or of S 's physical morphology, in virtue of which Φ in S has the causal-role features that formula (2) attributes to an F -instantiating instance of M , then M would not have instantiated F , and no occurrent physical state in S (either simple or compound) would have had the causal-role features that formula (2) attributes to an F -instantiating instance of M .

Condition (vi) needs to be part of the supervenience situation in order that, when M in S causes $(M+M^*)$ -appropriate cognition and behavior, these effects are counterfactually dependent on M 's instantiating F . Such counterfactual dependence is a prerequisite for F 's instantiation by M to be causally efficacious itself vis-à-vis these $(M+M^*)$ -appropriate effects, rather than being epiphenomenal.

But although this kind of counterfactual dependence, obtaining under the conditions (i)–(v), is indeed a necessary condition for such causal efficacy, it is not sufficient. Suppose that the minimal physical supervenience base for M 's instantiating F happens not to include all additional *physical* aspects of the situation, over and above the presence of P itself, that are poised to play a causal-contributory role in the physical causal generation of $(M+M^*)$ -appropriate cognition and behavior. Were this so, then the supervenient instantiation of F by M would be disconnected from those causally contributory, P -supplementing, physical aspects of the situation. This disconnect would render F 's instantiation epiphenomenal vis-à-vis P 's $(M+M^*)$ -appropriate effects, *even though* all of conditions (i)–(vi) obtained.¹² Hence the need for the following

12 Suppose, for instance, that P 's instantiation alone were a minimal supervenience base both for M 's instantiation and for the instantiation of F by M – quite apart from any further aspects of the total occurrent physical state Φ or the actual physical morphology of the cognitive system S . Then the instantiation of F by M would be disconnected from those further aspects, even though some of them would play a crucial causal role in the generation of

further condition, as an additional element of the pertinent kind of supervenience situation.

- (vii) The minimal physical supervenience base for M 's instantiating F in S comprises not only P but also any further aspects of Φ , and/or of S 's physical morphology, in virtue of which Φ in S has the causal-role features that formula (2) attributes to an F -instantiating instance of M .

The residual “How possible?” question asks whether a scenario comprising all of conditions (i)-(vii) is really a coherent conceptual possibility, given that it involves a conscious phenomenal feature F somehow playing an M^* -appropriate causal role even though M^* is not present in consciousness itself. And the residual “How plausible” question asks whether the details of such a scenario can be spelled out in a way that makes actually plausible – and not merely conceptually coherent – that claim that chromatic illumination gets physically implemented in the human brain in the manner of (i)-(vii).

We maintain that the answer to each question is Yes. Explaining why is a task we will undertake in a sequel to the present paper.

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($M+M^*$)-appropriate cognition and behavior This disconnect would render F 's instantiation epiphenomenal. Furthermore, condition (vi) would obtain *vacuously*, since the fact that a P -instantiation by itself would constitute a minimal supervenience base for an F -instantiating instance of M would make it just *impossible*, given the operative form of supervenience, for there to have been an occurrent instance of M , physically realized by an occurrent instance of P , where that M -instance failed to instantiate F .

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CONTRIBUTORS

Axford, Barrie, Professor Emeritus in Politics, Centre for Global Politics Economy and Society (GPES), Department of Social Sciences, Oxford Brookes University, Oxford, United Kingdom.

Ben-Rafael, Eliezer, Professor Emeritus of Sociology, Tel Aviv University, President of the International Institute of Sociology and Chair of the Israeli Association for the Study of Language, Tel Aviv, Israel.

Bokser Liwerant, Judit, Professor of Political Science, Head, The Graduate School at Political and Social Sciences, Universidad Nacional Autónoma de México, National Research Fellow, National Council of Science and Technology, Mexico City, Mexico. Distinguished Visiting Professor, The Hebrew University of Jerusalem, Jerusalem, Israel.

Chadjipadelis, Theodoros, Professor of political Science, Department of Political Science, Aristotle University of Thessaloniki, Thessaloniki, Greek.

Cotesta, Vittorio, Professor of Sociology, Dipartimento di Scienze dell' educazione, Università degli Studi Roma Tre, Roma, Italy.

Gromitsaris, Athanasios, Dr. habil., Chemin du Vierayms 1160, Meteren, France.

Henderson, David, Professor of Philosophy, Department of Philosophy, University of Nebraska, Lincoln, United States of America.

Horgan, Terence, Professor of Philosophy, Department of Philosophy, University of Arizona, Tucson, United States of America.

King, Jeffrey C., Professor of Philosophy, Department of Philosophy, Rutgers University, New Brunswick, United States of America.

Krausse, Reuss-Markus, Dr. phil., ProtoSociology (Journal and Project), Institute of Sociology, Goethe-University Frankfurt am Main, Frankfurt a. M., Germany.

Lang, Stefan, Dr. phil. habil., Project (PI) FWF Lise-Meitner-Program, Department of Philosophy, Faculty of Philosophy and Education, University of Vienna, Vienna, Austria.

Lepore, Ernie, Professor of Philosophy and Cognitive Science, Institute of Philosophy, Rutgers University, New Brunswick, United States of America.

Levine, Joseph, Professor of Philosophy, Department of Philosophy, University of Massachusetts Amherst, Amherst, United States of America.

Marangudakis, Manussos, Professor of Sociology, Department of Sociology, University of the Aegean, Mytilene, Greece.

Nederveen Pieterse, Jan, Melichamp Professor in Global Studies and Sociology, University of California, Santa Barbara, United States of America.

Potrč, Matjaž, Professor of Philosophy, Department of Philosophy, University of Ljubljana, Ljubljana, Slovenia.

Peter, Georg, Dr. phil., ProtoSociology (Journal and Project), Institute of Sociology, Goethe-University Frankfurt am Main, Frankfurt a. M., Germany.

Preyer, Gerhard, Professor of Sociology, Institute of Sociology, Goethe-University Frankfurt am Main, Frankfurt a. M., Germany.

Robertson, Roland, Professor Emeritus of Sociology, Institute of Advanced Studies, University of Pittsburgh, United States of America, and Sociology, University of Aberdeen, Scotland.

Roninger, Luis, Reynolds Professor of Latin American Studies, Wake Forest University, Winston-Salem, United States of America.

Stojnić, Una, Assistant Professor of Philosophy, Department of Philosophy, Princeton University, Princeton, United States of America.

Strahovnik, Vojko, Dr. phil., Associate Professor, Department of Philosophy, University of Ljubljana, Ljubljana, Slovenia.