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Commentary on Jakab's *Ineffability of Qualia*

Zoltan Jakab has presented an interesting conceptual analysis of the ineffability of qualia in a functionalist and classical cognitivist framework. But he does not want to commit himself to a certain metaphysical thesis on the ontology of consciousness or qualia. We believe that his strategy has yielded a number of highly relevant and interesting insights, but still suffers from some minor inconsistencies and a certain lack of phenomenological and empirical plausibility. This may be due to some background assumptions relating to the theory of mental representation employed.

Jakab's starting assumption is that there is no linguistic description of a given experience such that understanding the description would result in someone who has never had the experience being described undergoing an experience of that type. (In terms of the well-known Mary case: No description could reveal what colors are like to Mary.) This is what Jakab means by the ineffability of qualia. And this is Jakab's explanation: Understanding in the standard sense involves our linguistic-conceptual abilities; but our linguistic-conceptual abilities are not involved in undergoing simple sensory experiences; so they cannot deliver knowledge by acquaintance, which means linguistic descriptions of sensory experiences cannot result in someone who understands the description undergoing the experience being described. (We do not agree with the assumption that our linguistic-conceptual abilities are not at all involved in undergoing simple sensory experiences; such processes can be involved in undergoing simple sensory experiences, but they need not be the only thing involved in undergoing simple sensory experiences; in undergoing simple sensory experiences something else is involved which cannot be captured by descriptions. The crucial point is that descriptions do not give us knowledge by acquaintance.)

Jakab argues that the ineffability of qualia results from representational and computational mechanisms in the mind-brain. According to his explanation many sensory experiences are syntactically unstructured or representationally atomic; their function is just to distinctively indicate certain external state of affairs, but not to systematically map their structural attributes. If syntactic structure is present and if (with a certain degree of reliability of a "probabilistic link"; see p. 42) it maps a certain pattern of relations in the external world then this structural information about the world can be expressed in language. Jakab explains that limits of expressibility as in the case of qualia are tied to the limits of the information represented by some state. In his opinion the ineffability of qualia arises out of their limited representation of information - these limits in representing information correspond to the missing structuring of qualia or sensory experiences, and unstructured states are ineffable. The reason for the ineffability of qualia is missing syntactic structure.

To understand fully what this means let us look at Jakab's conceptual toolkit: By complex representations he means a pattern of relations among certain constituents mapping a certain external pattern of relations; complex representations have syntax and constituent structure. Unstructured or atomic representational states are *syntactically* and *semantically unstructured*; they have distinctive physical properties, but these properties only serve as indicators of external states of affairs. Jakab formulates the following conditions on which an experience **E** has constituent structure.

An experience **E** has constituent structure iff it has constituents that stand in specific relations to each other; for something to be a constituent of **E**, it has to satisfy the following two conditions:

(CS1) C_1, C_2, \dots, C_n are *discernible* in **E**. Discernibility means that C_1, C_2, \dots, C_n are *introspectively accessible* on undergoing **E** (hence they can give rise to a verbal report that lists the constituents, or discriminative responses). This personal-level description is interpreted in machine-level terms, thus C_1, C_2, \dots, C_n must be accessible to those processing mechanisms that define access consciousness.

(CS2) Each discernible element C_1, C_2, \dots, C_n is a full-blown experience that can be undergone independently of the other constituents (i.e., independently of "the rest" of **E**).

Assuming (CS1) and (CS2) Jakab offers necessary and sufficient conditions on the expressibility of experiences:

[CN] The experience to be imagined (**E**) has to have constituent structure. Elementary perceptual states can be *recalled as wholes* by activating previously learned associative links; they cannot be *constructed* in imagination.

[SN3] The constituents of **E** have to be known to the subject. This means that they have to be labeled; it is not enough that the subject has already undergone them. For instance, the instruction "Imagine a blue triangle" can help the listener only if, in the listener's mind, the experience of blue is associated with "blue" and some pictorial representation of a triangle is associated with "triangle". If these associations are not in place, the instruction cannot work; e.g., "blue" cannot recall the corresponding perceptual state from the listener's memory.

[SN4] The perceptual modality, which is supposed to perform the imagination, has to be properly trained. This explains why, e.g., a congenitally blind subject immediately after sight restoration cannot visually imagine shapes or complex scenes; she cannot even *perceive* them because her visual system is not yet trained.

In the color domain, all simple sensory experiences satisfy **(CS1)**; they have a dimensional position consisting of hue, brightness, and saturation. But not all sensory experiences satisfy **(CS2)**; a system or subject cannot experience single values of the dimensional position of a simple sensory experience independent of the other two values (it cannot experience hue without saturation and brightness). Jakab distinguishes having elementary color experiences (yellow, red, green, blue, black, and white) and having nonelementary color experiences, as, for example, orange, which is composed from yellow and red. While nonelementary color experiences have constituent structure [they satisfy conditions **(CS1)** and **(CS2)**] elementary color experiences fail to have constituent structure [they do not satisfy condition **(CS2)**]. Jakab assumes that the constituent structure of nonelementary states is representationally irrelevant. Elementary color experiences are ineffable because they do not meet condition **(CN)** of the necessary and sufficient conditions on the expressibility of experiences; they do not have constituent structure (hue, saturation, and brightness cannot be undergone independent of each other).

For **(CN)** to be met in the case of elementary color experiences a subject must have undergone the experience before. But even if a subject has undergone elementary color experiences, they are still not expressible in language. In Jakab's opinion the reason is this: If we describe red, we are basically confined to the hue dimension itself; unique red has no constituent structure, only one of the dimensional positions of red seems to be relevant to its intrinsic character; but all that a description can convey on the intrinsic character of redness is that it is unmixed, unstructured, or unitary. Unique hues lack constituent structure; therefore it is not possible to extract any relevant information from elementary color-experiences that could be coded in language (a perceptual state having constituent structure is a necessary condition on the expressibility of that state in language). Any coupling between a linguistically coded structure and a perceptual state will turn out to be arbitrary (in the case of unique hues). Any representational structure, conveyed by a description, will mismatch equally well with the unstructured experience of a unique hue.

So Jakab's explanation of the ineffability of qualia is based on the assumption that it is syntactic structure that sets up the limits of expressibility; absence of syntactic structure entails representational atomism. We agree with Jakab's starting assumption that there is no linguistic description of a given experience such that understanding the description would result in someone who has never had such an experience undergoing an experience of that type. Ineffability is an interesting and relevant feature of simple sensory content, and a representationalist analysis certainly is promising. But within this framework of agreement there are a few points on which we want to raise questions.

First, it is at least questionable that missing syntactic structure causes the ineffability of qualia. It seems that even if qualia would have syntactic structure, the only thing expressible by language would be this syntactic structure, but not the experiential content. Imagine a situation in which qualia have syntactic structure: Orangequalia, for example, have syntactic structure, they satisfy conditions **(CS1)** and **(CS2)**, and they are composed from red and yellow; but in spite of having syntactic structure,

orangequalia are not expressible in language. Jakab explains that the reason for the ineffability of an orangequalia is that red and yellow do not have syntactic structure. Now assume that red and yellow *have* syntactic structure: Yellow could be composed from experiences Z_1 and Z_2 , and red could be composed from experiences Z_3 and Z_4 . We would end up with the following situation: (a) Either $Z_1 - Z_4$ have themselves syntactic structure and satisfy conditions **(CS1)** and **(CS2)** or (b) they do not have syntactic structure like elementary color experiences in Jakab's account. In case (b) we again end up with ineffability, because according to Jakab's explanation $Z_1 - Z_4$ lack syntactic structure. In case (a) things are not so easy: We also end up with ineffability if the further components of $Z_1 - Z_4$ are atomic and lack syntactic structure, and we do not end up with ineffability if the further components of $Z_1 - Z_4$ have themselves syntactic structure. At no stage of decomposition of an experience with syntactic structure do we get full expressibility. The reason is this: To get expressibility we have to assume that all the components of an experience with syntactic structure again have syntactic structure *ad infinitum!* So, even if we assume "syntacticity all the way down," at no finite stage of decomposition of an experience with syntactic structure is that experience expressible (in spite of its having syntactic structure). To really get expressibility we would have to stop the infinite regress of decomposition, but then we would again end up with something atomic and with ineffability. This seems to suggest that missing syntactic structure is not the reason for the ineffability of qualia. In other words: even if qualia would have syntactic structure this would not be enough to get expressibility; only the syntactic structure would be expressible.

Second, the notion of representational "atomicity" is slightly unfortunate because it implicitly presupposes an entity that can, in principle, "stand alone," phenomenologically, but possibly even in an ontological sense. An atom is something that is not only indivisible, but, like a substance in the ontological sense, can in principle exist all by itself. A hydrogen atom can be part of an H_2O molecule or part of an H_2S molecule, but at any time it can be reisolated from the "molecular context" of water or hydrogen sulfide. For the conscious experience of color, this is phenomenologically as well as empirically false. In other words, our second question amounts to the claim that **(CS2)** is empirically false for color.

As is well known, under conditions of homogeneous visual stimulation by a *Ganzfeld* the conscious experience of chromatic color vanishes completely. That is, the respective phenomenal content is not a context-invariant property of subjective experience, but one that crucially depends in its existence on a specific perceptual context. If, as Jakab proposes, its "intrinsic" character, e.g., of unitary, phenomenal "red," is taken as a "particular 'value' of a single subjective dimension (hue)," then this dimension is not an absolute dimension, independent of the overall context in which phenomenal experience is generated. In particular, no full-blown experience of phenomenal red can be undergone, if *all* of the visual field is filled with the paradigmatic physical stimulus. Instead, color experience typically vanishes within 3 - 6 min; and in some cases visual experience as such even disappears completely.

What is the resulting phenomenal configuration in these cases? Typically, after a 3-min adaptation, an achromatic field will be described in 80% of the reports, with the remaining 20% only describing a faint trace of consciously experienced color (cf. Cohen 1958, p. 391). Representative phenomenological reports are “A diffuse fog,” “A hazy insipid yellow,” “A gaseous effect,” “A milky substance,” “Misty, like being in a lemon pie,” “Smoky” (cf. Cohen 1957, p. 406), or “swimming in a mist of light which becomes more condensed at an indefinite distance” or the experience of a “sea of light” (Metzger, 1930; and Gibson & Waddell 1952; as quoted by Avant, 1965, p. 246). This shows how a simple sensory content like “red” cannot “stand by itself,” but that it is bound into the relational context generated by other phenomenal dimensions. One prediction following from this is that a homogeneous *Ganzfeld* stimulation of *all* sensory organs would lead to a complete collapse of phenomenal consciousness (originally made by Koffka, 1935, p. 120; see also Hochberg, Triebel, & Seaman 1951, p. 153) or to a taking over by autonomous, internal activity, i.e., through hallucinatory content exclusively generated by internal top-down mechanisms (see, e.g., Avant 1965, p. 247; but also, e.g., ffytche & Howard, 1999; Leopold & Logothetis, 1999). As a matter of fact, even during ordinary chromatic stimulation in a simple visual *Ganzfeld* many subjects lose phenomenal vision *altogether*, i.e., all phenomenal dimensions, including saturation and brightness, disappear from the conscious model of reality. Cohen (1957, p. 406) reported a complete cessation of visual experience in 5 of 16 tested observers. He also presented what he took to be a representative description of the shift in phenomenal content: “Foggy whiteness, everything blacks out, returns, goes. I feel blind. I’m not even seeing blackness. This differs from black and white when the lights are out.”

Individual differences do exist. Interestingly, the fade-out effect is even wavelength dependent, i.e., in viewing a short wavelength, fading periods are long and the additional phenomenal experience of darkness (i.e., of being darker than a nonilluminated *Ganzfeld*) after turning lights off is strong, while just the opposite is true for viewing long wavelengths (with the magnitudes of all three shifts in conscious content (i.e., the loss of chromaticity, brightness, and the addition of darkness after lights are turned off) being linearly related to the logarithm of stimulus intensity; see Gur, 1989). In general, the *Ganzfeld* effect is likely to result from an inability of the human visual system to respond to nontransient stimuli. As Moshe Gur writes: “In the *Ganzfeld*, unlike normal viewing, the ever-present eye-movements do not affect the transformation from the object to the retinal plane and thus the stimulus temporal modulations are faithfully depicted at the retinal level. ... It is the spatial uniformity of the stimulus that assures that although different retinal elements may receive different amounts of light, each element, in the absence of temporal changes in the stimulus, receives a time-invariant light intensity” (Gur 1989, p. 1335).

What does this mean in terms of conceptual constraints for our philosophical concept of conscious color experience, in particular for the ineffability of color experience? In Section 4.2 Jakab, when discussing theoretical option [1] (the constituent structure assumption for binary hues like orange), writes that, for orange, (CS2) amounts to the claim that the experience of red and yellow can be

undergone separately. Second, Jakab reaches an interesting conclusion about the dimensional positions of individual colors as compared to those of phenomenally experienced tones: Because binary, unsaturated hues satisfy both (CS1) and (CS2), they can be said to have “constituent-based dimensional positions.” As originally introduced, however, (CS2) states that for every discernible element of a perceptual experience *E* it is true that it is a full-blown experience that can be undergone independently. We now see how (CS2) is empirically and phenomenologically false for conscious color vision. Therefore the conclusions just mentioned are not tenable as well. Not only is it impossible to experience hue without saturation or brightness, but it is also impossible to experience hue plus saturation plus brightness without an integrated percept - typically segregated from a background. Conscious experience seems to start on the object level, and elementary states in the true sense of the word do not exist.

The underlying philosophical mistake consists in importing the “combinatorial semantics” associated with Fodor’s classical “language-of-thought” approach to mental representation into a representationalist analysis of phenomenal content. Simple phenomenal content (e.g., the color orange) is not related to complex phenomenal content (e.g., the robust, multimodal object in terms of the orange in your hand, which you consciously feel and smell and the weight of which you sense as you view it) in the same manner as elements are related to a set, but like parts are related to wholes. Ineffable forms of simple sensory content are not building blocks or atomic constituents, but attentionally available, discriminable *aspects* of higher order phenomenal wholes (cf. Metzinger, 1995). There is no “machine-level” (see Jakab’s definition of introspectively accessible constituents C_1, C_2, \dots, C_n on p. 16) because human brains simply are not machines (at least not machines with a classic von-Neumann architecture). They are dynamical systems binding features they detect in their environment into perceptual objects by ultrafast, complex forms of self-organization taking place (a) in a non-rule-based representational medium, which (b) unfolds on a subsymbolic level, and (c) at least in perceptual processing “operates” on entities for which the syntax/semantics distinction is not easily applied. Jakab says he wants to apply the Fodorian picture and the notion of an “atomic symbol” to perceptual representation. But the orange in your hand is not a perceptual molecule constituted from perceptual atoms, a mere combination of content-blocks or a bag full of features, it is phenomenally experienced as *integrated* in a much stronger sense. A theory of consciousness has to do justice to this fact or it will be descriptively implausible. The relevant phenomenal content does not result from constituent-structure syntax and a combinatorial semantics, but from a nonlinguistic process that we are currently beginning to understand in a much better way (for a recent review, see Tallon-Baudry & Bertran 1999). Mixture does not imply constituent structure; other theoretical options are open to us: Complex phenomenal content (even if it is subjectively invariant, like the orange in your hand) can be understood as an ongoing, integrated, and holistic *process*, the individual causal components of which do not necessarily have to possess the potential of “standing alone” on the conscious level of representation. Even binary colors, introspectively mixed as they are, cannot “stand alone” - they have

to be integrated into a perceptual object to reach the level of introspective accessibility.¹ Therefore, the conclusion to constituent structure is not a necessary one.

Jakab plausibly differentiates relational and intrinsic similarity, with the latter characterizing phenomenal contents along the same experiential dimensions, and he also points out that a metric of similarity relations within the hue dimension “fails to capture the particular values of the particular subjective (hue) scale... .” However, one should be careful in analyzing this kind of “particularity” as “atomicity” or “constituency” - this simply is a *non sequitur*. Particularity (depending on what we would like to call the level of “granularity” involved in phenomenal content) differs with respect to the higher order mechanism reading out the relevant information. For instance, it differs for attention and for cognition². What appears as a particular value under one mechanism may not do so under another one. A Churchlandian type (see, e.g., Churchland 1986, 1989) of “state-space semantics for phenomenal content” could be more promising because it does more justice to the continuous and extremely fine-grained nature of the real dynamics of the perceiving brain and to the context sensitivity of the states it generates - even if simple, perceptual qualia might then turn out to be “*simply the activation of a conceptual category embodied in a hidden layer that is maximally close to the sensory transducer end of the processing hierarchy*” (Churchland 1998, p. 32). In any case, the second point we want to make is that Jakab arrives at phenomenologically unconvincing results because he unnecessarily imports a classicist computational approach into his background assumptions. Better options are available.

Third, Jakab suggests that the function of representationally atomic sensory experiences is distinctive indication. They indicate the presence of a particular kind of external event with a certain degree of reliability and they are *distinguishable* representational states (for the closely related notion of an “analog indicator,” see Metzinger, 1993; for the concept of “presentational content,” see Metzinger, 1997). As Jakab writes: “One might want to add that A [an atomic state; TM & BW] has to be recognizable on reoccurrence.” But, as Jakab adds, many sensory experiences do not meet this condition, they are not recognizable on reoccurrence; all we can do is to *discriminate* them if we experience them simultaneously. This is an important point, and it may help to differentiate Jakab’s original notion of “atomicity.”

Let us stay with the example of conscious color vision. As Diana Raffman (1995) has shown, we do not possess transtemporal identity criteria that allow us to introspectively reidentify different shades of

² Actually, the situation is much more complicated than this. If “introspective access” is analyzed as “consciously experienced access,” then a single phenomenal object representation will not be enough to yield the full-blown experience of “a self in the act of introspecting”: An ongoing phenomenal representation of a *subject-object relation* is necessary. For the notion of a “phenomenal model of the intentionality relation,” see Metzinger, 2000.

phenomenal color: Due to a limitation of our perceptual memory (Raffman calls this the “memory constraint”), we are not able to reidentify, i.e., *type-identify*, single token experiences. The only exception to this rule is formed by the four pure phenomenal colors, red, yellow, green, and blue. Obviously, philosophers have ignored this simple empirical fact for much too long, and it certainly should function as a conceptual constraint in future theorizing. What it demonstrates is how the notion of “indivisibility” only makes sense when explicitly related to a processing mechanism *for which* some individual token of active sensory content is impenetrable, *for which* it is indivisible, and *for which* it is an atom. To keep things simple, we distinguish only two such metarepresentational mechanisms: attention and cognition. Cognition is a process of mental concept formation, whereas attention is not. Attention is a process of “representational resource allocation” that helps to highlight or “zoom in,” e.g., on a specific currently active color state. Such states then are *attentionally* available, i.e., a subsymbolic process of metarepresentation can read out their informational content. However, for the large majority of non-unary hues, their content is not *cognitively* available, i.e., for the application of a “phenomenal concept.” Because we are systems that possess no internal transtemporal identity criteria for this kind of content, we cannot *recognize* it on reoccurrence. This point may be important in further strengthening Jakab’s original philosophical intuition: According to Raffman these states are not only ineffable in that we cannot *speak* about them, the deeper point is that we cannot even *think* about them. Keeping in mind our previous criticism about the combinatorial approach to perceptual content, let us call these states “attentionally atomic.” They are the atoms of introspective attention; at least at any given time they form the primitive units of color experience. (It is interesting to note how plastic these atoms can actually be under practice, e.g., when undergoing a systematic training in refining your color experience; for instance, when studying the history of art, learning to paint, or during an excursion to the Antarctic or a rainforest). Let us call the unary hues “cognitively atomic.” They are the atoms of introspective cognition; they are the only maximally determinate states that we can reliably type-identify on reoccurrence, by applying a phenomenal concept to them. Jakab does justice to this point, but then goes on to note that different inner “lightbulbs,” which covary with external events while “the processing system” cannot handle them differently and therefore cannot give rise to systematically different effects, do not distinctively indicate those events *for the system*. This conclusion is too strong: If the system is in a situation of pairwise comparison and if the processing mechanism is attention, then they *can* be handled differently and they can be systematically distinguished as well. We *can* distinguish turquoise₃₄ and turquoise₃₅, if presented with both stimuli simultaneously in a laboratory situation. However, if the task is *recognition* after only one of those two color samples is being represented to the subject after a short break, we fail. What mechanism can play what role *for the system* depends on the perceptual context. It may, in joining Jakab in taking a teleofunctionalist, evolutionary perspective on phenomenal content, be interesting to note how it was in precisely those situations in which our ancestors needed fine-grained sensory discrimination (e.g., when telling ripe from rotten fruits), i.e., in a situation where many objects slightly differing in color

are simultaneously present and a quick “on-line decision” has to be made - in which attentional availability would have been helpful in generating systematic, adaptive responses. For memory functions, however, it would have been very uneconomic to increase the computational load on functions of categorization and recall by taking all of the immense informational richness of the actual confrontation with a stimulus source into off-line processing. Atomicity is relative to context and representational mechanism. If the conceptual differentiations introduced above are applied, Jakab’s approach can explain distinctive indication, at least in some perceptual contexts. There is attentional on-line distinction, and there is cognitive off-line distinction. In other words, for conscious color content there are only four maximally determinate cognitive atoms, but thousands of maximally determinate attentional atoms. We tend to see this as a strength and not as a weakness of the human system of color vision. Jakab’s point about format conversion is well taken, but it is interesting to see how ineffability in this stronger sense expands into the realm of the cognitive: We cannot even think about all those maximally determinate shades which are attentionally available to us because we can, in principle, not form the necessary phenomenal concepts.

In closing, let us have a brief look at the notion of a “phenomenal concept.” Let us now turn to the second question, regarding the notion of *phenomenal concepts*, frequently occurring in the philosophical literature [see Raffman, 1993, 1995 (giving further references), Raffman in preparation; Burge 1995, p. 591; Loar, 1990; Lycan, 1990; Rey, 1993; in particular Tye, 1995, pp. 161, 174, 189; 1998, pp.468; 1999, pp. 713; 2000]. First of all, one has to see that this is a terminologically unfortunate matter of speaking: Of course, it is not the concepts *themselves*, which are phenomenal. Phenomenal states are something concrete; concepts are something abstract. Therefore, one has to separate at least the following cases:

- ?? **Case 1:** Abstracta can form the content of phenomenal representations; for instance, if we subjectively experience our cognitive operation with existing concepts or the formation of new concepts.
- ?? **Case 2:** Concepts in a *mental* language of thought could (in a demonstrative or predicative manner) refer to the phenomenal content of mental states, for instance, to primitive first-order phenomenal content, as it is episodically activated by sensory discrimination.
- ?? **Case 3a:** Concepts in a *public* language can refer to the phenomenal content of mental states; for example, to simple phenomenal content in the sense mentioned above. On an object level the logical identity criteria in using such expressions are *introspective experiences*; for instance, the subjective experience of *sameness* mentioned above. Examples for such languages are supplied by folk psychology or philosophical phenomenology.
- ?? **Case 3b:** Concepts in a *public* language can refer to the phenomenal content of mental states; for instance, to simple phenomenal content. On a metalinguistic level, the logical identity criteria applied when using such concepts are publicly accessible properties; for instance, those of the neural and functional *correlate* of this active, sensory content. One example for

such a language could be given by a mathematical formalization of empirically generated data, for instance, by a vector analysis of the minimally sufficient neural activation pattern underlying a particular color experience.

Case 1 is not the topic of our current discussion. Case 2 is the object of the other referenced criticism. We find this criticism very convincing; however, we do not discuss it further here — among other reasons because the assumption of a language of thought is already, from an empirical point of view, highly implausible. Case 3a assumes that we can form rational and epistemically justified beliefs with regard to simple forms of phenomenal content in which certain concepts appear. The underlying assumption is that formal, metalinguistic identity criteria for such concepts can exist which rest on *material* identity criteria, which the person in question uses on the object level to mark the *transtemporal* identity of these objects — in this case, the simple forms of active sensory content — for herself. A fulfilment of those material identity criteria, according to this assumption, is something that can be directly read off from subjective experience itself. This, the thought is, works because in our subjective experience of sensory sameness we carry out a phenomenal representation of this transtemporal identity on the object level in an automatic manner, which already carries its epistemic justification in itself. It is precisely this background assumption which is false in most conceptual contexts: The empirical material seems to show that those transtemporal identity criteria are simply not available to us. It follows that the corresponding phenomenal concepts can *in principle* not be introspectively formed. To put it differently: The phenomenological approach in philosophy of mind, at least with regard to those simple forms of phenomenal content, is due to failure; a descriptive psychology cannot come into existence with regard to almost all of the most simple forms of phenomenal content. The only promising strategy, in order to generate further epistemic progress in terms of a *conceptual* progress, is characterized by Case 3b. The neural and functional correlates of the corresponding phenomenal states can, in principle, provide us with transtemporal identity criteria as well as with those logical identity criteria for which we have been looking. Neurophenomenology is possible; phenomenology is impossible. For the most subtle and fine-grained level in sensory consciousness, we have to accept the following insight: Conceptual progress by a combination of philosophy and empirical research programs is possible; conceptual progress by introspection alone is impossible in principle.

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