

Qualifying Qualia Through the Skyhook Test

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If we are to preserve qualia, one possibility is to take the current academic, philosophical, and theoretical notion less seriously and current natural science and some pre-theoretical intuitions about qualia more seriously. Dennett (1997) is instrumental in showing how ideas of the intrinsicness and privacy of qualia are misguided and those of ineffability and immediacy misinterpreted. However, by combining ideas of non-mechanicalness used in contemporary natural science with the pre-theoretical idea that qualia are special because they are unique, we get a notion of qualia that is acceptable to naturalistic philosophy. The notion of unique qualia is not opposed to the idea that some of the characterizations of qualia have to be qualified. It is the folk-philosophical, academic, notions of theoreticity and conceptuality that have to be modified.

I. Introduction: the Skyhook Test

One aspect of the hard problem of consciousness is that it is nearly impossible to see how a scientific explanation of the brain, be it in terms of the physics or functional roles involved, could give rise to an understanding of how it feels to be in a given conscious state. The feel or quale of a mental state simply seems not to be something that can be read out of, inferred, or even imagined on the basis of a physical description.¹ This difficulty seems to indicate that a naturalist or physicalist theory of mind or of consciousness somehow forces us to explain away the 'feel' of being conscious or to 'quine the qualia' (Dennett [1997]). In Dennett, the quining of qualia gains further momentum from a Darwinian line of thought, which allows for only one Design Space, of ever-increasing forms of complexity in organisms, where the qualities of the mind have to be explained in terms of a continuum from rudimentary elements to a more full-blown version (Dennett [1995]). Design Space is continuous in the sense that everything 'higher' in it can be built out of something 'lower'. Belief in the natural continuum is Dennett's reason for insisting that what he calls cranes (as opposed to skyhooks) should explain all that there is to explain in a scientific way. Let us call the idea that everything, also everything that at first sight seems special, has to fit into the continuum of nature built by cranes 'the skyhook test'. A common idea seems to be that qualia do not pass the skyhook test and therefore must be more or less eliminated, either epistemologically or metaphysically as the case may be.

For instance, Dennett's aim in 'Quining Qualia' is to show that 'conscious experience has no properties that are special in any of the ways qualia have been supposed to be special' (1997, p. 619). It is this claim I argue against. I will claim that Dennett succeeds in showing how *many* of the supposed properties of qualia demand skyhooks for their existence, but this does not mean that qualia are not special in *any* way. All of this, of course, depends on who is doing the supposing. It is by no means clear that the 'apparently special' properties that philosophers typically talk about are the most relevant, or that they best correspond to a pre-theoretical notion of conscious experience. Moreover, the use of the skyhook test implies or presupposes some understanding of the 'natural', and it is by no means clear that an unqualified academic understanding of the natural – something like philosophers' folk physics – is smoothly continuous with results of modern natural science. In the following I suggest that by 'supposing' some less petrified and academic qualities in both qualia and nature the task of the naturalistic philosopher might become easier.

Dennett's concern in (1997) is with some of the characterizations of qualia that seem to make them qualitatively distinctive – such as ineffability, intrinsicness, privacy, and immediacy to consciousness. His aim is to show that each of these properties is questionable or confused. If the characterizations are confused, then the theoretical notion of qualia is empty and useless. While the view of experience presented here is sympathetic to Dennett's quining of the intrinsicness and privacy of qualia, it still suggests a position where some 'specialness' of experience can be maintained with no recourse to skyhooks. To be more precise, there is one feature of qualia missing from Dennett's discussion, namely uniqueness. Qualia are not unique to a philosophically defined subject,² but unique in the sense of being unrepeatable and non-predictable. Pre-theoretically, uniqueness seems to be one of the key requirements in the specialness we attribute to our mental lives, maybe even more so than the fairly sophisticated and technical properties of incorrigibility, intrinsicness, or ineffability. It is not definite that all forms of folk psychology attribute properties of intrinsicness or ineffability to mentality to any interesting or important degree. On the contrary, in everyday life it seems quite natural that qualia depend on extrinsic conditions (coffee tastes different in different company) and that they are freely and precisely analysed (when visiting the doctor or attending an exhibition).

The qualified notion of qualia presented below concurs with Dennett's denial of the intrinsicness and privacy of qualia and results in a different interpretation of ineffability; the qualified qualia are non-private, non-intrinsic (or rather a-private and a-intrinsic), but unique and conceptually ineffable. The notion is quite different from the views of the qualia-defending philosophers that Dennett discusses, so different that it is indeed in many ways closer to Dennett's than to his critics' views. Therefore the argument

will proceed through an examination of Dennett's quining. First, however, we have to discuss some of the notions that will be used.

II. Skyhooks, Cranes, and the Nature of Nature

What exactly are cranes, then, if we are supposed to build all of our understanding of the continuum of nature with their help? Dennett characterizes cranes and skyhooks in a story-like way. Roughly, skyhooks are extra-natural mechanisms, something like *deus ex machina*, and cranes are the opposite: natural mechanisms. Dennett writes:

Cranes can do the lifting work our imaginary skyhooks might do, and they do it in an honest, non-question-begging fashion. They are expensive, however, they have to be designed and built, from everyday parts already on hand, and they have to be located on a firm base of existing ground. Skyhooks are miraculous lifters, unsupported and insupportable. Cranes are no less excellent as lifters, and they have the advantage of being real. (1995, p. 75)

Cranes are the tools to be used in the Design Space to create organisms and artefacts, and the use of cranes can be referred to in crane-like, no-skyhook scientific explanations. For example, in biology sexual reproduction is a crane that is based on the firm ground of genetics. It can be noted that the 'who' who is doing the supposing is already detectable in the expression 'everyday parts already on hand'. Whose everyday and whose hands? We need a more precise characterization of the nature of cranes in order to know what tools are available. In speaking of the Darwinian picture of evolution Dennett writes: 'Each step [in the lifting process in building organisms] has been accomplished by brute, mechanical, algorithmic climbing, from the base already built by the efforts of earlier climbing' (1995, p. 75). Further on he defines cranes in connection with evolution: 'A crane . . . is a subprocess or special feature of a design process that can be demonstrated to permit the local speeding up of the basic, slow process of natural selection, and that can be demonstrated to be itself the predictable (or retrospectively explicable) product of the basic process' (1995, p. 76).

If all we can use in the building process is mechanical and algorithmic, then the prospects for a scientific explanation of qualitative experience are not good. The problem is evident already in the Cartesian historical origin: if *res extensa* and *res cogitans* are defined not only as different but as opposite, a problem of interaction is virtually guaranteed. In very general terms one may see a direct connection between the increase of mechanicalness and decrease of qualitative or subjective features in physical explanation.³ What cranes are available is not a trivial question. Overall, one can detect even a hint of question-begging in the Dennettian programme. For if one starts with

mechanical and algorithmic processes and insists that this is all to be used, then it is small wonder that one ends up with an explanation of consciousness in which there is no room for qualia, because qualia *qua* qualia cannot fill in any slots or roles in mechanical or algorithmic processes. The question is whether all honest, non-question-begging and firmly based cranes in fact are mechanisms or not? More precisely, are they mechanical⁴ mechanisms or not? That is, do we know, in natural science, phenomena and their explanations that are firmly based, honest, non-question-begging but still non-mechanical or unpredictable? If the answer is in the affirmative, then it is possible to build a notion of qualia without involving any skyhooks.

Some of the most interesting features of natural science and natural philosophy during the 20th century were the discussions on indeterminacy, unpredictability, and the implied amechanicality in physics and mathematics.⁵ The discussions are well known, it is enough to note that both contemporary physics and mathematics contain areas that include non-Turing-computable, non-predictable, and non-algorithmic and therefore non-mechanical phenomena and their explanations (Pour-El and Richards [1989], Kreisel [1974]). Philosophically speaking, foundational problems of mathematics, in particular the question of whether mathematical thinking is governed by rules or not, have been the most recalcitrant problems during the last century. In any case, one cannot simply assume that, e.g., mathematical thinking is algorithmic or that one could not have a crane-like non-algorithmic view of mathematical thinking. Moreover, if the non-mechanical phenomena discussed in contemporary physics are part of nature, then nature includes non-predictable and non-algorithmic phenomena. In explaining something like the quantum level double-path experiment (see Albert [1992]), we have to use a crane (Quantum Theory [QT] or relevant parts of it) that does not suppose a firm, predictable, and algorithmic level of nature. In fact, the crane cannot even suppose the level of classical physics or classical logic to hold.

The non-classicality of the quantum level was maybe most emphatically stressed by Niels Bohr and his followers in the Copenhagen interpretation of quantum mechanics, where the notion of complementarity was introduced.⁶ The concept of complementarity is intended to highlight the fact that there cannot be one predictable and algorithmic explanation of a quantum phenomenon. If we take contemporary views on quantum physics seriously, then the continuum of nature contains phenomena that we have to explain in ways that do not suppose a mechanical, completely predictable or algorithmic nature of nature. Only a metaphysical purist would say that those non-mechanical explanations are skyhooky or non-naturalist. First, this means that in naturalistically building up something like qualia we are, in principle, entitled to suppose that something is non-predictable and non-algorithmic. Second, a no-skyhooks explanation of the continuum has to be able to account

for how, exactly, the classical level of predictability and algorithmic processes and other classical concepts arise out of the non-predictable and non-algorithmic level. If the Design Space is continuous and if we cannot assume that the quantum level is completely describable as mechanical, predictable, or algorithmic, then the classical level with its strict laws of identity, determinacy, and atomistic properties seems quite special, maybe even in need of skyhooks. For example, the ideas of correspondence between the classical and quantum worlds, or of complementarity, are awfully close to being skyhooks, because they simply assume that ‘we’ have to use the classical level language in addition to the quantum level language.⁷ Similar considerations hold for nearly all the explanations of the relationship between quantum mechanics and the classical level. Even the Bohmian ontological interpretation of quantum mechanics that in some sense does propose determinate, computable, and algorithmic trajectories for particles in the quantum world does not see nature as a whole as completely mechanical, quite the contrary (Bohm and Hiley [1995]). If we do not want to beg the question, mechanical and algorithmic cranes are, even if in some sense more familiar, suspect with regard to the ‘firm basis’ they stand on. Today, we do not have a unified predictable and algorithmic explanation of nature in terms of physics. Thus the very adherence to mechanical, predictable, and algorithmic cranes is unnecessary baggage if not skyhooky, because it blankly – or metaphysically – supposes that the firm ground must be there, even if the details are missing. On the other hand, taking the continuum of nature seriously means that mechanicalness is not the only way to go. If that is true for some areas of physical nature, why could it not be true for the mind?

III. Asubjectivity and Uniqueness

Let us call asubjective something that comes before the distinction between subject and object. The prefix ‘a-’ is used here to indicate a level where the distinction in question does not apply. If mechanicalness presupposes that there are real, permanent units that interact in determinate and predictable ways, then non-mechanical is something where, for instance, the interaction is not determinate and predictable. ‘Amechanical’, in turn, would designate a level of nature where the distinction between mechanicalness and non-mechanicalness does not apply, because, for instance, there are no real permanent individual units to begin with. In the same way, asubjective experience is a level of experience in which the distinction between subject and object has not yet risen. Because the subject–object distinction is a precondition for truth and the existence of concepts, the asubjective level can

equally well be called *aconceptual*, or, less rigorously, *non-conceptual* or *preconceptual*. *Non-conceptual* content of experience has recently been discussed in a variety of fields (Crane [1992], Cussins [1992, 1990]). The important thing to notice is that it can be expected that *non-conceptual* content is something displayed by cognitive agents such as animals, young babies, simple neural networks, etc., before they are organized enough to maintain a conceptual structure that demands the subject–object distinction. Therefore, in a naturalistic programme conceptual content has to be explained as arising out of *non-conceptual* content. In a similar way, it can be argued that the rise of the subject (and the object) presupposes an *asubjective* level of experience, which is, explanatorily speaking, the ‘firm basis’ onto which the cranes used in building the subject have to be based. Schopenhauer’s notion of *Wille* is maybe one of the most radical and far-reaching philosophical descriptions of a level of *asubjective* experience.⁸ However, such extremities are not relevant here; the point is simply that there is an *asubjective* or *aconceptual* level of experience that can be discussed in a scientifically useful manner, and that this level is in an evolutionary and explanatorical sense more primitive than the *subjective* or *conceptual* level.

If experience is first *asubjective* and secondly *subjective*, then an honest Darwinian explanation has to explain the latter in terms of the former, not vice versa. Contents of *asubjective* and *non-conceptual* experience cannot, for instance, be described as *private* in the usual sense of the word, because the *asubjective* level does not yet contain the distinction between different subjects. The notions of *private* (*subjective*) and *public* (*objective*) do not yet apply to *asubjective* experience. For the same reason the notion of *intrinsicness* is inapplicable. In the case of *non-conceptual* or *asubjective* experience the distinction between external conditions of content, such as the physical organization of the agent, and the semantic content of the experience cannot be made.⁹ Similarly, *non-conceptual* content can be described by using concepts, but it is not itself conceptually effable, because it does not fulfil the *Generality Constraint* for concepts (Evans [1982]) and, consequently, is not systematic and compositional.¹⁰

In his famous article ‘What Is It Like to Be a Bat?’ Thomas Nagel argues that there is a fact about what it is like to be a bat, but that the nature of this fact, unlike the existence of the fact, is not ‘propositions expressible in a human language’ (Nagel [1998, p. 522]). Nagel concludes that realism about the *subjective* realm leads to the idea that there are facts inexpressible in concepts. The same applies to *aconceptual* experience, the existence and explanatory relevance of which can be discussed and described in concepts. However, *aconceptual* experience itself does not consist of propositionally or conceptually expressible knowledge: it is conceptually ineffable. It is good to note that this kind of *asubjective* or *aconceptual* content of experience is also holistic in the sense that the compositional parts (‘atoms’) that make up

conceptual content have not yet been developed. The contents are interdependent in a non-compositional manner.

There are interesting connections between the notions of uniqueness and asubjectiveness. Amechanical levels of nature provide room for genuine uniqueness. We can, for the sake of the argument, take uniqueness in a minimal sense, meaning something that cannot be predicted or repeated at will. A series of coin tosses is unique in this sense. It is quite clear that conceptual structure or conceptual content of experience cannot be unique, because it is, by definition, systematic and compositional, and therefore repeatable at will (barring difficulties of performance). Asubjective experience can be unique because the constraints on the experience are much looser. Furthermore, asubjective experience may be unique in a stronger sense if we say that randomness means non-Turing-computability, for instance, of the kind exhibited by both classical and non-classical physics. However, we need just a minimal condition: aconceptual experience has to have access to random-like uniqueness.

IV. Are Qualia Incommunicable Atomistic Residues?

One of the essential features of Dennett's naturalistic thinking is a kind of holism, for instance about mental states, their recognition, ascription, and role. Not surprisingly, one of the properties of qualia that strikes Dennett as improbable is ineffability, which implies some sort of intrinsicness, which in its turn seems to imply that qualia are 'somehow atomic and unanalyzable' (1997, p. 621). Ineffability means that one cannot communicate the nature of one's qualia to another person. Intuition pump no. 1 in Dennett (1997) is intended to bring out the mistake that leads to a wrong picture of ineffability. The intuition pump illustrates that if some people like it hot and some not quite so hot, it must be the case that the feel or taste of an allegedly same¹¹ thing ('hot') has an identifiable nature that explains the likes and dislikes. In the pump, the conclusion seems to be that it is all right to talk about 'the way something tastes to somebody at some time'. The mistake that Dennett points out on the basis of this pump is that in individuating qualia we have to 'isolate the qualia from everything else that is going on – at least in principle or for the sake of the argument' (1997, p. 620). This is because 'the way something tastes to somebody at some time' seems to be a residual property that is left over when experiences are stripped of everything inessential (1997, p. 621). Thus, this sense of the notion of ineffable qualia seems to presuppose a qualia atomism or essentialism analogous to Husserl's idea of phenomenological essences that indeed sounds anti-naturalistic.¹² Dennett attacks this atomism by claiming that not only are qualia impossible to communicate, they are so atomic as to be unanalysable by introspection. For example, a subject cannot

tell whether his or her qualia are inverted or whether the perceptual mechanisms leading to those qualia have been tampered with (intuition pumps 3–6 in Dennett [1997]; see the discussion of pumps 5 and 6 below).

In Dennett's analysis, the traditional view of ineffability follows because qualia have no inner structure or a more general, holistic context which would help in describing them. In contrast to this, Dennett's own view of ineffability is that a given experience is practically ineffable because (i) the experience has an untested profile in response to perceptual circumstances and (ii) the experience is a highly informative way of thinking (1997, p. 636). Dennett's suggestion implies that the way to effability runs via reduced information content and a guaranteed or familiar way of responding to perceptual circumstances. Entering a mental notion into a holistic web of tested profiles in response to various circumstances raises the level of predictability and therefore possibilities of functional specification and therefore conceptual effability. Dennett is here, in effect, expressing the Generality Constraint for concepts in a different context and with different terminology. This suggests a familiar model of communication according to which what is communicated is a relatively modest and well-defined informational content whose (mis-)interpretation can be checked against a set of behavioural responses. Alternatively, in terms of concepts, what is communicated is conceptual content that is a part of a web of concepts. Effability in this sense requires predictability and reliability. I think that both of these notions of effability, the atomistic and the Dennettian, demand too tight a relationship between what is discussed and the discussion itself. They demand too much in the sense that they suppose that because the communication of qualia would have to be like the communication of concepts and, furthermore, because the communication would have to be reliable and predictable, qualia themselves would have to be structurally and functionally definite. The conclusion does not follow. It is possible to communicate in a relatively reliable and predictable way about non-predictable, non-Turing-computable and non-algorithmic phenomena, as people do in mathematics and physics. The possibility of devising a relatively reliable conceptual (classical) description for some phenomena does not entail that the phenomena themselves behave in a predictable and algorithmic manner.¹³ What it does entail, however, is that we see the explanation as incomplete, complementary or just as a way of organizing experience, and realize that the classicality or conceptuality of the explanation is a property of the explanation – a property 'we' want – not of the explained phenomenon. If qualia could be completely and without residue communicated as parts of conceptual or functional frameworks then they would not be unique, precisely because the conceptual and functional frameworks have a definite structure that is at least in principle repeatable, predictable, and controllable. The classical level descriptions of quantum phenomena are indeterminate, incomplete, or complementary because they

ignore or circumvent the unpredictability and non-mechanicality of the individual quantum phenomenon. It would seem perfectly reasonable and non-skyhooky to expect that a similar incompleteness, complementarity, or indeterminacy is going to characterize every conceptual, theoretical, and reliable communication of qualia. This does not violate our pre-theoretical notion of qualia, because a pre-theoretical notion hardly demands anything like the mechanicalness of academic theoretical and conceptual analysis from a description of experience. Therefore, even if we would have a conceptual, theoretical, reliable, and predictable way of communicating about qualia, that would not necessarily mean that qualia themselves are classical or mechanical phenomena. Consequently, the absence of such a way of communication tells us nothing about the predictability or non-predictability of qualia, let alone their existence.

Conceptual and functional structure that can be reliably communicated ('theory') is, indeed, one of the paradigm cases of things that can be repeated. For what is 'reliable communication' if not the transmission and repetition of structure, be that concepts, functional organization, or patterns of behaviour? If we define uniqueness in a way that presupposes unrepeatability and unpredictability, then complete and reliable communication of unique qualia seems impossible. However, even if qualia are ineffable in this theoretical or conceptual manner, they are not intrinsic or private in the sense that they would be somehow forever locked inside a subject's mind, like the beetle in the box in Wittgenstein's famous example that Dennett mentions (1997, p. 623). There is no beetle in the box for Wittgenstein or Dennett, because the beetle has no role in the functional explanation of the world in terms of public language. What I am suggesting is that there is no beetle in the box because there is no box: the beetle, too, is a non-private, asubjective, and unique experience, which is not shut inside the compartmentalized structures – concepts, functions – of a subject. It is precisely the unrepeatability and non-conceptuality of qualia that make up the possibility of sharing qualia in a non-private and non-intrinsic sphere of experience.¹⁴ This kind of sharing is of course not theoretical and not conceptual, and therefore also not predictable or fully controllable. It is rather something like interpretation, where something new is constantly created in an unrepeatable and creative manner.

The fact that something, in this case the nature or communication of qualia, cannot be conceptually and reliably controlled, the fact that something is unpredictable or random, does not make that something anti-naturalistic, as modern physics shows. Certain non-linear dynamical systems show behaviour that is in principle unpredictable, random, and therefore uncontrollable. Furthermore, quantum mechanics contains an even wilder unpredictability and randomness that cannot be completely talked about in a conceptual manner. A description of, for instance, superposition and collapse

of the wave function has to take recourse to some kind of non-theoretical interpretation, irrationality, or complementary languages (Albert [1992], Heisenberg [1955]). What is at issue here is the precise role neither of randomness in nature nor of non-theoreticity of language needed in modern physics, but rather the fact that randomness and non-theoreticity can be seen as everyday properties on scientists' hands. Certain fields of modern physics are able to cope constructively and fruitfully with the unpredictability and non-theoreticity of quantum phenomena. Some scientists and philosophers are even inclined to claim that QT is the best grounded and most precise of all scientific theories. In this sense unpredictability and non-theoreticity can be included in cranes that can be used in constructing an explanation for phenomena in the Design Space. Therefore, the fact that the 'special' property of uniqueness demands randomness in the physical basis of qualia and non-atomistic non-theoreticity in talking about and interpreting qualia cannot as such count against qualia. Indeed, this kind of speciality is not speciality after all, as it may be seen growing continuously out of the primitive properties discussed in modern mathematics and physics. The cloth of nature contains unrepeatable and unpredictable phenomena with no recourse to skyhooks. The 'speciality' of qualia does not arise from their presumed nature as atomistic 'residual essences' of experience, but rather from the fact that nature contains random uniqueness and that qualia exist on a level at which the mind takes part in this uniqueness. All of this means, of course, that qualia cannot be described in a theoretical language in the same way as conceptual structures are described. However, this impossibility does not show that qualia stand in need of skyhooks or that a non-theoretical (in the sense of complementarity, incompleteness, aconceptuality, or what have you) notion of qualia would not correspond to a pre-theoretical understanding of qualia.

V. Universal Acid in the Mind

The intuition pumps that Dennett presents against qualia are largely based on the assumption that qualia presuppose 'mental atomism' or 'qualia atomism'. Therefore Dennett's pumps are intended to show the untenability of atomistic qualia, not of qualia *per se*, or more particularly, not the notion of holistic, non-private, and unique qualia defended here. Let us take an example. Pump no. 5 is supposed to pump the intuition that qualia are a *bona fide* notion after all, by suggesting that a qualia-inversion could be achieved intra-personally, for example by some neurosurgical operation that inverts visual qualia. If this was possible, there would be a correlation between a neurosurgical operation and a shift in qualia that would be empirically verifiable. Against this direction of intuition flow Dennett presents his intuition pump no. 6, called alternative neurosurgery, where two possible ways of inverting the qualia are

suggested: (i) inverting the information processing in 'early' channels that lead to qualia, such as the optic nerve, or (ii) inverting some memory-access links. A difficulty arises for the person undergoing this kind of neurosurgery, because it is impossible for him or her to tell which of the two operations has been carried out. As Dennett puts it: 'nothing in the subject's experience can favor one hypothesis over the other' (1997, p. 624). Because one operation inverts the qualia and the other only some memory access links, it should be possible to tell which one happened, but it is not. Therefore, the qualia are as 'unknowable to the subject as anybody else's qualia'. This is also because the link via memory is similar to the link via cable in Dennett's intuition pump no 4, where qualia inversion is done in a computerized fashion.

There are several things to be said about this intuition pump no. 6. The first is that the pump can be read not only as suggesting the unknowability of atomistic qualia but also as supporting holistic qualia, i.e. the notion that accessing memory or, better said, creating memories has a qualitative aspect, too. Memory can be seen as a continuous outgrowth of lower level unstructured experience, such as qualia. If this is the case, then the introspective difficulty in telling which of the two operations was carried out is no surprise and no threat to the existence of qualia. A condition for Dennett's thought experiment is that it is possible to do just one operation, either early-on visual inversion or memory-access inversion. There might be empirical reasons for seriously doubting that the condition can be fulfilled, but even if such 'atomistic' operations were possible, the fact that the subject cannot access the physiology of how qualia and qualia inversions arise does not undermine the qualitative aspect of experience. It rather undermines the notion that visual qualia would be an atomistic follow-up of information processing in the 'optic nerve' or any place else in the nervous system. If the subject cannot tell which of the two happened, then that shows that from the point of view of (holistic) qualia the difference is irrelevant. To see this, consider the case of the 'colour-blind painter' discussed by Sacks (1995). In this case, the qualia inversion of colour perception was of another kind, so that colours were not completely inverted (say red for green, etc.) but rather a hue of grey was allocated for every colour. We can guess that the painter is familiar with some well-known monochromatic paintings and may even have reproductions available. Now, facing a monochromatic painting that to us and the painter before the involuntary neural restructuring (due to a car accident in Sacks' story) seemed, say, green, the painter after the restructuring encounters a greyish colour, a colour that the painter knows consciously to be 'wrong', and a colour that does have a feel to the painter (see Sacks [1995, p. 11]). In this situation it is empty philosophical speculation to ponder over the subjective unknowability of the 'memory-access' or 'early channels' cause of the colour inversion or grey conversion. The quale that changes is not a private, atomistic quality, but an unpredictable, holistic, and unique

experience that has close connections with the social and cultural sphere the person finds him- or herself in. The overwhelming depression and change of life-world (with the accompanying inability to access the physiology of the inversion) that the painter encounters in seeing this monochromatic painting does not show that qualia do not exist, but rather that from the point of view of qualitative experience the distinction between qualia *per se* and memory-access or responses to them is spurious. (Moreover, neuroscientific data seem to suggest that physiologically speaking this kind of qualia change can arise for a number of reasons that exist in intermediate levels, not as pure cases of 'visual inversion' or 'memory-access inversion' [see Sacks (1995)]).

There is, furthermore, a certain absurdity in the suggested thought-experiment of alternative neurosurgery. It supposes a kind of modularity in the brain and atomistic granularity in experience that goes against the Dennettian version of Darwinian continuum thought. It is doubtful whether one can in principle, not to speak of practice, change just one thing in the brain without altering anything else. The same goes for experience; it can be doubted whether one really can compartmentalize a change in qualia so that the change does not at least eventually have an effect in other experience, say remembering, judging, etc. If we allow for the kind of distinction between early channels leading to qualia and memory-access to them and accompanying reactions that Dennett takes advantage of in pump no. 6, all kinds of absurd thought-experiments become available. Consider the neurosurgical time-inversion. Neurosurgeons change the order of your memories so that they appear now in reverse order. The memories that previously seemed to be about most distant happenings now present the happenings as most recent and vice versa.¹⁵ There are two ways of doing this: either by (i) changing the time-tags of the memories themselves or (ii) by changing memory-access to the memories. As a subject starting to live your life with reversed remembered time there is no way of telling which of the two operations was carried out. Does this mean that the temporal order of your memories is unknowable to you, and that the notion of temporal order is hopelessly confused? Inverting or changing any major amount of qualia is a unique and global change, changing the whole life-world of the subject as well as her or his personality. Considerations in terms of early-on or late-on operations (tag-inversion or cable-inversion) do not cut the concept of qualia in the right place.

Consider also the neurosurgical belief-inversion. Neurosurgeons change the content of your beliefs so that when you previously believed 'that p' you now believe 'that not-p', and where you previously believed 'that not-q' you now believe 'that q'. This is done alternatively by (i) changing the early-on pathways leading to beliefs themselves or (ii) changing memory-access to beliefs and reactions to them. Does the subjective inability to tell whether what happened was (i) or (ii) mean that the contents of your beliefs are

unknowable to you and that the concept of belief is useless? It is by no means obvious that belief-inversion would be somehow more paralysing or fanciful than qualia-inversion. I do not think that the objection that this kind of belief-inversion would be conceptually impossible because the system of beliefs in question would be false and irrational (and therefore not a system of beliefs) is convincing. First, the objection presumes a strict realist distinction between the world and the subject and his or her beliefs, a distinction that is one of the issues at hand. Second, even granting realism for the sake of the argument, the belief-inversion would be possible for the person whose beliefs are inverted because also the beliefs about rationality, truth, etc., would be inverted. Maybe we should not call it a system of beliefs any longer but rather a system of smeliefs,¹⁶ but still the subject could not tell whether the change from beliefs to smeliefs was caused by early-on inversion or memory-access inversion. Third, if we do not want to beg the question and already suppose that there is a sharp distinction between qualia and beliefs, then we can equally well object to the alternative neurosurgery qualia-inversion by pointing out that it is conceptually impossible because it would imply a false system of qualia (for instance, presenting pain and pleasure in 'wrong' behavioural or environmental connections).

In all of the cases the inability to tell what has happened shows the untenability of atomistic notions of mental content, not the epistemic-cum-ontological ephemerality of all notions of mental experience. Someone might object to this conclusion by saying that qualia are *really* somehow ephemeral features (or residual essences) of experience that one can conceive of inverting, but memories and beliefs *constitute* the self or subject and the world in a way that does not allow for inversion. There is nothing, however, suggesting that one's qualia are not constitutive of selfhood and the world – nothing other than a theoretical prejudice arising from a representationalist picture of the mind. On the contrary, the empirical evidence of relatively limited cases of qualia-change seems to indicate severe implications for an understanding of the self and the world. For instance, in the case of the colour-blind painter mentioned above it is quite clear that the change in qualia brings about a drastic, nearly lethal, change in the self-understanding of the affected person and those close to him.

Interpreted this way, the alternative neurosurgery intuition pump no. 6 seems to favour the idea that qualia are holistic, distributed over the whole of mental life, including its non-subjective part, rather than modular features of some specific brain functions or some experiences. Similar considerations about atomistic or holistic qualia apply elsewhere, too. Consider Dennett's intuition pump no. 7, the case of Chase and Sanborn, two coffee tasters who have for years been checking the quality of a particular brand of coffee. Now, for Chase the coffee still tastes the same, but he does not like it any more. For Sanborn, the coffee nowadays tastes disagreeable, even if it used to be the

best tasting coffee. Dennett goes on to describe three different possibilities of what has happened to the qualia Chase and Sanborn entertain: (i) the qualia (the taste of the coffee) have stayed the same but the aesthetic evaluations have changed, (ii) the evaluations have shifted, or (iii) a little bit of both (i) and (ii). The point is that Chase and Sanborn differ in their own opinion of what has happened. The problem for somebody believing in the existence of qualia is that there probably is no way of telling what has happened. Even if we could devise tests to see how reliable the tasting skills of Chase and Sanborn are these days, there is the further difficulty that 'qualia are supposed to affect our action or behaviour only via the intermediary of our judgments about them, so any behavioral test can give us direct evidence only about the *resultant* of our two factors (qualia and judgment/memory)' (1997, p. 628, original emphasis). Thus there seems to be little possibility of telling the difference between 'attempted qualia renormalization' on the other hand, and 'extended aesthetic evaluation', on the other. If there is no difference, no psychological relevance or work to be done in terms of intentional explanation, then, again, qualia are out unless hung on a skyhook.

However, there is another way of interpreting this example, one that does not entail there is no way that the coffee tastes to Chase or Sanborn. The alternative is to suggest that qualia hunters are again looking for something too small, too atomistic. The fact that we cannot experimentally distinguish between 'attempted qualia renormalization' and 'extended aesthetic evaluation' points out that there is no sharp distinction between qualia and aesthetic evaluation and judgment in the first place. The fact that Chase finds the taste of the coffee the same but his reaction to it different is a mental content that does have a feel, too. Similarly, Sanborn's state of mind that finds the taste disagreeable is qualitative. The quale does not reside in the atomistic essence left over when judgment and other content are taken away, but rather takes part in constituting the overall mental quality. Judgment is a quale, a very complicated and rich one, or perhaps a more or less predictably organized series of qualia.¹⁷ The fact that the qualitative aspect can in some purified cases be ignored in explanation does not show that qualia have to be supported by skyhooks. What it shows is that functionalist intentionalistic explanation is limited to certain quite special, qualitatively impoverished and relatively highly structured parts of experience. If judgments are structured and highly de-randomized qualia, it should come as no surprise that telling judgment apart from qualia is quite difficult if not impossible, or attainable only 'at the limit', as an idealized abstraction.

This more holistic way of seeing qualia and mental content does not go against the pre-theoretical notion of qualia. Experientally, there tends to be a way that making a particular judgment feels like. There are two ways of taking this intuition into account. We could say that there is nothing but qualia in our experience or, alternatively, contend that even the 'highest' and most

purified and structured strata of mentality are contaminated by a qualitative aspect, because they are built out of it. Either way, Dennett's intuition pump no. 7 (Chase and Sanborn) does not show qualia out of the natural world. Moreover, in the case of this intuition pump Dennett writes in a way that suggests the dissolution of the distinction between qualia and judgment. For how could there be a 'resultant' of qualia plus judgment to be behaviourally tested if qualia and judgment were not continuously connected? Dennett continues the above quotation about the resultant by writing: 'In extreme cases we can have indirect evidence to suggest that one factor has varied a great deal, the other factor hardly at all, and we can test the hypothesis further by checking the relative sensitivity of the subject to variations in the conditions that presumably alter the two component factors' (1997, p. 628). How are such 'extreme cases' possible if they do not operate as different points or grades on a continuous scale?

A corroborating conclusion can be drawn from intuition pump no. 9, the experienced beer-drinker. This pump also points, I think correctly, to the false notion of 'intrinsicness' sometimes connected with qualia. A sip of beer presumably does not taste good the first time, but one can acquire a desire and liking for beer. Therefore, 'no one comes to enjoy the way the first sip tasted. Instead, prolonged beer drinking leads people to experience a taste they enjoy, but precisely their enjoying the taste guarantees that it is not the taste they first experience' (1997, p. 630). This, indeed, seems to guarantee that qualia cease to be intrinsic properties, because attitudes or reactions seem to be able to affect or constitute a change in a quale. The 'attitudes and reactions' include the attitudes and reactions of other people – another important feature in the non-intrinsicness and non-privacy of qualia. Moreover, the very fact of reactions and attitudes affecting qualia shows the continuity of mental life: reactions may be evolved and highly predictable but never completely pure of qualia. If reactions were not qualia we would need to explain how non-qualitative structures, reactions or something similar, are able to have an effect on qualia, which presumably would already constitute a solution to the hard problem of consciousness. Again, the intuition pump destroys intrinsic, atomistic qualia, but not the fact that reacting in a particular way to something also feels like something. I want to emphasize that intuition pump no. 9 also points to the unrepeatability and unpredictability – uniqueness – of qualitative experience. The taste of beer changes according to reactivity, attitudes, the presence of other people and so on. Thus there is no definite or fixed taste of beer ('the' taste). The taste of beer may be like a previously encountered taste of, say, beer, but it cannot be strictly identical. There is nothing in the natural world, be that the environment or the brain, that could guarantee such identity, or at least we know of no such guarantee. The beer and the brain are both in some state of constant unpredictable flux. Even the experience of the experienced beer-drinker or the professional

coffee-taster is changing, making the qualia to some extent fluctuating, unrepeatable, and unique. One of the major discoveries of artificial neural network research is that the ubiquity of change does not preclude the possibility of recognition: the taste may be sufficiently similar to prompt recognition and similarity even without identity-preserving structures in the 'outside' world or 'inside' the network (see, e.g., Rumelhart and McClelland [1986], Pylkkö [1998]).

Darwin's universal acid working in favour of continua and against atomistic specialness should be used inside the mental realm, too, in dissolving the distinction between qualia and feeling on the one hand and judgment and reason on the other. Qualia are rudimentary judgments or judgments are developed qualia, no water-tight walls exist between the two. Both are also more or less holistic and non-private and non-intrinsic. The amount of theoreticity and predictability increases when we move from qualia to judgment, so that judgments are more reliably communicated and stand in need of less interpretation, but even the most purified judgment or any other rational theoretical structure needs some interpretation and cannot stand as a self-explaining transparent fact.

VI. Taking Science Seriously

If in the way explained above we interpret Dennett's intuition pumps as supporting holistic qualia and disqualifying atomistic qualia we are faced with a bigger issue. If we grant that judgment, evaluation, and other structured and 'higher' conceptual level phenomena exist, we need to explain those in terms of something simpler, something non-conceptual. This is entirely in line with Dennett's description of Darwinian thought and takes no recourse to skyhooks. The explanation of human experience should handle experience as a continuum where more evolved or complicated forms, e.g., conceptual thinking, are seen as a natural follow-up of lower-level experience, e.g., qualia. It is quite generally agreed that if we see conscious experience as a biological phenomenon, then it is a relatively 'early' phenomenon, appearing in animal forms much before the onset of anything like thinking, propositional attitudes or other higher forms of cognition. In addition, consciousness seems to be present without beliefs, judgments, language and the like. Evolutionistically speaking, language and propositional attitudes seem to be more complex and advanced phenomena than conscious experience. If we take the continuum of nature seriously, this fact alone shows that an explanation of propositional attitudes and language should grow continuously out of an explanation of conscious experience, not vice versa. We ought first to have an explanation of the more primitive 'firm ground' of conscious experience to be able to explain higher cognitive

functions. If we believe in the continuum of nature, then we cannot take a functional description of beliefs, desires, concepts, etc., as a criterion or model for an explanation of conscious experience without begging the question. This, it seems to me, is the basic problem for any functionalist and Darwinist line of explanation.

There are two issues at stake here. First, the direction of explanation in explaining the more structured in terms of the less structured.¹⁸ Second, the very existence of the structured level seems to point out the existence of a less structured level. One cannot just start with a Newtonian–Cartesian notion of mechanical *res extensa* and then build some functional mental structure with cranes, because the notion is already a relatively high-level academic construct that stands in need of grounding with regard to both the micro-physical realm and asubjective forms of experience. One may attempt to build a continuum of functional structure by suggesting that the less structured elements are steps of computation or intentional instantiation with no feel. This, however, neglects the obvious fact that even conceptual thinking is an experience, albeit as purified and structured possibly quite weak and unimpressing experience, and as such stands in need of an explanation in terms of rudimentary experience. The point is, again, that there is nothing unscientific in the uniqueness of qualitative experience, i.e. that no skyhooks are necessary to explain the uniqueness; I am not trying to introduce uniqueness as an unexplained specialness. Qualia are a prime candidate for the basis of a Darwinian experiential explanation of conceptual thinking. In nature, the order is experience first, conceptual thinking second.

More specifically, the above considerations bring up the issue of whether or not in discussing qualia (either while defending or while quining the notion) one who believes in evolutionary thinking is entitled to ‘atomistic qualia’ or the sharp difference between qualia on the one hand and memory, judgment, reaction, etc., on the other. The discontinuity between qualia and reactions to them that Dennett uses in the intuition pumps flies in the face of an evolutionary account of mentality. This discontinuity characterizes the notion of qualia that Dennett is criticizing, but it is also a presupposition behind Dennett’s contention that specialness in qualia stands in need of skyhooks. If unique and non-intrinsic qualia are seen as one of the most primitive aspects of mental life, then there should not be any jump or added specialness to judgment, memory, or reactions. Conceptual mental functions should grow continuously out of qualia. If this is the case, the intertwinement and mutual affectivity of qualia and judgment is no surprise; it is rather an evolutionary necessity. What should be a surprise in need of explanation is the amount to which humans are able to purify or structure their lives so that they experience less qualitatively and ultimately, as an idealization, may come to a point of all-structure and no-qualia.

Taking science seriously might mean accepting that science is potentially more radical than philosophy. Cranes are evolving: only time will tell what cranes will be used in scientific explanation. In any case, presently we have access to notions that provide an opening for unique non-private qualia. To show how qualia are unique, we need to make only a few assumptions that do not seem unreasonable or unscientific. On the contrary, there is an increasing amount of evidence to show their plausibility.

The first assumption is that for something to be unique in the sense of unrepeatability a degree of randomness in nature is required. This is, of course, a philosophical or metaphysical assumption. Why cannot the existence of randomness in nature be proven by empirical experiments? Because given any empirical phenomenon that displays randomness, somebody who wants to deny randomness and unrepeatability can always say that the phenomenon in question is in principle computable, predictable, and deterministic. One could answer that the recourse to 'in principle' predictability and deterministicness is a skyhook, for we do know that in the case of certain dynamical systems or QT there is no humanly possible way of reducing the randomness we observe. The hope for a unified deterministic theory is, if dogmatically applied against notions of randomness, a skyhook.

There are at least two scientific roads to argue for the required kind of randomness in nature. The suggested minimal condition is fulfilled in QT. The measurements of superpositional properties of quantum systems give us statistical or probabilistic results (Albert [1992]). Moreover, the randomness of individual measurements does not seem to be a case of epistemic uncertainty, but a fundamental feature of quantum mechanics itself. The results of a measurement of a given property of, say, an electron can be predicted only statistically. Therefore, a (long enough) series of measurements of superpositional properties of electrons is unique in the sense of being unrepeatability.

The second road, and the one that might be more feasible for cognition, is the randomness encountered in non-linear dynamical systems. In certain kinds of dynamical systems, an exquisite sensitivity to initial conditions makes the prediction – and therefore repetition – of a given future career of the system even in principle impossible. The behaviour of the system is strictly random, as there is no computable way to predict or repeat it. There is a growing body of research suggesting that the human mind can be modelled as such a dynamical system, whence the requirement of unrepeatability randomness would again be satisfied (van Gelder [1998], Globus [1995, 1992]).

Now we come to the second assumption. Randomness has to be experientially relevant. Quantum mechanical indeterminacy may provide an explanation of the uniqueness of experience, if, first, there exist quantum mechanical phenomena in the human central nervous system or the body and,

second, if those quantum mechanical phenomena may make an experiential difference ('can be experienced/are experience'). As we are talking of the continuum of human experience and especially qualia and raw feels, that 'experiential difference' does not even have to be manifest on the level of conscious deliberate thinking. The experiential change may reside on an unconscious or aconscious level, as long as it contributes to experience.

The first part of the assumption is empirical and controversial. At first sight, the brain seems to operate on levels of temperature and size that shut out the possibility of quantum effects. However, several suggestions of possible loci for quantum action have been put forth (such as exocytosis in Beck and Eccles [1992] or microtubuli in Hameroff [1994]). A more roundabout way is the one suggested by Edelman (1992), in that quantum mechanical random effects might play a part in the early development and eventual organization of the brain. The second part of the assumption, namely, that quantum mechanical phenomena in the nervous system can be experienced is, of course, more philosophical and speculative. However, if we suppose that some (classical) physical goings-on of the brain have an effect (give rise to, constitute, subvene, or whatever) on mental functions and experience, then there is no philosophical reason to discriminate against quantum physical goings-on.¹⁹

The second possibility of experiential difference in terms of non-linear dynamical systems seems more promising and less controversial. If certain features of the mind can be seen as non-linear dynamical systems that have a chaotic and unrepeatable nature, then the uniqueness of qualitative experience seems to be a genuine possibility (Skarda and Freeman [1987], Carpenter [1999], Globus [1995, 1992]). This kind of uniqueness through randomness does not have to take any recourse to QT, and thus the controversial issues of the status, relevance, and interpretation of quantum mechanics are avoided. The brain might be a classical system, but there could still be randomness enough for uniqueness of qualitative experience. For instance, in a study of saccadic eye movements Carpenter writes: 'The randomness of reaction times is, in other words, the result of a process of deliberate gratuitous randomization by a neural process within the brain itself – a sort of neural roulette wheel' (1999, p. 20). In Carpenter's view such randomization may provide evolutionary advantage in the form of new discoveries or game-theoretical benefits. It might also provide natural root for the uniqueness of qualitative aconceptual experience.

NOTES

1 Famous formulations are Chalmers (1995) and Nagel (1998).

2 In a Humean vein it could be claimed that a notion of permanent subject (and of permanent object) stands in need of skyhooks anyway, but that is another matter.

- 3 Nagel (1998, pp. 520–1) discusses the phenomenon in terms of moving away from a single point of view (subjectivity) to a view from ‘nowhere’ (objectivity).
- 4 For ‘mechanical’, see Kreisel (1974).
- 5 An interesting review of the developments in philosophy of mathematics can be found in Chaitin (2000). I will leave the accompanying discussion on incomputability to the side, but see Penrose (1994).
- 6 For an overview, see Heisenberg (1955).
- 7 The idea of correspondence was presented by Bohr (1976).
- 8 Schopenhauer (1986); for a contemporary discussion see Pylykkö (1998).
- 9 Cussins (1990).
- 10 Connectionist subconceptual (subsymbolic) content is discussed from this viewpoint in Fodor and Pylyshyn (1988).
- 11 The question of ‘sameness’ or ‘similarity’ would need an extended discussion that cannot be entered into here. Suffice it to note that in a Humean tradition we can ask what prompts the notion of ‘same’ in a statement like ‘the very same food often tastes different to me at different times’ (Dennett [1997, p. 620]), and sceptically contend that metaphysical issues are involved. If the food tastes different, seems different, feels different, and in a physical and natural sense is different, why call it ‘the very same’? Again, the nature of the continuum of nature is at issue.
- 12 See Husserl (1970) and the discussion in Dreyfus (1991).
- 13 See also Vadén (1996).
- 14 For the notion of an aconceptual unrepeatable and non-private sphere of experience, see Pylykkö (1998).
- 15 Different kinds of qualitative time inversion might seem absurd, but they are not *that* absurd – they are at least as conceivable and understandable as qualia inversion. Books of science fiction provide good examples.
- 16 The word is from Fodor and Lepore (1992, p. 146).
- 17 Compare A. Damasio’s (1994) way of attributing the rationality of behaviour to an access to emotional content.
- 18 Dreyfus (1992 and 1991) puts forth a famous argument for explaining the theoretical–conceptual cognitive level in terms of the non-theoretical and non-conceptual level.
- 19 The move from classical to quantum mechanics would not, of course, as such help with the hard problem of consciousness, but it could help with taking qualia into a naturalistic philosophy of mind.

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