

# The Oneness of Reality

## Introspective Qualia: Neurophysiology of Brain-Brain Interaction

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### Abstract

The brain is the only piece of evidence from which consciousness and the associated image of reality can be derived through perception and introspection. It is the aim of this paper to introduce a radical change of perspective in conscious cognition by establishing a simple theoretical paradigm based on the observation that: "the observer (the brain) is part of the physical world (the observed) whose representation (qualia) as generated by the brain, includes the representation of the brain itself". We come here for the first time across the concept of qualia as the neurophenomenological representation of the physical world: on the one hand it solves the riddle of how the perceiver can perceive himself, from within, but in so doing it introduces its own transformation into the neurophysiological perception, the introspective qualia, of the brain's neural processes. The self-conscious mind, the feeling of the self, is the introspective quale of the brain's neural processes. Knowledge is thus transferred from the perceived neurophenomenological representations of our in-the-world-ness (sensory perception, somatic sensation, psychic awareness) – qualia – to the neurophysiological perception of neural processes – introspective qualia – that we experience in the wholeness of conscious cognition. Qualia are a Cartesian tool that looks at reality from "without" resulting in its interpretation in terms of Cartesian dualism (mind and body) and cannot therefore solve the mind/body problem, Chalmers' "hard problem". Introspective qualia look at reality from "within" and explain the relationship between mind and brain in its wholeness doing away with the artificial splitting between the conscious mind (*psyche and nous*) and the material body (*soma*). Introspective qualia establish the ontology of first-person experience being relived as a third-person sensation through introspection. This mentalistic view is rooted in a physical fact, that the mind is what the brain "feels". Matter and psyche are two aspects of one reality: conscious cognition, the one and only reality of which we are aware. The mind and its perception are one and the same thing.

**Key Words:** Conscious Cognition, Qualia, Introspective Qualia, Brain States, Mind States, Mind, Brain, Self, Reality.

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### Introduction

When it comes to it, research in A.I. and the associated feelings of what happens (consciousness, the mind, the self, the ego, etc.) it is important to realize that nothing could be felt, perceived, experienced in absence of the brain. No brain, no party.

It is also important to realize that the brain is a material item subject to physical laws and therefore that we will need to explain all its manifestations in terms of chemical processes and classical and quantum physics.

Subject to these two obvious observations, in his ground breaking book published in 1994, (Damasio, 2005) posed that just as movement, emotions and digestion could be

biologically explained, so could consciousness too.

Only when its biological origin can be ruled out, then there is reason to look for an alternative explanation which is otherwise sought in philosophical or religious theories and myths.

We should however be wary not to fall into the physicalist trap and want to explain all in terms of the brain's computational skills. In fact although it is perfectly legitimate to establish a correlation between mentalistic data and neurophysiological processes, this does not warrant the assumption that consciousness will arise from computational neuroscience only.

The rationale being Kurzweil's Law of Accelerating Returns (Kurzweil, 2005) whose conclusion is that within a few decades humanity will reach the Singularity when the whole Universe will develop total consciousness.

Descartes got undue credit for his mind-body dualism: the mind-body problem was already known to the ancient Greeks as documented in Plato's dialogue *Phaedo* and handed down the centuries by religions, an article of faith akin to creationism useful for reward or punishment purposes in another world. Back in 1921 Russell wrote: We are conscious of anything that we perceive (Russell, 2007).

This is altogether not completely true unless we include introspection in the process, what makes it possible, for instance, to distinguish appearance from actual state of affairs. It is however true that without perception there can be no consciousness. This paper extends the concept of perception to include whatever can be experienced by human consciousness in cognition, e.g.: emotion, mood, feeling, discursive thinking, imagery, memory, dreaming, hallucination, sensory perception, somatic sensation and the perception of the "self".

This theory rests on the assumptions that the brain is the seat of perception, where all perceptions are "felt", and that every mental process has a physical grounding and is consistent with the natural sciences (Wilson, 1999).

Based on these assumptions the concept of *introspective qualia* is introduced whereby knowledge is transferred from the perceived neurophenomenological representations of our in-the-world-ness to the neurophysiological perception of the brain's neural processes (the mind).

The concept of introspective qualia has far reaching implications for consciousness and neuroplasticity.

### **Introspective qualia and consciousness**

Perception can be about objects 'out there', it can be about dreams, emotions, memories, mood and all kind of introspective perception and it can be about our own self.

In this last case we speak of *conscious cognition*.

It is assumed that real objects exist 'out there' even if we do not perceive them (Mermin, 1985) but for the sake of cognition some means of perception is needed.

The first source of perception is mediated through our five connections to the outer world, the sensory organs: the skin, the eyes, the ears, the nose and the tongue. They are responsible for the touch, the sight, the sound, the smell and the taste, respectively.

The stimuli derived from the interaction of the sensory organs with the world 'out there' are conveyed to the brain where perception is 'felt'.

The second source of perception is not directly related to the sensory organs: in the case of introspective perception the stimuli are already there, inside the brain.

They are triggered by the brain itself: this is the case with dreams, mood, feelings, emotions, memories.

Further the concept of mind is very important for the third source of perception as well: about our own self which is directly connected to the feeling of being conscious.

The perception of the self is the most tricky one because of it being at the same time an introspective feeling and of being however related to our presence in the world: this results in an ambivalent and apparently incongruent situation best expressed by the juxtaposition of the definition of the 'self' as given by Schrödinger:

*"The reason why our sentient, percipient and thinking self is met nowhere within our scientific world picture can easily be indicated in seven words: because it is itself that world picture. It is identical with the whole and therefore it cannot be contained in it as part of it"* (Schrödinger, 1967), and by a question posed in the Brhadaranyaka Upanisad, 4.5.15:

*"when the Whole has become one's very self [...] who is there for one to perceive and by what means? [...] By what means can one perceive the perceiver?"* (Olivelle, 2008).

This is really the problem because it is believed that we cannot have a phenomenological representation of ourselves other than from the outside (Breuer, 1995) and therefore we seem to be landed in an impasse.

The key to this riddle rests in the incongruity between the question (related to a view from within) and the remark consisting in an outside view of our in-the-worldness. To solve it we will have to reassess the whole picture of how the brain is involved in cognition. In fact the problem arises when the observing system is the same as the system being observed – when, that is, the brain is observing the 'brain'.

It is here, when the mind contemplate itself that these issues come to a head. In the case of a human being who is observing his own thoughts (e.g. through introspection), the fiction of the dynamic separation of mind and matter needs to be reexamined.

The solution of this brain-teaser rests on the observation that *'the observer (the brain) is part of the physical world (the observed) whose representation (qualia), as generated by the brain, includes the representation of the brain itself'*.

The entanglement of observer and observed introduces the quantum dimension in cognition in a natural way: quantum cognition is epistemic cognition including a psychological dimension that cannot be reduced to computability.

The part is the totality, the part has the same cardinality as the totality.

The whole is not the sum of its parts; it is the organizational closure of its parts (Varela, 1978).

It introduces the concept of qualia as generated by the brain and therefore they can be explained by the brain's neural processes.

Because there exists a quale of the brain, it must have a representation of itself, of its own neural processes. This is how the perceiver perceives himself, from within. The representation of itself, the quale of the brain, is the mind, the quale of all qualia, the sum of all our representational perceptions.

The brain therefore can be considered as a sensory organ. The brain 'feels' the mind by perceiving it in agreement with the fact that introspective stimuli are triggered by the brain itself.

In this way the unity of the cognition process is restored by including all kind of perceptual and conceptual qualia understood as those subjective experiences that one can know or become aware of.

We come here for the first time across the idea of qualia defined as the neurophenomenological representation of the physical world (Rudrauf, 2003): we should be wary about this word and handle it with care because when we speak of a neurophenomenological representation of the brain, it means that we are looking at the brain from outside, as on a dissection table. In other words we would be looking at someone else's brain!

In fact to solve the riddle of how the perceiver can perceive himself, we must introduce the perception from within and in so doing introduce its own transformation into the neurophysiological perception – the introspective qualia – of the brain's neural processes.

Introspective qualia are not just qualia plus introspection (Churchland, 1996): they are the neurophysiological perception of the brain's neural processes through which we achieve the neurophenomenological representation of the physical world.

The self-conscious mind, the feeling of the self, is the introspective quale of the brain's neural processes.

It seems therefore fair to assume that the brain, the only piece of evidence that we have, is the only source of knowledge about the physical world, our introspective life and our self.

This mentalistic view is rooted in a physical fact, that the mind is what the brain 'feels'.

It will by now be clear that some kind of global perception is meant and that by this token we are in the position to experience conscious cognition.

*Knowledge is transferred from the perceived neurophenomenological representations of our being-in-the-world (sensory perception, somatic sensation, and psychic awareness) to the neurophysiological perception of the brain's neural processes.*

Although we have no sensation of the inner workings of the central nervous system, we can feel their manifestation in our subjective conscious awareness of physical, introspective and psychological cognition.

Introspection is a form of metacognition that normally raises the question of whether the mind can observe (perceive) itself.

In view of what has been said, such a statement is articulated as a tautology: the mind and its perception are one and the same thing.

Introspection is a first-person experience relived as a third-person sensation.

Introspective qualia establish the ontology of first-person experience.

It is now clear why for the purpose of cognition it is not necessary to know what all possible neural processes in the brain are, whether due to quantum effects or not: whatever they are, they always will be reflected in the introspective qualia, the feeling of our conscious self.

Actually it all happens inside our head: we experience the wholeness of conscious cognition as the neurophysiological perception (introspective qualia) of the brain's neural processes; as soon as we step 'outside' we perceive the neurophenomenological duality splitting reality in matter and mind as represented by qualia.

Qualia are a Cartesian tool that look at reality from 'without' (there is no neurophenomenological interface between our in-the-world-ness and the feeling of what happens): there is indeed an Explanatory Gap in the interpretation of reality in terms of Cartesian dualism (mind and body). Qualia cannot therefore solve the mind/body problem, Chalmers' 'hard problem', they are a product of Cartesian dualism.

Introspective qualia look at reality from *'within'* and therefore the divide between perceived neural processes – both mental and physical – falls and they explain the relationship between mind and brain in its wholeness doing away with the artificial splitting between the conscious mind (*psyche and nous*) and the material body (*soma*) (Jaynes, 1990).

Just like in the case of a Klein Bottle with no inner nor outer side, consciousness is elusive, it has no inner nor outer side. And just as the extra dimension of a Klein Bottle, consciousness emerges as an independent extra dimension when we step into our in-the-world-ness and become aware of *being-there*.

### **Introspective qualia and neuroplasticity**

Neuroplasticity (Damasio, 1999, 2003), (Schwartz, 2003) is basically a matter of brain states *vs* mental states.

The introduction into neuroscience of functional brain imaging technologies has given a reasonably good working knowledge of the role of brain areas in the processing of complex information.

In fact what brain states are is a matter of philosophical debate: “the notion of a brain state is a philosopher’s fiction” (Bechtel, 1999) and “we don’t really have even a clue what such things are” (Polger, 2004), (Brown, 2006) on the one hand, and a matter of uncertain science when a scan of blood flow in the brain is taken as vindication of a subjective mental state, and a way to validate our experience of the world (Goldacre, 2010).

In fact because we can only be aware of the perception of something that is actually happening (neural processes), this is perfectly in line with the tenet that the mind can shape the brain by interposing an intermediary – the brain itself.

And that’s all you need to explain brain changes – one brain state giving rise to another.

Even the vague notion of mindfulness or bare attention has to be paid for in terms of physical activity of neurons other than those involved in focusing on the target of your attention (Schwartz, 2004).

Brain and only brain can affect brain (Begley, 2007): correlational analyses about the relationship between mentalistic data and neurophysiological processes are fully acceptable, these activities are the core of neurophysiological science.

*But, although ‘mentalistic’ data are necessarily causal consequences solely of brain processes: it does not mean that a purely physical description of the mind leads to a deterministic account of it. Deterministic does not necessarily mean predictable especially in view of the quantum effects that are possibly involved in brain processes.*

*If this were not the case, it would be tantamount to assume that quantum effects, because they fall outside of accepted classical mechanical causal relationships, then they would also fall outside of (quantum) physically described phenomena. Quantum effects in the brain that are related to neural processes need not be causally related to the emergence of consciousness or, in other words, they are unlikely to be reflected in conscious experience.*

The concept of introspective qualia explains brain states in terms of neural activity and then only insofar as these can be reduced in their computational dimension (Churchland, 1985).

Reductionism can be a dangerous tool when taken out of its domain of applicability (natural sciences) and applied to human sciences resulting, for instance, in the mind/body quandary that has been with us since time unmemorable.

When Descartes found himself faced with the problem of how to deal with the relation between soul and body, he chose for the reductionist solution separating the two terms of the relation: the thinking substance and the extended substance. But the relation is a synthesis and, in a reductionist approach, the results of analysis cannot be covered over and again by the moments of this synthesis.

With this *'caveat'* about the limits to reductionism it is possible to explore how mind and machine compare or: what is it like to be a computer?

Because a computer is a human creation, knowing what it is like to be a computer it would help to know how our brain works.

In view of what has been said it seems legitimate to ask oneself what kind of a data processing machine (say a computer) our brain (having data processing skills as well) is likely to compare (Bower, 2011), (Lehrer, 2009) not in terms of processing power or of processing speed, but functionally.

What present day computers do is perceiving: a chess-playing computer can be said "to perceive" the state of the match on the chess board. Computers have a memory, they can remember; but they have no insight in the remembrance and therefore they cannot introspect (Vermersch, 2002). This is why computers have to go through all possible moves before coming up with what a human being can "see" intuitively.

The design of a data processing machine determines how we use and how we can use that machine: the fundamental design constraints of the underlying hardware are molding and constraining the software (Damasio, 2003)

By analogy it is possible to state that the neural structure of the brain molds and constrains the mind, with a difference: the brain can mold itself through self-directed neural changes

induced by the application of bare attention or mindfulness.

The brain is a metacomputing device: it can change its neural structure and therefore can adapt its neural activity (the mind) to changing situations (neuroplasticity).

Computers "perceive" but they do not "experience" perception, they do not have qualia in the usual meaning of the word but they might have introspective qualia if a computing machine were to perform a metacomputation (introspection equivalent in conscious cognition) (Mogi, 2003) to detect its own 'circuitry works' (neural processes equivalent).

Again a "view" from within, this time in terms of hardware producing its own software with an opening to neuroplasticity.

## Conclusion

Actually it all happens inside our head: we experience the wholeness of conscious cognition as the neurophysiological perception (i-qualia) of the brain's neural processes.

As soon as we step 'outside' we perceive the neurophenomenological duality of matter and mind as represented by qualia.

Qualia are a Cartesian tool that look at reality from 'without' resulting in its interpretation in terms of Cartesian mind/brain dualism.

i-Qualia look at reality from 'within' and explain the relationship between mind and brain in its wholeness doing away with the artificial splitting between conscious mind (*psyche and nous*) and the material body (*soma*).

An abstraction is made when something not capable of existing in isolation is thought of as in an isolated state. Our 'being-there' by contrast is a totality which can exist by itself alone. From this point of view, consciousness is an abstraction since it conceals within itself an ontological source in the region of the in-itself, and conversely the

phenomenon is likewise an abstraction since it must “appear” to consciousness.

The self, the psyche’s image of totality and wholeness, can be only the synthetic totality of which consciousness, like the phenomenon, constitutes only moments. The concrete is man within the world in that specific union of man with the world which Heidegger, for example, calls “being-in-the-world” (Sartre, 1943).

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