

Chapter III

Qualitative sensations

What is the nature of subjective sense impressions?

1. Types of consciousness

In section I.1 some general definitions of “consciousness” were seen. The psychologist Thomas Natsoulas³⁰ (1983) did a detailed epistemological study of the meanings of CONSCIOUSNESS, concluding that there are six meanings for the term:

- N1:** CONSCIOUSNESS₁: Social use, joint or mutual knowledge, a “con-scious” group, from the Latin *conscio*. Used in the 17th century, as in Hobbes: “When two, or more men, know of one and the same fact, they are said to be Conscious of it one to another”. Someone was “my conscious” if he or she were my accomplice. Asch (1952) spoke of “socially conscious” when people interact and are aware of each other.
- N2:** CONSCIOUSNESS₂: Internal knowledge: possibility of giving testimony about oneself. A knowledge concerning objective facts about oneself, such as whether I did or did not commit a criminal act.
- N3:** CONSCIOUSNESS₃: State of being aware of anything, either an external object or an internal one, or that something is the case. Includes dreams and hallucinations.
- N4:** CONSCIOUSNESS₄: Self-consciousness. Locke: “consciousness is the perception of what passes in a man’s own mind”.³¹ It has a rational or linguistic component.
- N5:** CONSCIOUSNESS₅: Personal identity. The totality of the conscious self, i.e., the totality of impressions, thoughts and feelings of a person.
- N6:** CONSCIOUSNESS₆: The state of being awake, as opposed to the state of coma.

Among philosophers, there are some proposals on how to characterize different *types* of consciousness, which could encompass Natsoulas’ meanings 2-6.³² We will follow a more traditional and broad distinction between four aspects of conscious mental life, which may vary in degree down to an unconscious level or level of automatism.

(1) *Sentience*. First of all, there is phenomenal consciousness, which consists of our passive subjective experience, when we pay attention to the sensations available to us. The immediate phenomenological qualities, *what it is like to be ourselves*. The manner in which a color appears or a tune sounds, the way we feel a pain. The experiential properties of sensations, perceptions, feelings, thoughts, emotions and desires. The field of qualia, of subjective qualities. Traditionally it has been referred to as “sensation” or “perception” (e.g. Leibniz), or “feeling” (Hamilton). Sentience may come in different degrees, from unconscious

³⁰ NATSOULAS, T. (1983). Concepts of consciousness. *Journal of Mind and Behavior* 4: 13-59.

³¹ LOCKE (1694), op. cit. (note 17), Bk. II, ch. I, § 19.

³² See: BLOCK, N. (1994), “Consciousness”, in GUTTENPLAN, S. (org.), *A companion to the philosophy of mind*, Blackwell, Oxford, pp. 210-9 (later online version: “Some concepts of consciousness”, 1996: <http://www.nyu.edu/gsas/dept/philo/faculty/block/papers/Abridged%20BBS.htm>). And also: TYE, M. (1995), “The burning house”, in Metzinger, T. (org.), *Conscious experience*, Imprint, Thorverton (UK), pp. 81-90. Block coined the term “access consciousness”, while Tye defines a “responsive consciousness” which he judges similar to access consciousness. The other three types suggested by Tye are phenomenal consciousness (case 1), of higher order (case 3) e discriminatory, as when someone discriminates a bird from a background of leaves. Block divides case 3 in two: “monitoring consciousness”, which may involve an “internal scanning”, and “self-consciousness”, which includes a notion of the self.

perception up to a perception in which we pay attention to the qualities and structure of the perceptive field (involving reasoning).

(2) **Reasoning.** Reasoning is constantly present in daily life and in philosophy. Involves mental representations and elaborates plans of action. It is the main topic of cognitive science, and generally involves language, although it might take place in pre-linguistic levels. It also comes in degrees, from unconscious reasoning to that involving self-consciousness. Philosophers analyze propositional attitudes, as belief or desire, which involve intentionality, i.e. reference to something (which may or may not exist in the external world), an “aboutness”. Hamilton called this area of consciousness “cognition”, and Feigl “sapience”.

(3) **Deliberation.** Consciousness evolved biologically because of its utility for *action* in the natural and social world. In the traditional division, one speaks of “volition”, and in other contexts “conation” (Hamilton). By “deliberation” one understands consciousness connected to action, but in this category one may take the limit in which an action takes place in an automatic way, without consciousness. Block coined the term “access consciousness” for the conscious deliberation aiming at action, in which mental representations are available for reasoning and for rationally guiding our actions and speech. We have free access to such mental content, available for global control, and which is involved in intentional planning of actions. A functional aspect of consciousness, involved in the intentional planning of actions, and in the issue of free will. Connected to practical reasoning, and also encompasses emotions, which have such an important role in our actions (while also involving feeling).

(4) **Introspection (self-consciousness and individuality).** A combination of phenomenal consciousness and reasoning may lead to a higher-order consciousness (Rosenthal), i.e., a state of consciousness accompanied by the thought that one is in that state, self-consciousness. The latter might constitute a special category, a reflexive reasoning, exemplified by Locke’s phrase, quoted in the previous section. Such introspective consciousness generally involves a concept of *self*, and the ability to use this concept to think about oneself. This is the third issue pointed out by Feigl (1967, p. 136)³³ “in the cluster of mind-body problems”: selfhood (besides sentience and sapience).

“Wakefulness” denotes the state in which an organism is awake and responding to external stimuli, usually with awareness, while “attention” is an intensified state of awareness. Wakefulness excludes the subjective dream states – experienced mainly in REM sleep (with *rapid eye movement*), but also in non-REM sleep –, which are usually classified as states of phenomenal consciousness. A marked state of introspective consciousness during REM dreaming is a basic form of *lucid dreaming*, but there are also lucid dreams in which access consciousness is activated, allowing one to control the events in the dream.

2. Animal consciousness

The distinction between types of consciousness is important in the discussion of consciousness in animals. One assumes that introspective consciousness is shared only by the most intelligent animals, and that humans have the highest level of self-consciousness (involving sophisticated language and symbolic thought). A proposed criterion for self-consciousness is the test of looking in a mirror with a spot on the face: babies under 1½ years old don’t put their hand on the spot, nor do most mammals.

³³ FEIGL, H. (1967), *The “mental” and the “physical”: the essay and a postscript*, U. Minnesota Press, Minneapolis; quote is from the postscript: “Postscript after ten years”, pp. 135-69. The original version of the essay: FEIGL, H. (1956), “The ‘mental’ and the ‘physical’”, in Feigl, H.; Scriven, M. & Maxwell, G. (eds.), *Concept, theories, and the mind-body problem* (Minnesota Studies in the Philosophy of Science, vol. 2), U. of Minnesota Press, Minneapolis, pp. 370-497. ROSENTHAL, D.M. (1986). “Two concepts of consciousness”, *Philosophical Studies* 49: 329-59.

On the other hand, it is reasonable to accept that phenomenal consciousness is present in many classes of the animal kingdom. A group of neuroscientists announced in 2012 the Cambridge Declaration on Consciousness:³⁴

The absence of a neocortex does not appear to preclude an organism from experiencing affective states. Convergent evidence indicates that non-human animals have the neuroanatomical, neurochemical, and neurophysiological substrates of conscious states along with the capacity to exhibit intentional behaviors. Consequently, the weight of evidence indicates that humans are not unique in possessing the neurological substrates that generate consciousness. Nonhuman animals, including all mammals and birds, and many other creatures, including octopuses, also possess these neurological substrates.

To denote the more basic stages of consciousness during biological evolution, and also to refer to the first stages in the development of consciousness in fetuses or babies, one uses terms like “primary”, “original”, “core” or “creature consciousness”.³⁵ We will use *primary consciousness*.

The answer to the questions of when primary consciousness arose in biological evolution, and when in human development, is closely related to the answer to the question “what is the immediate brain correlate of phenomenal consciousness”. In the literature, there is no consensus on the question of when primary consciousness arose in evolution. Some associate primary consciousness only with amniotes (reptiles, birds, and mammals), others extend it to vertebrates, and there are also strong arguments for the thesis that cephalopods (octopuses, etc.) have primary consciousness. Finally, there are scientists who argue that even insects have some form of subjective experience.³⁶

Assuming that phenomenal consciousness appears first in the phylogenetic lineage and in ontogenetic development, it is reasonable to assume that it is involved in the establishment of introspective consciousness, which motivates us to focus our attention initially on phenomenal consciousness. On the other hand, evolutionary reasoning would give priority to the evolution of deliberative consciousness, which is directly related to the organism’s fitness in its natural and social environment.

3. The doctrine of secondary properties

Let us assume a basic distinction between mind and the external world, even though one might argue that such a division is oversimplistic. But we will use this division to point

³⁴ “The Cambridge Declaration on Consciousness”, available online, was written by Philip Low and edited by Jaak Panksepp, Diana Reiss, David Edelman, Bruno Van Swinderen, Philip Low and Christof Koch.

³⁵ The term “primary consciousness” is used by EDELMAN, G.M. (1992), *Bright air, brilliant fire: on the matter of the mind*, Basic Books, New York, p. 112, but had already been used by Hodgson (1878). J.S. Mill employed the term “original consciousness”. “Core consciousness” is used in p. 112 of DAMASIO, A. (2000), “A neurobiology for consciousness”, in Metzinger, T. (ed.), *Neural correlates of consciousness: empirical and conceptual questions*, MIT Press, Cambridge (MA), pp. 111-20. “Creature consciousness”, appears in p. 729 of ROSENTHAL, D.M. (1992), “A theory of consciousness”, in: Block, N.; Flanagan, O. & Guzeldere, G. (eds.), *The nature of consciousness: philosophical debates*, MIT Press, Cambridge (MA), pp. 729-54.

³⁶ In amniotes: CABANAC, M.; CABANAC, A.J. & PARENT, A. (2009), “The emergence of consciousness in phylogeny”, *Behavioral Brain Research* 198: 267-72. In fish: SNEDDON, Lynne U. (2011), “Pain perception in fish: evidence and implications for the use of fish”, *Journal of Consciousness Studies* 18: 209-229. In cephalopods: SHIGENO, S.; ANDREWS, P.L.R.; PONTE, G. & FIORITO, G. (2018), “Cephalopod brains: an overview of current knowledge to facilitate comparison with vertebrates”, *Frontiers in Physiology* 9: article 952, pp. 1-16. In insects: BARRON, A.B. & KLEIN, C. (2016), “What insects can tell us about the origins of consciousness”, *Proceedings of the National Academy of Sciences, U.S.A.* 113: 4900-08.

out that there is a difference between a thing in the outside world and the perception or memory of this thing in our mind (this is a “realist” thesis, which is opposed to an “idealism”, according to which everything is in our mind). We may therefore say that there are *things* or bodies in the world, and perceptions, sensations, ideas or representations of these things in our mind.

The doctrine of the *primary and secondary properties* (or simply “secondary properties”) is based on the distinction between (1) our perceptions or representations of geometrical and mathematical properties of external bodies, like figure, size, number, texture, motion, and (2) the perceptions of the external world by means of colors, sounds, smells, tastes and the sensations of touch. The central thesis of this doctrine, developed by Galileo, Descartes, Boyle and Locke, is that *there is a similarity* between primary properties (in the outside world) and its geometrical representation, while there is no similarity at all between a qualitative sensation, like a color or a smell, and the (secondary) properties of the world that cause in us these sensations. The only connection between secondary properties and qualitative sensations would be *causality*. This is an internalist conception (section II.9) regarding qualitative sensations.

	MIND	EXTERNAL WORLD
(1)	Geometrical ideas (figure, number, etc.)	Primary properties
(2)	Qualitative sensations (colors, etc.)	Secondary properties

Table III.1: Simplified scheme of the representation in our minds of the properties of the external world. The doctrine of secondary properties holds that there is a similarity between the two items in line (1), but not between the two items of line (2).

Aristotle had already distinguished between what he called “common” sensibles (“movement, rest, number, figure, magnitude”, *De anima*, II, 6, 418a17) and “special” objects of perception (“color is the special object of sight, sound of hearing, flavor of taste, while touch discriminates more than one set of different qualities”, 418a11).

What happened in the 17th century, with the birth of modern science, was the “mechanistic” notion (see section II.3) that the world only consists of physical bodies of a geometrical nature, and that their properties are only faithfully represented by mathematical ideas, while qualitative sensations are only present in our minds, not being similar to anything in the external world. According to Galileo, in *The assayer* (1623):

To excite in us tastes, odors, and sounds I believe that nothing is required in external bodies except shapes, numbers, and slow or rapid movements. I think that if ears, tongues, and noses were removed, shapes and numbers and motions would remain, but not odors or tastes or sounds. The latter, I believe, are nothing more than names when separated from living beings, just as tickling and titillation are nothing but names in the absence of such things as noses and armpits.

Descartes³⁷ adopted this distinction in the *Principles of philosophy* (1644, I, § 70): “there are in objects several properties, as size, figure, number, etc., which, as we clearly know, exist [...]”

³⁷ GALILEI, G. (1957), *The assayer*, transl. by S. Drake, in *Discoveries and opinions of Galileo*, Doubleday, New York, pp. 231-280, quotation from § 48, pp. 276-77; Italian original: 1623. DESCARTES, R. (2007), *Principles of philosophy*, trans. J. Veitch, in *The Method, Meditations and Philosophy of Descartes*, Aladdin, New York, 1901, pp. 281-361; Latin original: 1644.

But when we think we perceive colors in objects [...] we easily glide into the error of holding that what is called color in objects is something entirely resembling the color we perceive [...]

John LOCKE (1694)³⁸ also drew this distinction in relation to what he called the “quality” of things, which is “the power to produce any idea in our mind”. The primary qualities of a body “produce simple ideas in us, viz. solidity, extension, figure, motion or rest, and number”, and the secondary qualities “are nothing in the bodies themselves but power to produce various sensations in us [...] as colours, sounds, taste, &c.”

4. Qualia e related terms

Locke’s “ideas of secondary qualities” (§ 12) is what we have called “qualitative sensations”, and is what would be later called “sense data” (MOORE, 1913), “percepts” (RUSSELL, 1927), “raw feels” (FEIGL, [1956] 1967), “phenomenal properties”, or “subjective and intrinsic properties” (DENNETT, p. 43).³⁹

And I think that all past theories have in fact started with sense-data. The Ancients and the Schoolmen called them *sensible species*. Locke and Berkeley called them *ideas of sensation*, Hume *impressions*, Kant *Vorstellungen*. In the nineteenth century they were usually known as *sensations*, and people spoke of visual and auditory sensations when they meant colour-patches and noises; while many contemporary writers, following Dr. C. D. Broad, have preferred to call them *sensa*. (PRICE, 1932, p. 19)

With a similar meaning, “quale” (singular) or “qualia” (plural) was coined by the American philosopher C.I. LEWIS (1929):⁴⁰

There *are* recognizable qualitative characters of the given, which may be repeated in different experiences, and are thus a sort of universals; I call these “qualia”. But although such qualia are universals, in the sense of being recognized from one to another experience, they must be distinguished from the properties of objects. Confusion of these two is characteristic of many historical conceptions, as well as of current essence-theories. The quale is directly intuited, given, and is not the subject of any possible error because it is purely subjective.

The term “qualia” is very close to the concept of “sense-data”, used in the period before World War II in the British (by Moore, Russell, Broad, Price, Ayer etc.) to denote mental objects whose existence and properties are directly known in perception, i.e. that

³⁸ LOCKE, J. (1979 [1694]), op. cit (note 2), Bk. II, Ch. VIII, § 8-10. Since Locke’s term “secondary quality” can be confused with “qualitative sensation”, we choose to speak of “secondary property” when referring to the external world.

³⁹ MOORE, G.E. (1913), “The status of sense-data”, *Proceedings of the Aristotelian Society* 14: 355-81. RUSSELL, B. (2007 [1927]), *Analysis of matter*, Spokesman, Nottingham. LEWIS, C.I. (1929), *Mind and the world-order*, Scribner’s, New York, p. 121. PRICE, H.H. (1932), *Perception*, Methuen, London. DENNETT, D. (1988), “Quining qualia”, in Marcel, A.J. & Bisiach, E. (eds.), *Consciousness in contemporary science*, Oxford U. Press, pp. 42-77.

⁴⁰ LEWIS, C.I. (1929), *Mind and the world-order*, Scribner’s, New York, p. 121. The term “*Quale*” was previously used by Hering, in the German version of his book: HERING, E. (1920), *Grundzüge der Lehre vom Lichtsinn*, Springer, Berlin, p. 12; in English the translation “*qualities*” also appears in p. 12: *Outlines of a theory of the light sense*, transl. L.M. Hurvich & D. Jameson. Harvard U. Press, Cambridge, 1964.

would really have the properties they seem to have. The theories of sense data declined with the linguistic and pragmatic turn of philosophy after the War.

A classic example of quale is the redness of a ripe tomato, that is, the subjective sensation that a normal observer has when looking at a tomato under sunlight. One must distinguish between the properties of the pigments in the tomato, which we might call “red” or “RED-V” (see section I.11), from the subjective sensation of “redness”, or “RED-M”, which is the quale.

Other examples of qualia are the smell of sandalwood, the sensation of a musical note, the pain of stubbing the big toe. A visual scene involves a great number of chromatic qualia. A green after-image, obtained after staring at the red tomato and then looking at a white wall, is also a chromatic quale. Hypnagogic images that appear in the visual field with eyes closed before sleeping also involve qualia. A vivid memory could invoke some set of qualia. An emotion of fear also seems to involve a special kind of quale.

5. Inverted spectrum thought experiment

To emphasize the difference between the (secondary) properties of a thing and the qualia that are generated in an observer, we can imagine the hypothetical situation in which a boy is born with a different perceptual apparatus so that he sees the colors inverted in some order. In the example given by LOCKE (1694, Bk. II, Ch. XXXII, § 15), “if the idea that a violet produced in one man’s mind by his eyes were the same that a marigold produced in another man’s, and vice versa”. That is, imagine a human being who inverts the spectral colors of a rainbow, exchanging violet and yellow: would we be able to discover that his subjective sensation is different? Well, when he was small, and saw a marigold with a bright violet hue, his mother said that it was “yellow”, so from then on the boy started calling “yellow” everything that appeared with a violet subjective hue, communicating appropriately with his friends. In other words, we would be unable to identify such a person (only if he confused two pigments that other people don’t, as a color-blind does).

It is in this sense that a quale comes before language, and cannot be captured by it. Assuming that all human beings are biologically similar, we assume that they all see colors in a similar way as we do, but there is no way of verifying this (at least so far). If a Martian arrived on Earth and asked what is redness, it would be useless to point to a tomato, because the perception that the Martian would have would be completely different from ours.

The possibility of the inverted spectrum thought-experiment is used as an argument against functionalism (section I.5). FODOR (1981, p. 130) explains this in the continuation of the quote presented in section I.6:

It seems possible to imagine two observers who are alike in all relevant psychological respects except that experiences having the qualitative content of red for one observer would have the qualitative content of green for the other. Nothing about their behavior need reveal the difference because both of them see ripe tomatoes and flaming sunsets as being similar in color and both of them call that color “red”. Moreover, the causal connection between their (qualitatively distinct) experiences and their other mental states could also be identical. Perhaps they both think of Little Red Riding Hood when they see ripe tomatoes, feel depressed when they see the color green and so on. It seems as if anything that could be packed into the notion of the causal role of their experiences could be shared by them, and yet the qualitative content of the experiences could be as different as you like. If this is possible, then the functionalist account does not work for mental states that have qualitative content. If one person is having a green experience while another person is having a red one, then surely they must be in different mental states.

Is this criticism of functionalism consistent with the principle of supervenience (section II.7)?

6. Mary's room thought experiment

One of the most discussed issues in contemporary philosophy of mind is Mary's room thought experiment, proposed by the Australian philosopher Frank Jackson (1982). Imagine a neuroscientist called Mary that lives in the 23rd century, when all of the science of color vision has been deciphered. She was raised in a black & white room, and never saw or experienced colors; when she goes out to party, she puts on special goggles so as not to see color. We might also assume that, once a week, during her deep sleep, all through her life, a special intervention is made in her brain, so that it won't atrophy and Mary won't lose her capacity to experience colors.

On the other hand, Mary became a renowned neuroscientist, having studied theoretically and experimentally all the physical and chemical aspects of the science of vision. According to Jackson, she has complete "physical knowledge" concerning colors, that is, complete linguistic-quantitative descriptive knowledge (which leaves out only acquaintance with colors). The question is: does she know everything that there is to know about colors?

When Mary finally leaves her room and observes, for the first time, a blot of green paint sprayed on a wall, does she acquire new knowledge? And after that, when someone tells her that the paint is green, is there an additional element included into her knowledge about green? The usual answer is yes. This indicates that there's a difference between "physical knowledge" (linguistic-quantitative description and experimental capacity of manipulation) of an element and the experience (acquaintance) of it. This difference is what is called *qualia*, or subjective qualities.

The so-called "knowledge argument" of Jackson leads to the thesis that there *is non-physical knowledge about the world*. One should notice that this thought-experiment defines "physical knowledge" in a certain way. But accepting this definition, one concludes that knowledge of qualia is "non-physical knowledge". Furthermore, could one also conclude that qualia *are non-physical entities*, as argued by David Chalmers? To do this, one would have to add another hypothesis to the argument, that "if something is knowable and if it is physical, then it is physically knowable".⁴¹ One therefore infers that there is something non-physical that is knowable, which would be the qualia. Thus, physicalism would be false.

Accepting Jackson's argument, the resulting dilemma is either to admit that physicalism is false, or to consider qualia to be physical (escaping Chalmers's hypothesis). This second alternative results in qualitative physicalism, or the "colored brain thesis" (to be seen in section VI.2). A similar point is made by Owen Flanagan, who considers that Mary's room thought experiment refutes linguistic physicalism, but not a metaphysical or ontic physicalism (ver NIDA-RÜMELIN, 2010).⁴²

This discussion illuminates the place of subjective qualities in the material world, pointing to an "explanatory gap" (in Joseph Levine's phrase) between the linguistic-

⁴¹ Let us define the following predicates: Fx: "x is physical"; Cx: "x is knowable"; Px: "x is physically knowable". Consider now three propositions: (1) $(\forall x) (Px \rightarrow Fx)$ (scientific hypothesis: anything that is physically knowable is a physical thing); (2) $(\exists x) (Cx \wedge \neg Px)$ (Jackson's knowledge argument); (3) $(\forall x) ((Cx \wedge Fx) \rightarrow Px)$ (Chalmers' hypothesis). From (2) and (3) one infers $(\exists x) (Cx \wedge \neg Fx)$, from which $(\exists x) (\neg Fx)$.

⁴² JACKSON, F. (1982), "Epiphenomenal qualia", *Philosophical Quarterly* 32: 127-36. NIDA-RÜMELIN, Martine (2010), "Qualia: the knowledge argument", *Stanford Encyclopedia of Philosophy*, online. DENNETT, D.C. (1991), *Consciousness explained*, Back Bay Books, New York.

quantitative description of science and subjective qualities. Briefly put: qualities are not derivable from quantities (qualitative physicalism expresses this by saying that “materiality and form are distinct”, in a modified hylemorphism). Future neuroscience will have to be content with establishing “bridge laws” (a term used by Feigl and Chalmers) between quantitatively described (and experimentally manipulated) brain states and qualitative mental states, while part of these laws will be *unexplained principles* (such as occurs in all principled physical theory, such as the Theory of Special Relativity, where principles are not explained by theory, but accepted because of the observational consequences deduced from them). Subjective qualities cannot be derived or explained entirely in a mathematical and quantitative manner; the nature of qualities involves something beyond representation or modeling: reality itself, or its “materiality”.

7. The cerebroscope

The “cerebroscope” is a fictional equipment imagined by Paul Meehl and Herbert Feigl (see FEIGL, 1956, pp. 473-4), which would allow that a person had visual access to any physicochemical process in the brain of another person. For example, suppose Mary is observing, through a cerebroscope that generates black & white images, the brain of a friend, Julie, who is looking at an avocado (inaccessible to Mary). Mary would have access to the “immediate brain correlate” of the visual experience of greenness, and with the knowledge she had of neuroscience would be able to infer that Julie is observing green object, even if she (Mary) doesn’t have access to any chromatic quale.

When Mary leaves the room and sees for the first time a colored patch on the wall, she doesn’t have any way of knowing the name of the color. DENNETT (1991, pp. 399-400), with his “blue banana trick”, argues that she *would* have the ability to know, because since she knows *everything* about the structure and workings of the brain, she would know what secondary thoughts would be generated as she looked at different colors.

Dismissing this possibility suggested by Dennett, if Mary had an “autocerebroscope”, i.e. a cerebroscope pointed at her own brain, she could easily infer what objective color (COLOR-V) she was seeing.

8. Molyneux’s problem

In 1693, the Irish scientist and politician William Molyneux rewrote a letter to John Locke (for he had written previously in 1688, without obtaining an answer), proposing the following problem:

Suppose a Man born blind, and now adult, and taught by his touch to distinguish between a Cube, and a Sphere of the same metal, and nighly of the same bigness, so as to tell, when he felt one and the other; which is the Cube, which the Sphere. Suppose then the Cube and Sphere placed on a Table, and the Blind Man to be made to see. Quaere, Whether by his sight, before he touched them, he could now distinguish, and tell, which is the Globe, which the Cube.

In the 2nd edition of his *Essays*, of 1694, Locke included this question, together with the answer proposed by Molyneux, which denied that the blind man could visually recognize the objects. This problem led to much discussion in the following decades. “Empiricists such as Molyneux, Locke and Berkeley answered in the negative. More rationalist philosophers

such as [archbishop Edward] Synge [1693], [Henry] Lee [1702] and Leibniz gave an affirmative answer” (DEGENAAR & LOKHORST, 2017).

In 1728, the English surgeon William Cheselden removed the cataracts of a congenitally blind 13 year old boy, and gave a detailed report of the new visual experience of the boy: “He knew not the Shape of any Thing, nor any one Thing from another, however different in Shape or Magnitude”.

Those who were favorable to Berkeley’s theory of vision, like Voltaire and Condillac, concluded that the boy did not distinguish visually the forms, but others, such as Diderot, criticized the interpretation of the experiment. In the 19th century, other experiments led to differing conclusions, influenced by the different circumstances of each observation.

More recently, a careful study conducted by Pawan Sinha and his group was made with five youngsters from India, who didn’t have their cataracts removed when born. The conclusion obtained by HELD et al. (2011, p. 552) was that “the newly sighted subjects did not exhibit an immediate transfer of their tactile shape knowledge to the visual domain”, obtaining a mean rate of correct answers of 58% (noticing that the chance level would be 50%; the patient that performed the best had a 64% rate of success). The scientists also discovered that after only 5 days the identification capacity rose significantly (in the three patients tested) to a mean of 83%.⁴³

In class we compared the thought experiments of Mary’s room and Molyneux. A striking difference (shown in Table III.1) is that Mary’s color vision involves a new qualitative sensation (*quale*), whereas what cataract surgery patients do not identify is the similarity between *geometric shapes* from touch and vision.

9. Two meanings of “identity”

In philosophy there is a fundamental distinction between two meanings of the term “identity”. *Numerical identity* denotes the situation in which there is only one individual. For example, the morning star and the evening star are identical, in the numerical sense, since both correspond to the same individual, the planet Venus. On the other hand, two monozygotic twins are almost identical in the so-called “qualitative” sense, i.e. they possess the same properties, in spite of being different individuals. This is *qualitative identity* or identity of properties.

The classic philosophical debate between “realists of universals” and “nominalists” involves a discussion concerning the type of identity that applies to properties. For example, suppose that two monozygotic twins have “identical” noses. Clearly this should be understood as identity in the qualitative sense. But a problem may be posed: can one say that the *figures* instantiated in each nose possess numerical identity? Is it one and the same figure (in the numerical sense)? A realist of universals, like Plato, would say yes, while a nominalist (in relation to geometry) like William of Ockham would answer no.

⁴³ DEGENAAR, M. & LOKHORST, G.-J. (2017), “Molyneux’s problem”, *Stanford Encyclopedia of Philosophy*, online, de onde foi. Cheselden’s quote is from: DEGENAAR, Marjolein (1996), *Molyneux’s problem: three centuries of discussions on the perception of forms*, transl. from Dutch by M.J. Collins, Kluwer, Dordrecht, pp. 54-6. HELD, R.; OSTROVSKY, Y; DE GELDER, B.; GANDHI, T.; GANESH, S.; MATHUR, U. & SINHA, P. (2011), “The newly sighted fail to match seen with felt”, *Nature Neuroscience* 14: 551-3.

10. Closed, open and empty individualisms

Returning to the thought-experiment of the perfect material human duplication (section II.1), let us now suppose that Calvin is an adult, and that, in order to realize the experiment, the organizers had offered Calvin-1 a great amount of money, say 1 million dollars, so that one week after the process of perfect reproduction he would have to be killed, in a painless way, while his copy would remain alive, occupying his place in the world. Should Calvin-1 accept the offer?

If Calvin-1 were a “body and soul” reductionist materialist, he would have no reason to refuse the offer. From his point of view, in the moment of duplication, his consciousness was perfectly similar to that of Calvin-2. It is true that Calvin-1 and Calvin-2 are different “individuals”, in the sense that any causal process inflicted on one of them does not affect the other; i.e., the two individuals “identical in properties”, but not “numerically identical” (section III.9). But the subjective experience of Calvin-2 is the same as that of Calvin-1, so it is as if Calvin-1 were at the same time inside Calvin-2, but both were disconnected.⁴⁴

Therefore, for Calvin-1 there shouldn't be any difference if it is he who continues living or if it is Calvin-2. One conclusion that can be drawn from this is that we should not fear death, if there is some other copy of us roaming around. Now that Calvin-1 is rationally convinced that he should not fear death, what difference does it make for him if the existent copy is perfectly similar to him, or only partially similar? Why fear death if there are other people roaming around which share some of our attributes?

This reasoning can lead to the thesis that, ultimately, all conscious beings are the same individual. All would be one! What would distinguish the different consciousnesses would be the fact that they are instantiated in different bodies, carrying different memories and different personalities. But underneath these accidental properties there would be an essential similarity. This thesis is known as *open individualism*,⁴⁵ and it is close to the “monopsychism” associated with the 12th century Islamic philosopher Averroes (section A1.5).

Open individualism explains well the paradox that you might not have been born. If nine months before your birth your parents had decided to drink a last beer before going to bed, most certainly another sperm would have fertilized the egg, and an individual with a different genetic code would have been born in your place. Applying this reasoning to all of human evolution, the probability of you having been born would be really minimal! How is it possible that *you* are here now? For open individualism, this is not a problem, for the same person would have been born under any circumstance (even with different genetic codes).

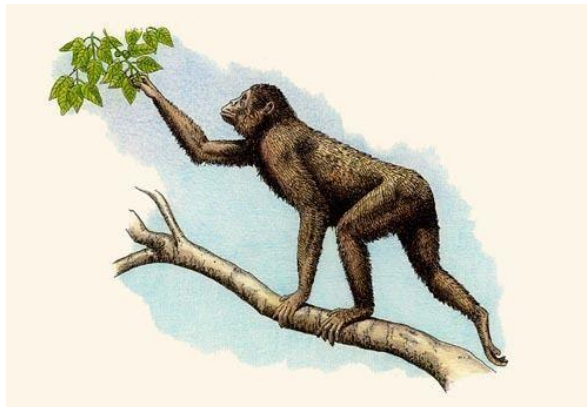
This “last beer paradox” is a problem for *closed individualism*, which considers that personal identity is associated to a particular body (or to an individual soul) and survives in time, at least until death. On the other hand, for *empty individualism*, there is no problem: for this worldview, associated with Buddhism (section A1.4) and certain passages in Hume, personal identity is only a momentary pattern that disappears with the flow of time.

After all, what is the cause of our fear of death? Is it the fact that death is so horrible? The cause seems to be related to natural selection. Consider a remote ancestor of human beings, for example a proconsul who lived in Africa 20 million years ago. Suppose that a certain proconsul individual were born with a genetic mutation, and weren't afraid of death. He would have had a much higher probability of being devoured by some predator, so that his fearless alleles would not have been inherited by other proconsuls. The fear of death is highly

⁴⁴ See quote by LOCKE (1694) in note 17.

⁴⁵KOLAK, D. (2004), *I am you: the metaphysical foundations for global ethics*, Synthese Library, v. 325, Springer, Dordrecht.

adaptive! That is why our own death is emotionally so terrible for us. But that would not constitute a *rational* reason for fearing death.



The proconsul, a predecessor of humans, great apes, and gibbons, who lived in Africa around 23 million years ago (figure obtained from Alchetron).