On the notion of existence

Piotr J. Witas*
Department of Haemostatic Disorders
Medical University of Łódź,
6/8 Mazowiecka str., PL-92215 Łódź, Poland
(Dated: 5 April 2020)

I argue that a slight shift in our understanding of the notion of existence is needed in order to cope with the problem of external world and the problem of mind and body. As a consequence of it being taught by "givenness" of the subjective mind, and despite its applicability in objective contexts, it should be considered a "tool" akin to qualia, rather than pertaining to a "true", objective reality. In plain language, one's supposed relation with their surroundings is known to them only in terms of their private ontology. This conclusion is supported both by intuition and - perhaps most importantly - by ontological issues in quantum physics.

I. INTRODUCTION

The problem of external world can be very roughly formulated as follows:

> How do I know there is me observing a world?

The mind-body problem, in turn, as:

> Why are there two functionally isomorphic sides of my mind [16], the qualitative one and brain behaviour?

Of course, these are not the only possible formulations; most of all, they are too simple to highlight the plethora of intriguing aspects of these issues that arose during centuries of research. Nevertheless, they are enough as regards the degree of generality I aim for. My intention here is merely to draw attention to and discuss a rather broad look at the mind's subjectivity, which apparently has not been focused on in the literature. I would like to leave putting it in a detailed context within the immensely rich discipline for the upcoming works, first of all due to limited space, secondly - in order to make the reasoning as straightforward as possible by concentrating on the main line of thought. An acquainted reader will recognize themes appearing frequently in the literature, many of them easily reachable with intuition at the same time, the originality of which I obviously do not claim.

The most important novel result of this work is that by introducing an appropriately defined *scope* of the notion of existence, relative to a conscious agent, it is possible to put the issue of external world in a new light and basically solve it. As a by-product, one finds the mentioned dichotomy inherent in the structure of mind fully justified and natural. In order to arrive at these conclusions, I make several commonsense assumptions:

- qualitative subjectivity (i.e. qualia together with a point of view) is an empirical fact (thus, I am inclined to the starting point of approaches presented for instance in [1, 2]; in particular, classic papers arguing in favour of this view are [3–7]);

- the subjective mind is functionally isomorphic to brain behaviour (a canonical view in today's cognitive science [8, 9]; I am very informal in applying this statement in the following);

- brain-in-a-vat is possible in principle (Descartes described the well-known prototype in [10], which has been developed later on, for instance in [11]).

A prelude to the argumentation is an intuition that we should not be able to reach an external world with our thoughts and know we did it, because it is the role of the mind's direct content itself (understood as a "biological signal") to provide the link. Contrary to this, we are convinced of being observers, of having external organs which provide sense data, and of knowing what the external world is. As I show in the following sections, one is able to resolve this issue by treating seriously a claim that the subjective mind's job is to provide the definition of existence, like it provides a sensation of colour or sound.

Sections II-IV present a self-contained, consistent reasoning based purely on classical physics. In section V, I adjust it slightly to the quantum regime and illustrate how well the framework goes with the lack of fundamental ontology in quantum theory.

*piotr.witas@umed.lodz.pl

II. THE MAIN ARGUMENTATION

Let us start with an approach which would naturally be advocated for by neuroscience; as we will quickly recognize, it has to be abandoned in the end, nevertheless it is a good heuristic starting point for our discussion. Let us postulate an objective reality (described by classical physics with well-defined, solid ontology), introduce a human in it and let their brain do its work. One of the most obvious and naive questions one might ask here is:

> Looking from the perspective of a "god's eye", what would the objective reality be for the brain? (We do not take the brain's point of view *per se*, just consider it from the outside.)

If the agent was able to react only to mean light intensity with their perceptive apparatus (other senses turned off), we could safely claim they had no idea of a world whatsoever. According to neuroscience, in such a situation the agent would merely be given a signal from their surroundings, in the end processed into what might be loosely called a visual "sensation", understood at this point as a state of a collection of neurons. If the perceptive apparatus, on the other hand, were a full-blown human one, it would be able to produce in the observer three-dimensional images of objects the "god's eye" saw in front of them. A routine question specifically in this context is:

> Would this mean the observer knew these objects were there?

The short answer, neglecting basically all of philosophical dispute surrounding epistemology, is that they could not, *provided the possibility of brain-in-a-vat was treated seriously.* This is because the two scenarios differ only in the degree of visual complexity; a three-dimensional visual scene is still just a signal. Thus, basic neuroscience and common sense encourage us to assume that the brain actually works in its own virtual sphere (correlated with its surroundings, obviously).

This observation makes it easy to arrive at an intuitively plausible claim, which makes the foundation of the rest of this paper:

> Since the brain's perceptual sphere is virtual, *its content resides in its own ontology*; put differently, the brain does not recognize any external ontology directly, but has its own, artificial one, for its own use.

The hidden motivation for making it is, in fact, having a subjective, qualitative point of view, together with it being isomorphic with brain behaviour: we are intuitively convinced that our most basic ontology is defined by the subjective mind (cf. the agent with simple visual consciousness above). There is, however, an important point which has to be stressed. Intuition requires us to adopt, based on our own experience, that such an artificial ontology, encoded in brain behaviour, would have to "feel" real for the brain in some way. To put it in a single sentence, it seems to be a good guess that *the brain should be able to functionally model existence itself.*

Obviously, an intuitive claim is one thing, how to demonstrate that a behaviour of a collection of neurons describes an object in an internal, emergent ontology is a completely different story. However speculative and hard to imagine with the present state of neuroscience is seems, though, I assume it is possible *in principle*, and leave formal aspects of these considerations for future work.

Let us now focus on the following problem: what does the brain have to say about it observing a world? Certainly, it sees itself in some sense. However, since it cannot recognize the external ontology, it cannot see the true relation between itself and its surroundings. At most, the brain has an image of itself (call it "image-brain") and the surroundings ("image-surroundings"), formulated in the language of the mentioned inner ontology. In the end, such an image-world has to be abstract, described with a physical theory used by the brain (it is not merely a visual image; in order to make the terminology simpler and allow for a hierarchy at the same time, I understand "inner ontology" as a collective term for all ontologies used by the brain, more direct, like "sensations", and more abstract ones). This implies that the customary, simple picture, with in fact a single meaningful ontological layer in which everything happens (in which an artificial ontology would be "just" a behaviour), is invalid from the brain's point of view. It is because regardless of the image-world being "more important", for containing more facts than a collection of direct "sensations", it cannot be considered *ontologically* fundamental - it is a structure in a certain sense *secondary* relative to the simplest elements of the inner ontology ("sensations"); it requires some processing of them in imagination in order to be formed (this regards, obviously, the brain itself - it can know itself only as such an image). What is more, despite the true ontology being unreachable, there seems to be an epistemic process, covering the image-brain and image-surroundings, from the point of view of the inner ontology. Being troubled by this situation, the brain would eventually come to the conclu-

sion that things looked *as if* it was observing an outer world, with the help of its own, private ontology. If one took the "god's eye" perspective, it would be natural to claim that indeed an observation was being made, in this or that way, for there would be the object and its image in the observer. Solely from the brain's perspective, however, there is no observation *in the strict sense*, for it has access only to the inner ontology, containing image-world and an epistemic process *within it*; hence "as if".

Let us now consider the inner ontology's "doubling" [17], specifically its simpler part, i.e. the "sensations", which follows from what we have just said. Clearly, there is the inner ontology itself, but there is also its image *within* itself. To be precise, this configuration can be looked upon from two angles:

- the external one, if we take the "god's eye" point of view and consider specific higher-level behaviour of the neuronal network on the one hand (inner ontology), and image of this higher-level behaviour within itself (image of the inner ontology), arising because the brain "sees" itself;

- the internal one, if we take the perspective of the neuronal network, i.e. choose the inner ontology as *the ontology*, and consider "sensations" occurring there (basic elements of the inner ontology), as well as the notion of image-brain which these "sensations" are able to give rise to (the behaviour of which contains an image of the inner ontology).

In the first case, we might sweep this "doubling" under the rug, for it is the external ontology which "really" matters. In the second one, however, it is not possible: it cannot be neglected that the "sensations" are ontologically fundamental, while the image-brain is derived (although "more important" in the model). The observer will thus have at their disposal both "sensations" themselves and their counterparts realized through behaviour of the image-brain, none ontologically reducible to the other.

This is a good moment to include qualitative subjectivity proper in the discussion. The reasoning above is constructed in such a way that it is easy to turn "sensations" belonging to the inner ontology into our "given" qualitative data, while the abstract image-world into our physical world (i.e. the structure emerging from our physical theories; still, let us keep it classical). The last move might be a bit surprising, but - it seems this is exactly the place where one should pay attention not to claim the ultimate reality has been grasped in the ontological sense; I elaborate more on this in the next section. Now, since we cannot really look at ourselves from outside, like it was done above, we cannot know what our brains look like "in reality"; more than that, we cannot meaningfully think about such a reality at all, for we are restricted to our inner ontologies. Thus, if we were to turn observers of the kind just considered into us, each artificial ontology would - out of necessity - have to be turned into a subjectively *real* one. A consequence is that we are forced to change the way we think about the notion of existence in general. We can no longer treat it as something "imported" from outside the mind; it has to be defined solely *within* it (this is what I meant by abandoning the approach we started with).

It is already clear that this switch allows us to solve the problem of qualia, the rotten apple in the kingdom of science. If we took the external point of view, they would be merely behaviour of the true brain (the "sensations"). However, since one is equipped in an inner ontology, they are fully allowed to be irreducible "things".

Now that I have outlined the main line of thought, I shall turn to justifying the vague points in the argumentation, as well as discussing implications thereof.

III. SOME DETAILS

I begin with a point of view, i.e. a single observer. After the fundamental aspects are settled, the generalization is straightforward.

A. Single agent

First and foremost, there is the issue of the subjective mind as the source of primary ontology. Intuitively, it is easiest and quickest to become convinced about it if one considers a trivial example of qualitative content - a uniform visual field, which we already mentioned. If I never happened to reach beyond the particular state of development corresponding to it, it is intuitively obvious that I could associate the notion of existence only with these "walls of colour"; there would be no notions of a world and observation for me. It is also immediate to conclude that this visual field could not be anything belonging to any "true" [18] ontology, for then its "givenness" would have to concern the totality of this ontology, not merely visual qualia.

This immediately introduces a pressing issue: how to reconcile the claim that the notion of existence is subjective with the fact that we are able

to equip it in some aspects of objectivity? The most straightforward way to demonstrate that the two are able to coexist is to trace the evolution of consciousness from the trivial, uniform one, to the one we are used to. Let me then, for ease and clarity, switch to my subjective point of view and, accepting that the "given" ontology is fundamental, assume that:

- I know nothing about my or any other brain;
- as mentioned, my visual field is very simplified, i.e. I have only "flat", uniform visual sensations;
- I have simple thoughts about these sensations, e.g. I can compare my qualia along a timeline and I can consider having them (or rather their "givenness", since the concept of "I" is very limited now);
- no other content of my subjective mind is present.

These assumptions are made in order to erase as much objectivity as possible, so that the subjective regime can be conveniently exposed. Now, if I gradually complicate the structure of my visual data, two significant transitions may occur. The first one - when I become able to recognize three-dimensional objects within my visual field, the second one - when I notice that these objects can leave my visual field without being "destroyed" (in other words, I can follow their time-development in my imagination when I do not see them). Both of these extend the primary notion of existence by pushing it into imagination to a degree. Obviously, at this point I cannot have the slightest clue that these objects *represent* something - they just arise within my mind, as a mixture of "sense data" and more or less clear thoughts. Going on, among spatial objects falling in and out of my visual field I notice a body with a head. If by any means I reach my brain (still a three-dimensional visual object), it is relatively easy to find out that it has a peculiar relation with the totality of the field. If something happens to this distinguished organ, the field can in principle become very much distorted. Now, this observation prepares the ground for the construction of what we describe with physics. The crucial step occurs when I *adopt the view* that some things happen when the mind is "off" (for instance, when I am asleep or in regions too small to be reached with my vision) and that it is possible to introduce a self-contained, total description by postulating a fundamental ontology (*the* world), of which - among others - the visual content of my mind is merely an image. This amounts to duplicating, in a certain sense, the brain-surroundings picture, present so far only in this visual content. Without going too much into details of how this happens, it suffices to say that if I make an abstraction (described by suitable physical quantities) of the three-dimensional visual brain I have in the content of my mind, as well as of its visual surroundings, impose certain dynamics on them (the laws of classical physics), and attach the subjective sphere through its isomorphism with this new abstract brain, the model apparently works fine. What seems to confirm that I do the right move in order to uncover *the reality* is that I can "suspend" my experience of such a world, or even erase myself completely from it for some time, and it will still do its job in the meantime; in this sense I claim that it is more fundamental than my mind.

Customarily, thus, we think of the result of this procedure as reaching a "true" outer world with abstract thinking. However, it is easy to convince oneself that the above reasoning could be repeated, *without any changes*, in case the inner-ontology approach (with image-brain and image-surroundings) was adopted. The simplest, although heuristic, argument in favour of all our ontologies being subjective (including the abstract ones) comes from experience. Introspectively, a moment of thought is enough to see that the notion of existence which helps furnish the abstract, physical model with particles and fields is connected with the "givenness" of the qualitative content of the mind; in fact, in can be easily considered its derivative living in conceptual imagination. In other words, it is very plausible that the notion of existence we learn from having the most direct, subjective content of the mind, is used in a different area afterwards, with the help of imagination, memory and so on; switching then from a purely visual image to the abstract model would *not* imply that we reached the "true" world by mere logical reasoning.

If this conclusion is unconvincing, one may refer to the brain-in-a-vat thought experiment: for a simulation to mimic a mental life properly from one's point of view, it *has* to include the ontological level. In order to appreciate this remark, it is enough to imagine such a life from birth to death - with the workings of a brain-in-a-vat based *solely on sense data* (or substitutes thereof), all understanding achieved by it would have to be exactly the same as that of its free twin, provided "sense data" were the same (I assume no other factors can differentiate the two brains); this naturally concerns also all abstract models produced by a brain. A short comment is in order. A true brain-in-a-vat may arise, ob-

viously, only in a "true" world. The one we could have at our disposal would necessarily have to resemble those occurring in an image-world, if we refer to section II; this is harmless, however, for:

- if we assume "god's eye", then the image-world brain-in-a-vat is implied;
- if we do not, then its possibility is still not prohibited (if one went in a lab and subjected oneself to a procedure *à la* brain-in-a-vat, this procedure would be formulated in terms of one's private ontology).

To summarize, the mere fact that we see a brain and its surroundings (i.e. introduce exterior of what is isomorphic with the subjective sphere) does not suffice to claim we managed to grasp the "true" world. In fact, the objective world each of us introduces from their point of view is *abstract*. This immediately suggests that one is never able to leave the playground of their own mind - the sense of objective existence seems to be living within the latter. That is, as for a world one can have at most an abstract model equipped in its own ontology (instead of "image-world" I will call it "quasi-objective world" from now on; its ontological basis, in turn, as "quasi-objective ontology"), to which one's notion of existence is restricted.

This conclusion needs to be stressed properly. By the claim that one's notion of existence is restricted to one's mind I mean that the "phenomenon" of existence as we understand and use it is subjective in a similar sense as qualia; it is just a "tool", not "the true existence" (although it is presented to us as true existence, since we do not know any other, so to say). One has to be careful, though, not to fall in the usual trap of idealism here. The fact that the origin of the notion of existence is purely subjective does not mean that one cannot build an *abstract* objective world with its help; it only means that this world does not constitute a common ontological layer for all minds (see subsection III B), and is not a "true" world.

The relation between the quasi-objective layer and our subjective sphere is in fact quite peculiar: *the former is defined in such a way that the latter is, in a certain sense, dependent on it.* This dependence can be considered causal, but causality acts here on the level of the quasi-objective brain [19] and its surroundings, not on qualitative subjectivity itself. In other words, we say that the quasi-objective acts on the subjective because quasi-objective environment acts on the quasi-objective brain *and* there is a one-to-one mind-quasi-objective-brain isomorphism [20]. We cannot thus locate qualitative subjectivity in the quasi-objective world, for this world is an abstract model produced within the mind on the basis of the mind's content; it is *designed* by us not to contain it. The only problem with intuition here is a false impression that something built within a mind cannot play the role of something on which this mind depends. It can, if we make a separate ontology out of it - living as an idea, and different from the one containing raw, live-experienced sensations, and connect the two properly, through the mind-quasi-objective-brain isomorphism.

Since I have been using the notion of a "true" external world, at the same time claiming it was beyond my reach, its role should be clarified at some point. In other words, if I cannot have access to the "true" ontology, why do I have its idea at all? I know I have a mind, I also have a brain interacting with its surroundings, the mind being represented in the brain as its behaviour - the first guess is that there indeed is a world in which I am immersed. But a few persistent problems urge me to doubt in this picture from time to time - the possibility of brain-in-a-vat, intuitively obvious irreducibility of qualia, their subjective ontological superiority over this objective world, some ontological problems in quantum physics (to which we turn later on). Clearly, these issues go away if I refer to the scenario from section II. In other words, what I have in my private ontology, considered fundamental for me, looks functionally the same as the content of the artificial ontology from that scenario. Thus, the way my private ontology works is in a certain sense *implied* by some hypothetical [21] "true" ontology; obviously, the implication in the opposite direction is not true, for I cannot discover any "true" ontology staying inside my mind. Hence, I have to make the latter metaphysical from my point of view [22]. This is what I mean by the phrase "it is *as if* I was an observer of a «truly» external world".

B. Multiple agents

The approach of first inventing a "truly" objective world, putting an observer in it, then switching to their subjective sphere and wiping out the objective one, however heuristic, is useful in settling things when it comes to having more than a single agent. Besides, it allows to shed some light on the problem of other minds, formulated as follows:

> Since I can observe only brains of other conscious agents, what can I say about the existence of their subjective, qualitative minds?

Let us then go back to the initial scenario (section II; "«true»" becomes "true" again, until the end of the paragraph) and look at things from the perspective of an external world in which several observers interact and communicate. Each of them would have their own inner ontology, formulated in terms of true brain behaviour; this ontology would again be composed of a more direct part ("sensations"), as well as a more abstract one (in order not to introduce too many terms, let us call the latter also "quasi-objective"). In particular, each of them would be *describing their own* quasi-objective ontology, all of them being correlated with the external one. Moreover, for each of these observers only their own inner ontology would seem to be the real one, all the others being "just" behaviour of other image-brains, i.e. artificial ones (for a single true brain there would now be several image-brains: one for its owner, the rest in inner ontologies of other agents). Most importantly, from each point of view communication would be about the currently chosen quasi-objective ontology, not about the external world, or any other, differently defined set of entities. Now, in order to apply this picture to our situation, one only needs to jump into a chosen subjective point of view, i.e. choose an inner ontology, change its status from artificial to real, and erase the external ontology.

When this is done, one understands what it means that ontology as we know it is merely a "tool" of the mind - one is not able to find qualia of others, for they are neither in one's quasi-objective ontology, nor there is any other ontology accessible that could contain them. The only reasonable way to cope with it seems to be accepting that existence is just something different than we thought; we treated it as an outer "phenomenon", to be learned from outside the mind, but in fact we only know it as something akin to the artificial ontology described earlier - we are agents who bring in their own *fundamental* notion of existence each.

On a practical side, I do not need to know other people's subjective minds as they are for them, since I can potentially find "them" as these people's internal ontologies through investigating the behaviour of their brains (which belongs to my quasi-objective ontology). In this way I can even check if a conversation I am conducting with another person is indeed about their ontology, provided I have enough understanding of their neuronal network. That I do not have access to their qualia *per se* as I have to mine is only a harmless manifestation of the fact that we do not have a fundamental ontology which we share between us.

IV. A BRIEF COMPARISON WITH EXISTING PHILOSOPHICAL VIEWS

Let me now contrast the framework I propose with defining aspects of some traditional views. To begin with, I would call it both monism and dualism. Monism, because the foundation of both private ontologies we naturally claim to have (qualitative and quasi-objective) is the content of consciousness. Dualism, for the qualitative ontology is "given" and experienced, while the quasi-objective one is a heavily abstract construction. The difference from the traditional monism is that only the source of the two ontologies is common, from dualism - that the mental and the physical are not naively "parallel" (one is either on the qualitative, or on the quasi-objective side). Going on, the quasi-objective affects the subjective and *vice versa*, but it is not the kind of superficial influence known from interactionism. There also is not much to talk about epiphenomenalism here, since the mental is not a by-product (epiphenomenon) of the physical. As for representationalism, we basically started from its negation - an agent's consciousness is in the strict sense considered a closed world with its own ontologies, so as to allow for brain-in-a-vat, which we expect to be possible in principle. Regarding panpsychism, since each of us treats their own consciousness *as if* it were a virtual ontology developed by perception acting in a world inaccessible to us, it does not make much sense to look for anything "outside" a given mind, specifically qualitative. Trying to ascribe such qualities to elements of a chosen quasi-objective ontology is also unfounded, for qualities are absent by definition in such an ontology.

We might, however, say something constructive, if we consider the physicalism-idealism interface. The approach I propose allows for a healthy balance between the two apparently opposing views. In order to see this, recall that it is possible to introduce mind-independent entities not leaving the mind in a sense. Since the mental and the physical are not exactly parts of a single ontology, making the physical independent of the mental does not automatically make the former literally *exist outside* the qualitative mind (in a reductionist view, for instance, where the mind is reducible to brain behaviour, there necessarily is a lot more in the global ontology besides - and thus "outside" - the mind). Instead, we *construct* the physical (the quasi-objective ontology) as an abstract sphere, not containing qualities, define its behaviour (through equations of physics), immerse a quasi-objective brain there (also an abstract structure, obviously) and postulate the mind-quasi-objective-brain isomorphism. Thus,

from one's point of view the quasi-objective surroundings do not "really" exist outside the subjective mind, but outside an abstract brain whose behaviour is to some degree *functionally* isomorphic to the subjective. All this shows that what we usually consider as pertaining to the domain of physicalism can be in a certain - very carefully defined - sense treated as a "product" of the mind, leading to an overlap with the traditional domain of idealism. It is advisable to remember, though, not to treat the mind-derived quasi-objective ontology as absolute or universal, for then one can easily get an impression as if mind was "steering" the objective world; this is exactly the kind of place where the heuristic notion of "true" reality helps one avoid meaningless conclusions.

When discussing idealism it is not possible not to mention solipsism. In case I treated ontology globally, as a single universal, fundamental layer, I would indeed be tempted to claim other subjective minds non-existent. However, now I should rather say that other subjective minds do not exist *for me*, while they exist for their owners. I am fully entitled to claim that other agents' ontologies are not equivalent to mine, because they, from my point of view, are merely *behaviour* of their brains (image-brains, in fact); thus, these ontologies are less ontological, so to say. Of course, these other agents say the same about my subjective ontology. Looking at a different side of solipsism, one can sometimes encounter an opinion that "the world as a whole exists because my mind exists"; here, it is rather that I understand ontology as a "phenomenon" only through my mind. Any objective world is an objective world *according to me*.

Since I mentioned solipsism - one cannot forget philosophical zombies [1] here. Essentially, if they were conceivable when ontology was global, it does not make much sense to consider them now. This is because *for me* minds of other agents have the form of image-brain behaviour - it is meaningless to "turn on and off" their qualia in my picture. Their qualia exist *for them*, and it is completely irrelevant from my point of view what these qualia are *for these agents*.

Let us now turn to functionalism, particularly to the "Chinese nation" argument [12]. Imagine we ran out of spare neurons, but have a pressing need to simulate the behaviour of a human brain. Since neurons communicate, we might choose people to play their roles, and since they communicate quite well *and* are quite abundant at the same time, we pick a numerous group speaking the same language, say the Chinese. Their total number is not as large as that of neurons in a typical human brain, but is at least of the same order. Imagine now that they perform their roles very meticulously and succeed at reproducing major functions of the brain, together with the whole apparatus of perception. Imagine also that one day someone dares to ask this enormous system about its qualia. The answer can be only one: "I have them." But for the one who poses the question the answer seems even more absurd than in the case of an ordinary brain, for each constituent of the system is magnified to a macroscopic size and clearly visible. That is, however, the essence of the experiment - from the perspective of the one who asks there is, in a sense, no point in asking this question, for it just does not have an answer in terms of experienced qualia *on their side*. One cannot expect to be given someone (or something) else's qualia in other terms than behaviour of a bunch of neurons (or pseudo-neurons), because there is no place for such qualia in an asker's quasi-objective ontology. The only aspect that might be investigated in such a situation is whether higher-level behaviour of a structure like the Chinese brain indeed contains something like the human private ontology, exhibited in a real brain.

Before we proceed, let us consider one more issue, tightly connected with the subjective sphere. Some authors (see [2] for instance) point that in a fully objective approach (i.e. one with a "truly" outer world in our terminology) it is totally unexpected that a single mind is somehow ontologically distinguished over the rest. In short, why is it my mind that "just exists", not some other one? The answer is immediate in the framework I propose. If the "phenomenon" of existence comes with the mind, it should be expected to be "ontologically distinguished", for it is distinguished in its own ontology.

V. QUANTUM CONTEXT

The above discussion could in principle be considered self-contained. However, there is a very strong, empirically confirmed support for its conclusions from quantum theory, which has been known for a long time not to possess a well-defined ontology. Since it is a fundamental theory in reductionistic terms, this lack of ontology should propagate to the macroscopic level. This is, obviously, in huge contrast to what we see (collectively, it is the problem of quantum-to-classical transition). For this reason, quantum theory is often claimed to be subjective - only our most direct experience seems to present entities in definite states, the outer world being shrouded in uncertainty and indeterminacy captured in probability amplitudes. Of course, there exist well-known attempts to solve these difficul-

ties; however, they seem to be sweeping this state of affairs under the rug, mostly by insisting that an objective ontology *should* be there.

Quantumness forces a departure from the solution we have discussed so far, albeit not a very serious one. The obvious reason is that now we are not able to construct a quasi-objective ontology in exactly the same way as above. Specifically, we are not able to do it bottom-up, for we would replicate the mentioned issue with ontological reductionism. However, nothing - except maybe "the spirit of science" - prohibits us from doing this in the top-down manner, as we actually do intuitively in real life, by starting with a description of direct, qualitative content of the mind, and going to more abstract entities, like objects living in physical theories. The only restriction is that we are not able to reach the bottom, for there any ontological description breaks down according to quantum theory; instead, we have to stop at a point where quantum effects are negligible, i.e. still in the classical regime, treating the latter as an approximate physical description, but also as the most distant region we can reach with a definite quasi-objective ontology. Someone familiar with issues from the quantum-classical border immediately recognizes here a place for the approach of Bohr and Heisenberg, and the famous "cut" [13].

In case one preferred to have a universal physical theory, i.e. covering the whole scale, the only solution seems to be pulling all of ontology to the most direct subjective sphere of the "given" content of the mind and looking for its connection with the global quantum state through the mind-quasi-objective-brain link in order to apply quantum collapse. In other words, in place of a quasi-objective ontology there is now its quantum version, which has to be constantly adjusted (this is where the collapse comes in) to the most subjective, qualitative sphere, through its link with the abstract brain. Most of the time along this repeated adjustment the emerging sequence of states would allow one to build a classical picture, due to decoherence effects [23]. This classical picture would be what we earlier considered as the quasi-objective.

The process of amplifying indeterminacy in quantum theory is nicely illustrated with the measurement problem. It becomes even more interesting if one considers nested measurements, like in the "Wigner's friend" thought experiment [14]. Assume a set-up including a measured quantum system described with states $|s_i\rangle$ (a decaying atom is a frequent choice), a measuring apparatus with basis $|a_j\rangle$ ($|a_0\rangle$ being the "ready" state) and a human observer. The process amounts to the following two-step evolution in the system-apparatus space:

$$\Big(\sum_i \alpha_i |s_i\rangle\Big)|a_0\rangle \xrightarrow{U} \sum_i \alpha_i |s_i\rangle|a_i\rangle \qquad (1)$$

and

$$\sum_i \alpha_i |s_i\rangle|a_i\rangle \xrightarrow{P_j} |s_j\rangle|a_j\rangle, \qquad (2)$$

where U is a unitary time-development operator, while P_j is a projector, returning the post-collapse state, from which $|a_j\rangle$ is what the observer sees. Imagine now that we treat this set-up, together with the observer, as an isolated quantum system and include another observer in the picture, who measures it from the outside; with this move we define the second measurement process. After the first observer performs the measurement, from their point of view the state of the inner system - the atom - is perfectly definite (in fact, the state of the whole room's interior can be idealized as a trivial, one-element statistical mixture for them). However, the situation looks quite different from the second observer's point of view - the whole system inside the room is still in a quantum superposition, which is known *not* to be equivalent to an ordinary statistical mixture. How can it be that two observers have so radically different descriptions of the same situation? If we view ontology as universal, this is indeed a problem. However, if we give each observer their own quasi-objective ontology (slightly smeared in the second case), they are never talking about *the same* collection of objects; it is true even if they meet, although then their ontologies are "adjusted" to one another from both points of view, which brings us back to the situation from subsection III B. There is thus nothing contradictory in the fact that the internal observer is involved in a superposition from the point of view of the external one. We only need to remember that one always has to choose a *single* observer and describe the situation from their point of view.

The problem of the lack of ontology which opened this section can be put in a slightly different light. One might say that physical quantities we know and use on the classical level are less and less well-defined as we go from the macro- to the micro-level. As an example, if on the macroscopic level one unambiguously talks about a point-like localization of a particle at $\vec{x}$ (effectively, of course), on the microscopic one this turns into "smearing" over a spatial region Ω, which corresponds to an observable given by

$$\Pi_\Omega = \int_\Omega d\vec{x} |\vec{x}\rangle\langle\vec{x}|. \qquad (3)$$

Within this region, on the one hand, nothing like a particle's position is defined, on the other - such a particle can still be considered point-like in some sense (take an electron as an example). If one performs a position measurement on an eigenstate of Π_Ω with another projector $\Pi_{\Omega'}$ ($\Omega' \subset \Omega$), a new "position" emerges, or is produced by the process of measurement [24]. In other words, quantum measurement is not epistemological - it does not uncover anything. In this sense, quantum theory does not posses a fundamental ontology. Now, ill-defined physical quantities, which could be blamed for a decay of ontology, might be *expected* to appear if the latter was merely a "tool" of the mind. If such an ontology can be thought of as arising due to particular signals the "true" brain receives from "true", external world, then it is conceivable that in general only some aspects of the outer ontology would be transferred to the inner one, according to sensitivity of the "true" perceptive apparatus of the observer. Obviously, it would not be verifiable for someone on the side of the private ontology; quantum measurement would perturb their quasi-objective ontology, making the values of observables appear as created rather than uncovered, but they would not be able to find a lower-level mechanism for explaining that. Nevertheless, such a "possibility" makes quantum indeterminacy less surprising. In passing, it is perhaps worth mentioning that not having access to a "truly" external ontology from within the subjective mind sheds new light on another traditional philosophical issue - the division between primary and secondary qualities. If things like position or velocity out if necessity are to be considered as living in a mind-derived ontology, they are in no way different than qualia from our point of view.

We might speculate even a bit more: circumstances leading to emergence of properties in the act of quantum measurement could be blamed for the probabilistic nature of quantum theory. If we imagine something beyond our control that makes our ontology shaky, as with quantum objects, it is even natural to introduce stochasticity in its behaviour. Of course, we as agents cannot confirm that - again, from our perspective it only looks *as if* it were so.

VI. CONCLUDING REMARKS

On a daily basis, we are very much accustomed to thinking that the content of consciousness is in a direct way a representation of a "true" surrounding world. This makes us convinced that existence, as a "phenomenon", is defined outside consciousness. A seemingly obvious justification is that each of us is able to construct a theoretical model of such a world, working regardless of any observer's experience. On the other hand, however, philosophical research along the lines of idealism makes one doubt these claims. The conflict between these two views is known to have produced an enormous amount of literature, turning it into one of the central topics in philosophy. My modest input here boils down to making use of an observation that the mere ability to construct the mentioned model (with a well-defined ontology only in classical physics) does not allow one to claim that the "true" ontology has been captured; instead, the very notion of ontology has to be considered as *defined* subjectively (similarly as qualia, in a sense), on the basis of the most direct content of the subjective mind. I have also shown that considering its origin subjective does not prohibit one from constructing an *abstract* objective world.

Specifically, the approach amounts to employing perhaps the most obvious, common-sense (and heuristic) observation possible in the discussed context: that each of us is necessarily limited to their "sense data" and processing thereof. For some reason, we accompany this view with an assumption of there being one, and only one, ontological layer possible, covering the surroundings, the senses, the brain as well as the latter's behaviour. What I propose, instead, is to consider the brain being able to produce an abstract ontology, in the higher-level dynamics of its neuronal network. The motivation is straightforward: subjectively we feel we *can* have a private ontology (the "given", for instance), and this *should* be visible in brain behaviour, somehow.

Perhaps the simplest way to reconcile the seemingly conflicting aspects of the notion of existence - the subjective and the objective one - is to treat things *as if* there was a "true" reality; to postulate a universal ontology, introduce observers, postulate their internal artificial ontologies realized through behaviour of "true" brains, and finally perform the jump to one of the latter by making it "real", while erasing the external one. Agreed, the approach is heuristic: if I am in a subjective point of view from the beginning, how can I possibly have a precise idea of a "true" reality *as it is*? Well, I cannot. Nevertheless, a detailed analysis performed "on the inside" of a subjective mind makes it harder to remember not to treat one's fundamental ontology in an absolute, universal way.

Even if one finds this redefinition of the notion of existence somewhat vague, the positive consequences of its introduction are encouraging. It has been claimed from time to time, mostly

around various "unification" topics in physics, that a solution is the more valuable, the more remote problems it can solve at once. Here, research areas involved are indeed distant, and with a single move all of them are shed new light on. First of all, subjectivity being ontologically distinguished becomes natural. Second, it becomes obvious that qualia cannot be reduced to anything, for they belong to a fundamental ontology. Moreover, it is pointless to look for them in any external world from our point of view: the quasi-objective one is designed not to contain them, while the "true" one has been effectively wiped out. Third, brain-in-a-vat stops being problematic. Finally, there is a place for ontological subjectivity inherent in quantum theory, allowing one to stop looking for *de facto* metaphysical ontological models, like Bohmian mechanics and Many Worlds interpretation.

A better grounding of what has been proposed in this paper is in the hands of precise introspection and neuroscience. It appears that the closest one can get to the subjective from the point of view of the latter is to recognize it as an agent's internal ontology, visible in brain behaviour. On the one hand, it would be fascinating to see the kind of neuronal organization this revealed. On the other, qualia or any other manifestation of subjectivity are seemingly to stay on the other side forever due to the resulting adjustment of the notion of existence.

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[16] "Subjective mind" and "consciousness" are synonyms in the following.

[17] I would rather not use the term "dualism" at this point due to its non-scientific connotations.

[18] I use quotation marks around this word from now on, since the external world, as understood in section II, is no longer considered reachable.

[19] The "quasi-objective brain" in this sentence should be understood as the "image-brain" defined previously; it is the most objective and mind-independent one we have at our disposal.

[20] To forget about this subtle fact, i.e. to embed the subjective in an abstract ontology built on its basis, is to introduce the mind-body problem; if one insists on us being able to operate within a universal, "true" ontology, there seems to be no straightforward way of explaining why the mind is doubled, as witnessed by the whole mind-body debate.

[21] Strictly speaking, it is so hypothetical that even my notion of existence does not reach there.

[22] I am using the word "metaphysical" in a slightly negative sense here, as a physicist would.

[23] There are intricate mechanisms taking place here (see [15] and similar publications), but they seem to omit the ontological aspect completely.

[24] This effect is clearly and measurably manifested in the famous double-slit experiment with quantum particles.