Subjectivist Propaganda

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Physicalism is the default position in science and in the philosophy of mind, but it should not be, I argue, because of two errors. By its epistemological error, physicalism gives physics priority over the evidence of first person experience. Only what I experience in first person is certain, so observation is prior to any theory. Physics itself is based on observation, avoiding the epistemological error, and then physics can progress, even changing its own ontology. However, physicalism imposes the ontology of physics on every science, and in physics everything is causal. By its ontological error, physicalism tries to explain causally what is intentional. And it happens that causality and intentionality are mutually exclusive, showing that the ontology of physics is insufficient wherever intentions are present. This ontological insufficiency prevents that physicalism can repeat the success of physics with any science where intentions play a rôle, and thus it is blocking the advance of both the social sciences and the philosophy of mind. To overcome this obstacle, I propose to go back to the essentials: we should consider again the transcendental problem raised by Descartes and its solutions by Hume and Kant. On top of this subjectivist solution, we should take advantage of Darwin and Turing, and we should extend our ontology beyond causality to include intentionality, and here my proposal is problem solving. Then you could join our Post-Kantian subjectivism and say with me: The world is not a huge machine, as physicalism proposes, but an enigmatic problem.

Keywords: *epistemology, transcendental problem, problem solving, subjectivism & physicalism, intentionality & causality*

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§1 Introduction: Devoid of problems, thinking is useless

¶1 · Near the end of November 2019, I learned that Jaegwon Kim had died, so I decided to read his *Philosophy of Mind*, Third Edition (2011), end to end. It was then when I realized how heterodox my position is. Though Kim discusses Descartes, he never mentions Kant, and Hume just twice, and both times in passing. And even Descartes is treated somehow dismissively, for example giving more credit to his "immensely astute pupil" Princess Elisabeth of Bohemia than to Descartes himself. Then, after finishing Kim's textbook, the reader is induced to believe that Descartes was plainly wrong and that neither Hume nor Kant have anything to say on this matter anymore, because their theories are obsolete. Dissenting so much on this as I do, it can only mean that I am completely outside the limits of orthodoxy.

¶2 · Of course, Descartes, Hume, and Kant were not right in everything they wrote, but nobody is. So then, taking advantage of the confinement of 2020, and trying to forget that I was turning sixty, I determined to reread all three in order to evaluate whether they are in fact obsolete, or not. I chose Descartes' Discourse and Meditations, Hume's Enquiry, and Kant's Prolegomena. I took these texts from the Internet, I composed a PDF file for each one —they are available from my web page— and then I proceeded to reread them, but now from the point of view of a sexagenarian who has already formed his own opinions.

¶3 · This paper starts from these rereadings, which introduce the main epistemological question, which is the transcendental problem. I see a progression there: Descartes raised the transcendental problem, Hume gave it a first skeptical solution, and Kant proposed a complete solution by reversing it. Infelicitously, after rereading them, I still consider that the transcendental problem and the answers to this problem given by these three philosophers are currently valuable and fundamental for epistemology, and then necessary to establish any philosophy of mind. Therefore, as these three philosophers are neglected in modern textbooks on the philosophy of mind, as in this one by the late Kim, it seems confirmed that I have lost contact with the current development of epistemology and the philosophy of mind.

¶4 · My own situation reminds me of a joke.

> *A wife calls her husband and warns him: "Please be careful, dear. The radio news says that there is a person driving the wrong way on the freeway." He responds, "One person? It's everybody!"*

And I am playing the husband rôle! Of course, I think that what I think is right, but I have to realize that the odds are against me. So, in this paper I will explain why I think what I think, so you can tell me where I am wrong. To help you to help me, each section title is a slogan that I defend. So, after reading each section, please pause a bit and write *true* besides its title if you believe that its literal meaning is true, or *false* if you think that it is false. I would appreciate very much your feedback on this, truly. As an appetizer, you can practice with my first slogan, *devoid of problems, thinking is useless*, that exceptionally I present you without any argument.

§2 Only what I experience in first person is certain

¶1 · Before erecting a tower, we have to set its foundation; the higher the tower, the firmer its foundation. Then, for the highest tower, the firmest foundation is required. This is what Descartes should have reason when he was trying to build the most comprehending philosophical theory. So Descartes was right insisting on his methodical skepticism, because otherwise hidden assumptions would interfere with the arguments producing biased conclusions.

¶2 · I am certain that I think what I think, that I feel what I feel, or comprehensively: I am certain that I experience what I experience, and nothing else is indubitable. Therefore, for Descartes, *only what I experience in first person is certain*. This slogan, which I fully endorse, is arguably the main contribution made by Descartes to philosophy.

¶3 · Descartes even doubts that the falling red stone he is seeing in front of him exists, because it can be an illusion, or perhaps he is dreaming. And time has proved that Descartes was right on this: it is now much clearer than it was in his time that I cannot take for granted that this falling red stone I am seeing exists as such, because physics has taught us that what ultimately exists are some strange fields and particles rather than stones and other material bodies.

§3 Under physicalism, everything is causal

¶1 · In the last argument, I have given physics the last word, a position called physicalism when it is driven to its most radical form. For *physicalism*, everything is physical, which is to say that the ontology of physics is the ontology. Kim's textbook is written explicitly from that position, in his words (Chapter 10, ¶2) because:

> *Materialism, or its contemporary successor, physicalism, is the default position in modern science and much of contemporary philosophy of mind (at least, in the analytic tradition).*

This is true, but wrong. I mean, physicalism is the default position, but it should not be, because for physicalism the ontology of physics is prior to epistemology, and this is like start building before setting the foundation. However, until reaching that conclusion, let me comment on the revealing transition from materialism to physicalism.

¶2 · The reason why materialism has been succeeded by physicalism is that the ontology of current physics is not anymore composed of material bodies as it was in classical physics. Currently, the ontology of physics is composed of fields and particles, the behaviors and interactions of which are governed by the laws of nature, which are causal. Actually, fields and particles are not separated entities, but two aspects of the same stuff, as each quantum field has its corresponding particles, and the laws of nature determine causally how those entities behave and interact. In fact, all we can say of the fields and particles is how they behave and interact, and this is what the laws of nature determine, and therefore finally, under physicalism, the physical laws of nature are sufficient. Consequently, *under physicalism, everything is causal*. In this transition from materialism to physicalism, causality is conserved because, also under materialism, everything was causal.

¶3 · So physicalism was materialism when physics was materialist, but now it is not materialism because physics is not itself materialist anymore, and the more generic label physicalism can accommodate whatever physics evolves into. This shows us that physicalism provides a moving foundation, which is as bad a foundation as quicksand is.

§4 Physics is founded on first person perception

¶1 · However, the unsolvable problem of physicalism is the foundation of physics. If the ontology of physics is the very foundation of knowledge, as posited by physicalism, then there is not any basis on which to argue that there is a better ontology for physics than the current one, whatever this might be. Under physicalism, it would be absurd to change the ontology of physics, but anyway, as shown by the transition from materialism to physicalism, that has indeed happened! And this raises a question: On what basis does physics itself progress?

¶2 · According to Popper, physicists base their theories on falsifiability, or more precisely, physicists validate their theories by predicting accurately observations and measurements that other experimenters can replicate. Here, by definition, an *observation* is a first person perception, and a *measurement* is a quantitative observation, so physicists do in fact follow Descartes: only the data that I experience in first person is certain; everything else, including theories, is hypothetical at best. Therefore, following Descartes, *physics is founded on first person perception*, because observation is prior to theory.

§5 Physicalism is wrong

¶1 · Suppose Galileo guesses that all red stones fall with the same speed. To verify this, he takes three red stones such that one of them balances the other two, goes up to the top of the tower of Pisa, lets the three stones to fall down freely at the same time, and waits until hearing the stones touching the ground. Then he reports us that the three stones have touched the ground at the same time, because it is not possible to distinguish the click sounds of the stones against the ground as they were simultaneous. His conclusion is that *all red stones fall with the same speed*. However, you are not bound to believe his words because the experiment is replicable; so it is up to you to repeat it, if you wish. In this first stage, everything is clear and distinct because everything is first person perception.

¶2 · The next stage is generalizing. Likely the stone color is not important, so experiments mixing red and gray stones follow, after which a new law of nature is proposed: *all stones fall with the same speed*. However, the most ambitious generalization, *everything falls with the same speed*, fails because feathers take more time to fall dawn. After examining why feathers are an exception, Galileo suggests that the air might be interfering, so perhaps in a vacuum everything falls with the same speed. Now the experiments are more involved, and although it is not possible to eliminate the air completely, anyhow it happens that the more perfect the vacuum, the more similar the speeds of feathers and stones are. Then, the agreed conclusion among physicists is that, *in ideal conditions, everything falls with the same speed*. Now things are not completely clear and distinct, since they depend on some provisions that are impossible to achieve in practice.

¶3 · Stated that, in ideal conditions, everything falls with the same speed, the next question is: At what speed does everything fall? For these new experiments, Galileo drops red stones from different heights measuring the time each one takes to reach the ground. Using h for height and t for the falling time, he finds that $h \propto t^2$, so $h = k \times t^2$ for some constant k. Well, in fact, constant k is not completely constant, because the measures taken are not accurate enough; particularly the time elapsed t. So, in order to state $h \propto t^2$ as the *law of falling bodies*, we depend on some provisions as before, and now also on calculations done on imprecise measurements.

¶4 · Nevertheless, Galileo insists and reformulates the law of falling bodies, for which space is not proportional to time, but to time squared, by stating that *everything falls with the same uniform acceleration*; of course in ideal conditions, but this goes implicit. And again, on top of that proposal, he argues that a force is necessary to change the velocity of a body, as gravitation in the case of falling bodies, and that *in the absence of forces a moving body will keep its velocity*, so it will continue moving forever.

¶5 · This last conclusion goes against our experience, as in practice, in the absence of forces, we observe that every moving body eventually stops. In order to save this new law, which is the *law of inertia* that Newton took later as his first law of motion, a new provision is required: *save for friction, in the absence of forces a moving body will keep its velocity.* It happens that polishing more the ball and the horizontal surface over which it rolls, the ball keeps moving more time, so the agreement among physicists is that without friction it would keep moving forever. In any case, even before Newton and Einstein put their minds on the physics of falling bodies, there were already tensions between the laws of physics and first person experience.

¶6 · Physicalists take the law of inertia as a first example that the laws of physics are true, even when they contradict our experience. Therefore, they happily conclude that physics is a better source of certainty than first person experience. However, this is nonsense. Even in the case of the law of inertia, what we experience has to be explained, because it is still true that in practice a force is needed to keep the velocity of any moving body. If this were not explained away by friction, then the law of inertia would have been falsified, in the sense of Popper, and consequently discarded. When a theory contradicts an observation, the theory is wrong.

¶7 · We must remember that physics is ultimately founded on observations, which are first person perceptions, and that on that foundation the building of physics is erected, each floor being the basis on which the next one is built. As the tower gets taller and taller, the foundation is further and further away from the top, but confusion will arise should we forget on what foundation does physics stand. *Physicalism is wrong* because physics is not a better source of certainty than first person experience. Physicalism confuses the building with its foundation. Physicalism confuses a hypothesis with the evidence.

§6 Epistemology is prior to ontology

¶1 · Now we can reconstruct the metaphysics of physicalism: for physicalism the very foundation of knowledge is the ontology of physics, and physics is founded on data taken from observations, according to physicists. So, for physicalist philosophers the foundation is physics, and for physicists the foundation of physics is Cartesian philosophy. Therefore, only by keeping philosophers separated from physicists, can the physicalist philosophers pretend that we the Cartesian philosophers are wrong.

¶2 · For us, it is easy to see that physicalism cannot be right. In fact, it is too easy to doubt that the current ontology of physics is the foundation of knowledge when there is not even an agreed interpretation for quantum mechanics. Another obstacle to physicalism, where everything is causal, is our first person experience of free will. This means that physicalism cannot pass through the methodical skepticism of Cartesian doubt.

¶3 · The conclusion is that before determining what there *is*, we should determine what can we *know* (that there is). Descartes' motto (Discourse IV ¶1), "I think, therefore I

am", says that *epistemology is prior to ontology*, and consequently epistemology is also prior to physicalist ontology.

§7 The transcendental problem is the central epistemological question

¶1 · If only what I experience in first person is certain, then everything else, including every possible theory, is dubitable. So perhaps Descartes' method is too demanding, making solipsism unavoidable, since there might be no way to go beyond the data of first person experience. Then, the question is: *Can I go beyond first person experience?* This is Descartes' question, known as the transcendental problem (transcend = go beyond). *The transcendental problem is the central epistemological question*, and it was addressed since Descartes' time by many philosophers.

¶2 · Descartes' own solution is weak. He believes that we can transcend first person experience because God, who created our minds, is not a deceiver. However, he acknowledges that he is sometimes wrong, so it seems that God is deceiving him when he is wrong, or perhaps he is wrong when he believes that God is not a deceiver. And, in any case, how can Descartes know for certain whether God is a deceiver or not?

¶3 · In addition, because of his time, part of what Descartes attributes to God, after Darwin (1859) it is attributed to evolution. For example, in Meditation VI ¶22, he explains us that the mind experiences that "which is the best fitted, and generally the most useful for the preservation of the human body", thus manifesting "the power and goodness of God." Rather, after Darwin, it manifests the power and goodness of evolution. Well, goodness only in the results, which seem perfectly adapted to their environments, because the evolution procedures themselves can be considered cruel and uncaring.

§8 Causality is a brain device that helps us to survive

¶1 · The transcendental problem was also addressed by Hume, who did it by investigating causality because (Enquiry §IV ¶22):

> *All reasonings concerning matter of fact seem to be founded on the relation of Cause and Effect. By means of that relation alone we can go beyond the evidence of our memory and senses.*

Causality is the relation by which the same cause is always followed by the same effect. Hume summarizes the situation of causality thus (Enquiry §IV ¶30):

> *We have said that all arguments concerning existence are founded on the relation of cause and effect; that our knowledge of that relation is derived entirely from experience; and that all our experimental conclusions proceed upon the supposition that the future will be conformable to the past.*

Therefore, the situation of causality is circular since (Enquiry §IV ¶32):

> *If there be any suspicion that the course of nature may change, and that the past may be no rule for the future, all experience becomes useless, and can give rise to no inference or conclusion. It is impossible, therefore, that any arguments from experience can prove this resemblance of the past to the future; since all these arguments are founded on the supposition of that resemblance.*

¶2 · So causality cannot be founded on experience, and now the question is: On what principle is causality founded? Hume's answer is that (Enquiry §V ¶36): "This principle is Custom or Habit." So causality is founded on Custom, where (Enquiry §V ¶44):

> *Custom is that principle, by which this correspondence [between the course of nature and the succession of our ideas] has been effected; so necessary to the subsistence of our species, and the regulation of our conduct, in every circumstance and occurrence of human life.*

Hume's conclusion (Enquiry §V ¶45) is that Custom is an instinct implanted in us by nature. In modern terminology, Hume is saying that *causality is a brain device that helps us to survive.*

¶3 · Although when expressed in evolutionary terms, Hume's solution is basically the same as the one given by Descartes, see §7, for Descartes his solution was absolute since it relies on God, while for Hume his was skeptical; Hume' Enquiry §V is titled "Sceptical Solution of these Doubts". Hume considered his solution skeptical because it is based on Custom and not on the evidence of first person experience.

§9 Objective reality is subjective

¶1 · As confessed in the Introduction to his Prolegomena, Kant was moved by Hume to interrupt his "dogmatic slumber", but Kant considered Hume's skeptical solution to the transcendental problem incomplete. Kant addressed Descartes' question by looking to Hume's solution from a different point of view. He rightly compared his change of point of view to the Copernican revolution in astronomy. But let us go step by step.

¶2 · In Kant's Prolegomena §2, we read:

> *First of all, we must observe that all proper mathematical judgments are a priori, and not empirical, because they carry with them necessity, which cannot be obtained from experience.*

I have selected this sentence because it draws a clear distinction between *a priori* and *necessity* on one side, and *empirical* and *experience* on the other side.

¶3 · Then, comparing his solution to the transcendental problem with Hume's one, Kant writes (Prolegomena §30):

> *This complete (though to its originator unexpected) solution of Hume's problem rescues for the pure concepts of the Understanding their a priori origin, and for the universal laws of nature their validity, as laws of the Understanding, yet in such a way as to limit their use to experience, because their possibility depends solely on the reference of the Understanding to experience, but with a completely reversed mode of connexion which never occurred to Hume, not by deriving them from experience, but by deriving experience from them.*

So causality is not founded on experience, but rather experience is founded on causality. And causality is necessary and a priori, precisely because it is not empirical and based on experience, but because that is the way our brain works.

¶4 · Later Kant writes about the laws of nature (Prolegomena §36):

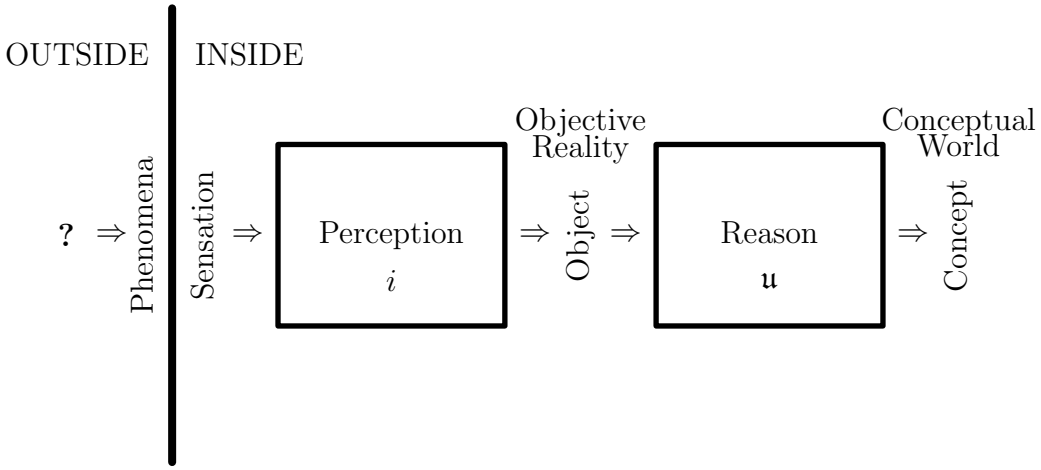
> *There are many laws of nature, which we can only know by means of experience; but conformity to law in the connexion of appearances, i.e., in nature in general,*

> *we cannot discover by any experience, because experience itself requires laws which are a priori at the basis of its possibility.*

And then he concludes this §36 with his Copernican revolution:

> *The Understanding does not derive its laws (a priori) from, but prescribes them to, nature.*

¶5 · So Kant agrees with Hume in that causality cannot be founded on experience. But then Kant takes the next step by reversing the point of view: experience is founded on causality. Well, not only on causality because, besides causality, Kant's analysis found some other Categories that inform (= give form to) our experience. In modern terms, Kant is saying that the cognitive machinery of the subject conforms the raw data taken from the senses, which are the *sensations*, into a reality of objects that obey the causal laws of nature. For example, the falling red stone I am seeing is a mental construct that gives form to some sensations as a perceived object (the red stone) ruled by causal laws (gravitation). The following figure shows my interpretation of Kant's epistemology, for which *objective reality is subjective*, because real objects, including the falling red stone I am seeing, are inside the subject, as they are built by our brain inside itself. My Perception subsumes Kant's Sensibility and Understanding.



¶6 · To understand is not the same as to assimilate. I guess this happens to everybody, and at least it happened to me. As a boy, I understood death. That is, I understood that after killing a mosquito, that mosquito would not bother me again, never. I also understood that, eventually, I will die. However, I took me some time to assimilate that I will die myself some day, and the assimilation was accompanied by shivering and shuddering. I had the same feelings the day when I assimilated Kant.

¶7 · Kant's epistemology is the logical answer to the transcendental problem raised by Descartes because, except the raw data taken by our senses, which are the sensations, everything else is calculated by the subject, including our experience. So first person experience is certain but it is not raw data, it is the result of some brain calculations. However, you can understand it without assimilating it. I will not give names, but for some philosophers the problem of qualia refers to colors, as the redness feeling, but neither to things, as the stone seen, nor to the laws of nature, as gravitation causing falling. If those philosophers understand Kant's subjectivism, they have not assimilated it. Even causality and freedom are not outside, but inside the subject.

§10 Realism is wrong

¶1 · Realism states that reality is independent of the subject. Realists also say that reality is not created by the subject, and that there was reality even before there was any subject. If we define *reality* as whatever is outside the subject, then we subjectivists can agree with those three realist statements. Our point, following Kant, is that everything we subjects know about what is outside the subject is calculated by the subject's brain, and therefore everything we know about reality depends on the subject. Everything we know about reality is subjective.

¶2 · For example, the falling red stone I am seeing is the result of perception, which is the name we give to some computing modules implemented in our brains. Using the figure in page 9, the falling red stone I am seeing is part of objective reality and then it is inside me, the subject. The inputs to perception are the sensations, which are outside reality phenomena that interact with my senses, as for example a photon hitting my left eye. So we do not see the sensations, and even less the outside reality.

¶3 · *Naïve realism* assumes that what we perceive is exactly what is outside us, implying that perception is like a perfect glass, that is, non-distorting and completely transparent. On this view, perceived reality, which is the objective reality of the figure in page 9, is a perfect representation of the outside reality, which is the true reality. Naïve realism is wrong, as shown by illusions and by our current knowledge of perception, see Marr (1982) for example.

¶4 · *Physicalist realism* assumes that physics, or more generally science, describes exactly what is outside us, implying that perception delivers a cooked version of it. On this view perceived reality is a simplified representation of the outside reality, which is the true reality. Physicalist realism is wrong because physics is elaborated from first person perception, see §4, implying that physics is a cooked version of perceived reality, and not the reverse.

¶5 · However, assuming that perception is implemented in my brain the same way that it is implemented in your brain, or similarly enough, then, in front of the same outside scene, we would both perceive the same object, let us say, the same red stone falling. This is why first person perception is a successful foundation of physics, and science, and why experiments are replicable, even though first person perception is as private as any other first person experience, as pain, redness, or free will.

¶6 · From our subjectivist position at the very right of the figure in page 9, naïve realism is projecting perceived reality outside, which is the natural way of seeing it. In fact, in dealing with our day to day business, the wise thing to do is assuming that what is outside is as we perceive it, because our perception was designed by evolution to survive in our environment. In any case, *realism* is a theoretical view that assumes that we can represent the outside reality truly as it is, implying that we can access the outside reality directly to verify it. Since this is not the case, *realism is wrong*.

¶7 · The word 'representation' is loaded with realism. The prefix 're-' suggests a repetition, indicating that what is represented is a version of an original, and then that a representation is better when it is more similar to the original. For us subjectivists, perceived reality cannot be compared with the outside reality, because we cannot access the outside reality directly. For us, perceived reality is good if it is useful for the perceiving subject, and more precisely as we will see below, if the perceiving subject can use it to resolve his problems, and ultimately his survival problem.

§11 Life is the source of intentionality

¶1 · Let us compare the answers of our three philosophers to the transcendental problem, *Can I transcend (= go beyond) first person experience?*

- For Descartes the answer is *yes* because God is not a deceiver and God has created our brain in such a way that we experience that "which is the best fitted [...] for the preservation of the human body".
- For Hume the answer is *yes* because the instinct of Custom, "so necessary to the subsistence of our species", is implanted in our brain.
- For Kant the answer is *yes* because of the workings of Sensibility, Understanding, and Reason, which are implemented in our brain.

So all three have answered *yes* because of the way our brain is and works.

¶2 · There are some differences, though, in their answers to the immediate question: Why is our brain as it is and it is not otherwise? Descartes points to the preservation of the body, Hume alludes to the subsistence of the species, and Kant ..., what does he say? Although in passing, he mentions life (Prolegomena §48):

> *[...] life is the subjective condition of all our possible experience [...].*

None of them elaborate on their answers, possibly because before Darwin (1859) it was not prudent to go any further. But what can we add after Darwin?

¶3 · After Darwin we can validate Hume's anticipation: the brain is a product of evolution. After Darwin we can explain all brain devices, including Kant's Categories, evolutionarily. For example, if implementing causality in brains would not make those living beings fitter, then causality would be eventually discarded by natural selection. In any case, Darwinian evolution is not a first person experience, but a theory, and then it is hypothetical, meaning that to go beyond Kant we have to make an assumption, and mine is the *intentional life proposal*: *life is the source of intentionality.*

¶4 · I am aware that this slogan is my first deviation from already transited paths, so you should evaluate it very carefully before writing your *true* or *false* besides it. In order to help you, in the next section, I will give you some basic reasons for its truth though, as anything that is not first person experience, the intentional life proposal is hypothetical and then its final value depends on the usefulness of its consequences, see §29, and not on the eloquence of its arguments. Fortunately for us here, I cannot be eloquent in English; I have enough struggling against it just to express what I intend to mean!

§12 Every living being is an embodied intention

¶1 · Every living being is intentional. The intention of every living being is to keep being alive in order to propagate life. The previous sentence is nearly tautological because life is best defined as an intention. That living beings are intentional can be reformulated this way: *every living being is an embodied intention.*

¶2 · In addition, non-living stuff is not intentional, so life and intention partition the world in the very same two parts: one that is alive and is intentional and another that is not alive and is not intentional.

¶3 · Intentionality (including intentions, means, and goals) is the core of life, but negated by physicalism, where everything is causal, see §3 and §16. For this reason, physicalism cannot use intentionality to define life, and it has to resort to operational definitions of life. The intentional life proposal overcomes this difficulty. Note that conceptual definitions of life based on cybernetics, as those by Maturana & Varela (1973) or by Rosen (1985), could fit with the intentional life proposal.

§13 Life is the problem of survival

¶1 · Admitting intentionality into our ontology has many consequences. After vindicating intentionality, we can write down *design* without scare quotes. Now the human brain is not only a product of evolution, but it has been designed by evolution. And design is about resolving a problem by implementing a solution using some available resources. The designer's intelligence is shown when an unsolved problem is effectively resolved, or when an already solved problem is resolved in a new way that uses less resources.

¶2 · We will use problem solving as our model for intentionality. In this model, an intention is a problem and a designer is a resolver. Problem solving assumes possibilities and freedom, because if there were not any possibility of doing otherwise, that is, if determinism were the case, then there would not be any problem.

¶3 · Using a problem solving model for intentionality, we have three kinds of ontological entities: problems, resolutions, and solutions.

- A *problem* is a state of need. A problem is defined by the condition that any of its solutions has to satisfy, and it requires freedom. There have to be possibilities and freedom to choose among them, because if there were only necessity and determinism, then neither there would be a problem nor there would be a decision to make.
- A *solution* is a state of satisfaction. A solution is a use of freedom that satisfies the problem condition.
- A *resolution* is a transition from uncertainty to certainty. A resolution takes a problem and tries to find its solutions; it is a way of solving the problem. A solving resolution for a problem is an algorithm that calculates its solutions.

$$\text{Problem} \xrightarrow{\text{Resolution}} \text{Solution}$$

Resolving is to searching as solving is to finding.

Problems	*Intentions*	*Purposes*	*Aims*	*Desires*	*Puzzles*	*Questions*
Resolutions	*Means*	*Resources*	*Expenses*	*Plans*	*Algorithms*	*Explanations*
Solutions	*Ends*	*Goals*	*Profits*	*Rewards*	*Results*	*Answers*

¶4 · Then, the problem of survival expresses the intention of continuing being alive, or in short, *life is the problem of survival*. From this problem solving definition of life, also known as the *problematic life proposal*, it follows that evolution is life's resolver.

§14 In calculating capacity, we are just Turing complete

¶1 · Evolution is life's resolver, but evolution only acts on each individual living being once: when it is conceived. In that very moment its genetics is basically determined for its whole life, and then later on this individual is on its own to develop, to grow, and to reproduce. If this individual happens to live in a stable environment that is the same as that of its ancestors, or very similar to it, then evolution has surely anticipated all the problems it will possibly face. But this is not longer enough for living beings that can move, as animals. In this case an additional resolver is needed, namely the neural system with its main organ, the brain.

¶2 · We can say that the animal brain was designed by evolution to solve those problems that a moving individual roaming around faces that evolution cannot anticipate. In this sense, the brain is the resolver of the problems of the moving individual. And now we can go a little further than our three philosophers in answering the main cognitive question: *Why is our brain as it is and it is not otherwise?* Because the brain was designed by evolution to solve as many problems as a moving individual could face.

¶3 · This answer demands a comment. Design is always a trade-off between goals and resources. It is said that "the best is the enemy of the good" because, generally, to cover every possibility, even those that are very unlikely, costs much more than to cover only those cases that are frequent enough. Therefore, as in any design, the ultimate goal of the evolution of the animal brain, which is resolving as many problems as possible, has always been moderated by the goals-resources trade-off.

¶4 · However, the human brain seems to fulfill completely the ultimate goal of the animal brain, because the human brain is Turing complete. In fact the human brain is the *only* Turing complete brain, but that is another story, see Casares (T) and §18. Worded as the *law of Post*: *in calculating capacity, we are just Turing complete*. This means

- that we can calculate whatever any Turing machine can compute, and
- that whatever we can calculate can also be computed by ã Turing machine.

Only if you believe that both clauses are true, you should write *true* besides the title of this section, otherwise you should write *false*. However, for the first clause you should take into account the provisions stated at the end of this section.

¶5 · The law of Post (1936) is a law of nature stating the limitations of the calculating power of our species *Homo sapiens*. As any natural law, it is in need of continual verification, because it can be falsified by observations refuting it; or by observations refuting any of its consequences, as for example Church's (1935) thesis.

¶6 · As expressed by Gandy (1980), Church's thesis says: *What is effectively calculable is computable*; in our words it is the second clause above generalized from we humans to any calculating device, including any brain. And the law of Post implies Church's thesis because, as shown in Casares (C), if the law of Post is true, then Church's thesis is also true. Then, by contraposition, if Church's thesis were false, then the law of Post would be false. And therefore, a counterinstance to Church's thesis would be enough to falsify the law of Post. Of course, in practice the situation is not as easy, since some provisions can be added to preserve a law, as Lakatos (1976) has shown us.

¶7 · Turing completeness is a computational property. And computing as modeled by Turing machines is unbounded in time and tape, where tape is external memory. This means that it is a mathematical idealization, because in practice there is not an infinite amount of time to compute, and memory is never infinite. So, the same way that the law

of inertia needs an exception for friction, the law of Post requires some provisions: *save for time or tape limitations and errors*, we can calculate whatever any Turing machine can compute. These provisions protect the law of Post from refutations based on time or memory limitations and on slips.

§15 The laws of nature are written by persons

¶1 · Newton's laws of motion were written by Newton, Maxwell's equations for electromagnetism were written by Heaviside, the theory of relativity was written by Einstein, and the Schrödinger equation was written by Schrödinger but interpreted by Born. So, for the time being, it is a truism that *the laws of nature are written by persons*.

¶2 · However, when this truism is considered along with the law of Post, the conclusion is that the *laws of nature* are the best algorithms that scientists have written till now to calculate what we would observe under some conditions. This conclusion, which also works as a definition, deserves some notes.

- The conditions are needed because each natural law has its own scope of application.
- When the result of the calculation does not agree with the actual observation, the law is falsified. In other words, the laws of nature are hypothetical, and then they need a continual verification, so their calculated results should always be checked against actual observations, since only first person experience is certain.
- The word 'algorithm' is synonymous with 'computable function' and with 'recursive function', because in the mathematics of computing every computing device implements a computable function, where computable and recursive functions are equivalent, as shown by Turing (1937).

¶3 · This last point sheds some light on causality, because the mathematical function models causality: as in causality, where the same cause always produces the same effect, in a function the same argument always produces the same value. Therefore, under the law of Post, the causal laws of nature are necessarily computable functions.

§16 What is causal is not intentional and what is intentional is not causal

¶1 · Causality and intentionality are mutually exclusive:

- Causality is assuming that the same cause is always followed by the same effect, without any other possibility permitted, and then without the possibility of doing otherwise. In causality, what happens happens, without any evaluation. In summary, there are neither freedom nor values in causality.
- Intentionality is assuming that problems exist, and problems assume that some things, the solutions, are better than other things. And problems require the possibility of doing otherwise, so they need freedom. In summary, intentionality assumes values and requires freedom.

Then, the *causal-intentional dichotomy* says: *what is causal is not intentional and what is intentional is not causal*.

¶2 · In physicalism, where everything is causal, see §3, the causal-intentional dichotomy implies that nothing is intentional. The causal-intentional dichotomy also implies that intentionality cannot be reduced to physics, since it cannot fit inside any causal law. But, denying a first person experience as pain, along with every other intentional experience, just shows that physicalism is wrong. On the other hand, assuming that life is the source of intentionality, so that every living being final intention is to resolve its problem of survival, makes straight considering pain to be a problem indicator, see §23.

¶3 · The causal-intentional dichotomy is also the reason why physicalism fails with every intentional science. Intentionality assumes values, that is, that some things are better than others, and possibilities, that is, that an agent can choose freely. And the ontology of physicalism is so poor that it cannot include intentionality, since there are neither values nor freedom in physics, where everything is causal. Then physicalism cannot comprehend any science where intentions play a rôle. This explains why physicalism can be successful in physics and chemistry, where the object is non-intentional, and why it is completely unable in psychology, economics, and wherever the object is intentional.

¶4 · Under physicalism, only the causal laws of nature matter, see §3, which are algorithms, see §15. Then, from the problem solving ontology presented in §13, physicalism only admits resolutions, while it ignores problems and solutions. This represents accurately that, in the poor ontology of physicalism, everything is causal and intentionality does not exist.

§17 We are a collaborative species

¶1 · Language cannot fit within physicalism either, since it deals with intended meanings, see Casares (B) and §19. But science requires language because its laws and theories are linguistic objects, see §15. Anyway, what is fundamental to me is that language is the defining characteristic of the human subject, implying that language is the key to subjectivism, and therefore I need to present you an evolutionary argument for language, or my theory would be much weaker.

¶2 · Firstly, we should assume that six million years ago, or whenever our last common ancestors with chimpanzees lived, see Patterson et al. (2006), the communication system of our ancestors was equal to the one chimps use today. This is a kind of communication system without sentences and with a finite number of words, which is named asyntactic in Casares (H), that is also used by many other species, and not only by mammals. This means that evolution reached this point several times, but it did not proceed any further, except in our case. Then, the question is: Why?

¶3 · If in our case, and only in our case, evolution took a different path, then we have to assume that some of our ancestors were confronting a different survival problem than those which chimps and the other asyntactic species have been facing. So here, in line with Tomasello (2008), I will defend that our survival has required collaboration, and then that our evolution as species was mainly driven by collaboration, meaning that the traits selected over the last six million years were mainly those which enhanced collaboration. To collaborate is to resolve a problem together with other individuals and then, when our evolution was directed towards better collaboration, it was enhancing communication, lastly reaching human language. In this scenario, although it is not the only possible one, communication and language will play the leading rôles.

¶4 · For this argument to work, chimps should not be able to collaborate, and this requires me to make you a distinction. To that end, using our problem solving model, we will distinguish collaboration from cooperation. In *collaboration*, all collaborating agents are trying to resolve the same problem, while in *cooperation*, each cooperating agent is trying to resolve its own problem, although each one utilizes the other cooperating agents. For example, all sexual species need to cooperate in order to procreate, since this works even if each partner is just trying to maximize its own descent. So sexual reproduction does not require collaboration, and cooperation is enough. And honey bees are an example of collaboration, because the survival problem of any colony worker is the survival problem of its queen. So eusocial species implement collaboration, which goes beyond cooperation.

¶5 · In human terms, to collaborate is to unify intentions and then trying to achieve joint goals with coordinated plans, and to cooperate is to take advantage of a mutualistic relation in order to share profits and expenses. So the difference is that in collaboration there is only one intention, which is a common problem assimilated by all the collaborating agents that they resolve jointly, while in cooperation there are several intentions, one for each cooperating agent, and only profits and expenses are shared, which are goals or rewards and means or resources, respectively.

¶6 · Cooperation is much more frequent in nature than collaboration. In fact, there are very few instances of collaboration, perhaps as few as three: multicellular organisms, eusocial species colonies, and human societies. And the number of eusocial species is a small fraction of the total, even though they are very successful evolutionarily, see Wilson (2008). The ultimate reason explaining why collaboration is rare, even being very successful, might be that Darwinian evolution is based on selfish individual competition. As competition requires at least two intentions striving against each other, it is then incompatible with collaboration, in which there is only a single intention. We can say that competition can accommodate some cooperation, but that competition is not compatible with collaboration,

¶7 · Collaboration subordinates individuals to a common aim, and in doing so, it creates supra-individual entities. When a set of individuals, instead of each one following its own individual interest, collaborate in order to achieve a joint goal, the whole set works as a single entity, as it is clear in the case of a multicellular organism, a bee colony, or a human team. That "organized groups beat solitaires in competition for resources" (Wilson 2008, page 17) explains why collaboration is so successful.

¶8 · According to Tomasello (2008), chimpanzees cannot share intentionality because they are too selfish. So chimps can cooperate, but they cannot collaborate as we do. And we can do it because *we are a collaborative species*, although we are not an eusocial species. Then, the next question is: Why are not we another eusocial species?

$$\text{Collaborative species} \begin{cases} \text{Eusocial species} \\ \text{Linguistic species} \end{cases}$$

§18 Language is a tool for expressing problems, resolutions, and solutions

¶1 · In the case of eusocial species, collaboration is hardwired genetically, to the point that some castes are sterile. Consequently, a worker bee cannot compete with its queen; it is bound to collaborate. Our evolutionary path was different, and not being hardwired, we can both collaborate and compete. We are more flexible. This flexible solution requires individuals that can share problems when appropriate, and this requires communication among the collaborating individuals.

¶2 · Competition does not require communication. Cooperation requires communication, but not much. For example, in the case of sexual procreation, the pair has to meet, but a pheromone can be enough. Communication for collaboration is more demanding. Full collaboration can only be achieved when all the problem solving machinery can be shared among the collaborating individuals. Then, given our problematic ontology, see §13, we have to conclude that *language is a tool for expressing problems, resolutions, and solutions*. Should the evolutionary fitness of a communication system had a direct relationship with its expressiveness or, in other words, if expressing more problems, resolutions, and solutions would have enhanced our ancestors survival chances, then the route from an asyntactic communication system to our language could have passed through these phases, see Casares (H): next syntactic, then generative, and lastly complete.

¶3 · A complete language requires a Turing complete device, thus explaining evolutionarily the law of Post. So, under the law of Post, human language is complete, see Casares (T), and this means that any computable function can be expressed and calculated in it, so every problem that can be resolved by computing can be expressed and calculated in our language. And this requires the computational complexity of Turing completeness, explaining perhaps why eusocial insects could not take this evolutionary path. And living in burrows, where communication is limited, could explain why the more complex eusocial species of blesmols did not take the linguistic route to collaboration.

¶4 · Since human language can represent problem solving fully, we can resolve problems theoretically. Other species resolve the problems they face when they face them by using strategies either hardwired by evolution or learned by experience. In our language, we can meditate and plan about future possible problems, or we can consider past problem resolutions. That is, we can resolve problems inside our brain, which is more secure and cheaper than resolving them in real time when facing them. We can even discuss how to resolve those problems with some conspecifics. Thus our problem solving is shareable. And, in addition to learning by experience, we can also learn how to resolve problems by instruction. This last possibility is uniquely human and it is only possible because of language, and particularly because human language can represent problem solving completely. In other words, because of our language, our problem solving is cumulative, so we do not have to reinvent the wheel, as all other species are bound to do.

¶5 · Therefore, the complete verbalization of problem solving adds its own advantages to those of collaboration seen in the previous section §17, implying that language has a very big survival value. So we are seeing, on one hand, that collaboration has a big survival value and that linguistic collaboration has even a bigger one and, on the other hand, that Darwinian evolution is not well suited for collaboration and that linguistic collaboration is even more stringent. This should explain why there are few eusocial and only one linguistic species, our own species *Homo sapiens*.

¶6 · So my story for language would be as follows. Some of our ancestors six million years ago were in a very infrequent evolutionary situation that fostered collaboration and that allowed rich communication. In that niche, evolution has been enhancing communication bit by bit thus enhancing collaboration bit by bit, and consequently it has been creating more and more cohesive, specialized, and powerful human societies; perhaps too powerful.

§19 The limits of computing are the limits of my world

¶1 · Under Church's thesis both *language comprehension*, that is, calculating the intended meanings of given sentences, and *language generation*, that is, calculating sentences with given intended meanings, have to be computable. Then, since we are Turing complete, we can learn any computable language, and therefore we can render Wittgenstein's (1922) statement 5.6 more precise: *the limits of computing are the limits of my world.*

¶2 · In fact, under the law of Post, save for time or tape limitations and errors, the limits of what we can calculate are the limits of computing. Some of the limits of computing were found by Turing (1936) himself. All natural and rational numbers are computable, but not every real number is computable, though every algebraic number, as $\sqrt{2}$, and some transcendental numbers, as π and e, are computable. Regarding functions, not every function from natural numbers to natural numbers is computable.

¶3 · The situation of sets was stated by Post (1944): *There exists a recursively enumerable set of positive integers which is not recursive.* This theorem says that there are sets of natural numbers that can be computed by extension, because there is a computable function that returns all of its elements, but that cannot be computed by intension, because there is not any computable function that returns TRUE for every natural number in the set and FALSE for every natural number not in the set.

¶4 · Regarding theories, the main results were achieved by Gödel (1930): 1) *no computable theory that is consistent can be complete* and 2) *the consistency of any computable theory that is consistent cannot be proved in that theory itself.* There is a corollary to this second incompleteness theorem that I like: *every computable theory in which it is possible to prove its own consistency is not consistent.*

§20 No theory is complete

¶1 · Since to resolve a problem is to calculate its solutions, then, under the law of Post, the limits of resolving are the limits of computing. It would be nice that every function were computable, so that we could resolve every problem, at least in principle, as Hilbert (1900) proclaimed with his "there is no *ignorabimus*", but sadly it is not that way. Du Bois-Reymond was right, there are problems that we cannot resolve.

¶2 · We can only predict what is causal and, under the law of Post, causal is computable and computable is causal. A consequence is that the limits of causality are the limits of computing, resulting that we can only predict what is computable. It would be nice that every function were computable, so that we could predict everything, at least in principle, as physicalism proclaims optimistically, but sadly it is not that way. There are events that we cannot predict.

¶3 · For a mathematical function, the same input always results in the same output, and then it models a causal mechanism. Consequently, mathematical functions lack freedom. Therefore, free will is a first person experience that cannot fit into a computable function,

and then, under the law of Post, freedom cannot fit into a causal law, implying that the laws of physics cannot be complete. This is a trivial conclusion, I know, but negated by physicalists.

¶4 · The laws of physics are not an exception. As seen in the previous section §19, no computable theory that is consistent can be complete. We are bound to require consistency, because an inconsistent theory would be absurd. As stated in logic, we can prove everything in an inconsistent theory: for every p, that both p and its negation $\neg p$ are true, and also that both p and its negation $\neg p$ are false. Therefore our conclusion is that, under the law of Post, *no theory is complete*. I repeat it; every consistent theory is incomplete. Forget the theory of everything.

¶5 · In other words, if a series of experiences can be described by computable functions, then those experiences can be explained by causal laws, provided there is someone intelligent enough to find the corresponding computable functions. Everything else, without exceptions, we cannot explain causally. Perhaps quantum mechanics seems funny because of this. Let us suppose that some quantum behaviors were not computable. By definition, that which is not computable is *random*. Then, under the law of Post, it follows that those random behaviors are not causal, and consequently we cannot predict them.

¶6 · And randomness is not alone. These are three sources of unpredictability:

- Randomness, because we cannot calculate what is not computable.
- Ignorance, because we cannot predict accurately if we lack some crucial data.
- Freedom, because we cannot predict completely the behavior of a free agent.

Physicalism cannot distinguish them.

§21 There is free will

¶1 · But you can distinguish them, can't you? Oh no! I see what is happening. Though most of you are physicalists, only a very few of you are radical, consequent and uncompromising physicalists. The majority, let me call you pragmatic physicalists, would agree with me in that radical physicalism cannot be right. Well, that is the reason why you are not radical physicalists, isn't it?

¶2 · Pragmatic physicalism is very difficult to attack. Firstly because it is not in fact a single position, but nearly each one of you pragmatic physicalists have your own position. Perhaps your only common belief is that for you *physics is a better source of truth than philosophy*. This is, by the way, a sensible thing to believe, but, I am very sorry to say, make you a band of defeatist philosophers. And secondly because yours is a compromising position. You deny the radical statement *'physics is the only source of truth'*, which has clear consequences, to adopt instead a vaguer and softer version —how much better is physics than philosophy?— that can be adapted to the circumstances in such a way that, in the end, it cannot be falsified.

¶3 · Let us take, for example, free will. Classical and modern physics says that there is not freedom, because nothing is free of the laws of nature, which are causal, but we experience in first person that we are free to move our own body, and free will is the foundation of ethics. For a radical, consequent and uncompromising physicalist there are neither doubts nor reservations: as physics says, there is not free will, and you are wrong thinking that you are free. Well, say you the pragmatic physicalists, wrong is a strong word, and perhaps freedom is an illusion, or perhaps free will is compatible with determinism.

¶4 · I must confess that, to me, compatibilism is like reaching the end of a *reductio ad absurdum* argument and then accepting the absurdity. The argument goes like this.

- Let us suppose that physicalism is true.
- Then nature is deterministic, and consequently there is not free will.
- But *there is free will*.

So, the compatibilist concludes, physicalism and determinism are compatible with free will! In logic, we would say that the compatibilist theory is not consistent, and in any inconsistent theory we can prove everything. This is more than unfalsifiable, it is absurd.

¶5 · I guess that for you pragmatic physicalists it is better to stick to the explanation of free will as an illusion, keeping the explanation as vague as possible. You could argue that, though nature is deterministic and we cannot do otherwise, we are finite beings who cannot calculate the future in detail and then we assume that the future is not written, so we act as we could change the course of nature. But giving details as these is raising why questions that you cannot easily answer.

¶6 · Therefore, while radical physicalism just negates whatever is not physical, pragmatic physicalism tries to accommodate whatever is not physical as physical. Then, the success or failure of pragmatic physicalism depends directly on the success or failure of that accommodation, as we will see in the next section.

§22 Pragmatic physicalism is wrong

¶1 · In physicalism, physics is the only fundamental science. For radical physicalists, all other sciences are just particular cases where some simplifications can be applied. For pragmatic physicalists, the other empirical sciences, including chemistry and biology, are the special sciences, and the assumption is that they can be reduced to physics. Social sciences, including psychology, are not even special, and the assumption is that they finally supervene on physics. Supervenience on physics is a fuzzier version of reduction to physics that allows the emergence of properties that are neither physical nor reducible to physical. In other words, supervenience is required by pragmatic physicalism to save those sciences where intentions are involved, which are psychology and the other social sciences.

¶2 · When you are not a pragmatic physicalist, supervenience on physics shows that *pragmatic physicalism is wrong*. Reduction, which is based on defining new concepts and applying logical principles to them, can satisfy the most exacting methodological requirements, which the laxer supervenience cannot satisfy. It is too convenient for you pragmatic physicalists that intentionality emerges from non-intentional matter; and here intentionality can be replaced by any concept that you save by supervenience on physics, as pain, mind, or life. Excuse my easy joke, but life is not an emergency; a pandemic is.

¶3 · Saying that intentionality emerges mysteriously from non-intentional matter does not explain anything. Supervenience explains intentionality as much as the *virtus dormitiva* of Molière explains why opium causes sleep:

> *I am asked by the learned doctor the cause and reason why opium causes sleep. To which I reply, because it has a dormitive property [virtus dormitiva] whose nature is to lull the senses to sleep.*

In any case, supervenience on physics shows that you pragmatic physicalists believe both that intentionality needs a physical explanation, and also that intentionality cannot be

explained by reducing it to physics.

¶4 · I agree with you in that intentionality cannot be explained by physics, see §16, but I dissent from you in that intentionality needs a physical explanation. Take pain, for instance. Pain is a first person experience, so it is certain and then it is always infinitely less doubtful than any theory explaining it. In other words, the pain that I am feeling is certain, even if no theory could explain it.

§23 First person experience trumps any theory

¶1 · Therefore, if a theory cannot explain pain, then that theory is not complete, because any theory that ignores part of the evidence is incomplete. Furthermore, if a theory negates pain, then that theory is falsified and it must be discarded, because any theory that negates part of the evidence is wrong. Conclusion: *first person experience trumps any theory*. Physicalism's failure to comply with the previous conclusion is what we call the *epistemological error of physicalism*; see §5 and §6.

¶2 · That pain cannot be explained by physics shows that physics is not complete, as expected since every consistent theory is incomplete, see §19, but showing conclusively that the postulate 'everything is physical' is false, and then that physicalism is wrong. Physicalism's failure to accept that physics is incomplete is what we call the *ontological error of physicalism*; see §16 and §20.

¶3 · Although pain cannot be explained by physics, the intentional explanation of pain is straightforward. Pain purpose is alerting to avoid danger, and ultimately death, so pain is a mechanism designed by evolution intended to preserve the life of the suffering individual. The previous sentence shows how easy is everything once intentionality is admitted without reservations. In fact, it is very simple: *pain* is a problem indicator, so pain is an intentional concept that is not physical.

§24 The primacy of physics is based on aesthetic reasons

¶1 · What is common to all of its forms, both radical and pragmatic, is that physicalism assumes the primacy of physics over all other empirical sciences, which in this context are dismissively called special sciences. The primacy of physics is not based on method, as those special sciences verify their theories and laws by confronting them against observations and measurements, just as physics does.

¶2 · In fact, observations need usually much more theoretical interpretation in current physics than in the special sciences. For example, going back to falling bodies, when he was devising his theory, Einstein had only one observational advantage over Newton: that his general relativity explained the perihelion precession of Mercury; for the full story, see Pais (1982), *November the Eighteenth* 1915, in pages 253–256. Although ultimately observational, the data on that precession requires instruments, as telescopes, annotations, or photographs, and theoretical calculations to perform inverse perspectives (from two to three dimensions) from a moving body (the Earth) in order to interpret it. But, of course, Einstein was not moved by this event on the fringes of experience to spend several years on general relativity; he had aesthetic reasons.

¶3 · To me, *the primacy of physics is based on aesthetic reasons*, too. A reason which is often invoked is Occam's razor: "the simplest is the best". Since at least one theory is needed, the goal is to explain everything with a single theory. The other reason is

analysis: "divide and rule". To better solve a complex problem, brake it into smaller ones, which, when taken to the extreme, implies that the goal is to explain from the tiniest elements up. As physics is the science that deals with the tiniest elements, the goal of analytical aesthetics is a single theory of physics that explains everything: the theory of everything.

¶4 · However, aesthetics is elusive. It is not always true that a single multipurpose tool is better than a set of specialized tools; usually it is the other way around. It is not always true that going to the tiniest details gives the best explanation; usually it is distracting. As with monotheism, number one is appealing in a way that seven, twelve or three hundred ninety-two are not: any other number seems arbitrary, but one is the extreme. In addition, as with monotheism, analytical aesthetics is prone to fundamentalism, in the most pejorative connotation of the word, see Bruiger (2017). As with monotheism, analytical aesthetics is so appealing that it can mislead you. Please, be prudent, and forget the theory of everything, see §20.

§25 Biology explains physics

¶1 · For physicalism, physics is the first science. Physicalists put chemistry, which can be completely reduced to physics, second, and then biology. For us subjectivists, there are already some difficulties with biology because life shows intentionality, which cannot be reduced to physics. So, pragmatic physicalists had to invent supervenience on physics, thus showing that intentionality cannot be reduced to physics. Our conclusion is that physics cannot explain biology.

¶2 · And, as Kant did, the next step is reversing the situation, by which Kant's Copernican revolution is extended to the hierarchy of sciences. Physics does not explain biology, but rather *biology explains physics* by explaining the subject who is doing physics. Let us see how things seem after the reversal.

¶3 · The theory explaining life design is Darwin's (1859) theory of evolution by natural selection, which is the main biological theory, see Dobzhansky (1973). The theory of evolution explains how life resolves the survival problem, and then it is an intentional theory, see §13. In resolving the survival problem of moving beings, evolution designed the animal brain, which is then an intentional organ. So, as anticipated by Hume (1748), see §8, causality is a brain device designed by evolution to resolve the survival problem. A product of the evolutionary process of the animal brain is the human brain, which is Turing complete, as stated by the law of Post, see §14, a law which can be explained evolutionarily, see §18. As Turing completeness is a computational property, the law of Post is computational, and then it is not physical and it is not reducible to physics, as argued by Putnam (1988), see Casares (I).

¶4 · The law of Post is the fundamental law of cognition, and then of psychology, and one of its consequences is that the causal laws of nature are necessarily computable functions, implying that the laws of physics are computable, see §15. This way, as we said above, biology explains physics by explaining the subject who is doing physics.

§26 Science and engineering are in a positive feedback loop

¶1 · Although it could seem that we are just replacing physicalism with biologism, this is only the first step. Let us analyze these two definitions:

- *Science* is the enterprise for stating the laws of nature.
- *Engineering* is the use of science for solving practical problems.

These two definitions suggest that engineering depends on science but that science is autonomous. This is wrong, however, because science depends on engineering. Modern science observations and measurements cannot rely on bare first person perceptions anymore, since they require exquisitely engineered instruments. Well, even in the beginnings, see §5, devices to make a vacuum and clocks to measure the falling times were needed. What happens is that better science causes better engineering, and better engineering causes better science. Therefore, *science and engineering are in a positive feedback loop.*

¶2 · In a typical situation, an engineer has a problem that she solves by using a particular law of physics. Using our problem solving model and the law of Post, the engineer is a Turing complete resolver, and the law of physics is the algorithm that expresses the resolution of this particular problem. This example shows that physics only provides the resolution, and then when physicalism focuses on physics and ignores the loop, it neglects problems and solutions, and this way physicalism neglects intentionality, see §16.

¶3 · Focusing on science and ignoring engineering is forgetting that, in the end, everything we living beings do we do it for surviving. However, when science is looped together with engineering, it is apparent that science has a purpose. The purpose of science is to anticipate resolutions to possible problems, even before facing them. Thanks to language, see §18, we can solve theoretical problems and we can accumulate their resolutions, so we accumulate that knowledge just in case, which is a survival strategy we use, and *science* is a methodical extension of this strategy.

¶4 · Therefore, biology is the first science, and science and engineering are looped together. A consequence of the loop is that science can be seen as a branch of engineering, by considering that science is reverse-engineering nature. An advantage of this rôle reversal by which engineering leads science is that the intentional point of view of problem solving is impossible to ignore.

§27 Between observations, the subject cannot be certain

¶1 · There is still one possible argument in favor of physicalism. Given that they make surprisingly good predictions, the possibility that the current laws of physics are right cannot be ignored. The argument goes like this. The scientific method, based on first person perception, is a good method to devise and to improve theories, and then it is possible that we have finally found the true laws of nature. And knowing the true laws of nature, we could explain everything from them. Can this be the case? Let us see.

¶2 · But, wait a minute! Although the astonishing precision of the forecasts of the laws of physics suggests that they could be right, this cannot be an argument in favor of physicalism because it fails Hume's test, see §8. That is, the forecasts support the laws of physics, but not the other way around. Perhaps tomorrow the current laws of physics will not predict accurately, so even if they have worked properly till now, they could fail tomorrow, and we cannot use any law of nature to prove that they will continue working forever. In other words, the current laws of physics can be the true laws of nature, but

even if they were the very true ones, we could not know for sure that they are right. Therefore, the laws of nature could never be the indubitable and firm foundation of our knowledge. That was about being right, but: Can the current laws of physics be wrong?

¶3 · Quantum mechanics has not a unique interpretation, nor even one agreed by everybody. One important result on the foundations of quantum mechanics is Bell's (1964) theorem. That theorem, which has been verified by observations, requires that at least one of these three assumptions is false: realism, locality, or free will. Freedom is not explicitly mentioned in the original paper, but Bell himself in an interview acknowledged that his analysis "assumed that free will is genuine", see Davies & Brown (1986), page 47. This is because Bell's theorem requires a subject freely deciding what to measure.

¶4 · Out of these three assumptions, the Copenhagen interpretation of quantum mechanics negates realism, which is consistent with our view here that objective reality is subjective and that realism is wrong. Another consequence of the Copenhagen interpretation is that the laws of nature describe what we know about the events, rather than describing the events themselves, which we subjectivists following Kant also assume.

¶5 · Physicalism is realism, though it is not naïve realism, but physicalist realism, see §10. The physicalist realist interprets that the wave function truly represents the outside reality. Then he interprets that the act of measuring makes the wave function to collapse to a determinate value. Meanwhile, when he is not observing, the wave function develops according to the Schrödinger equation, and reality is open to many different possibilities. What is perplexing is that the value measured, and none of the other values that were also possible before the measurement, determines the subsequent development of the wave function, implying that the act of measuring influences the course of nature.

¶6 · The subjectivist interprets that the wave function describes what the subject knows. And regarding what is outside, following Descartes, see §2, the subject is certain only when she observes in first person, that is, she is certain only when she makes a measurement. When the subject is not observing, she cannot be certain, and this is what the Schrödinger equation describes. So the Schrödinger equation represents accurately that, *between observations, the subject cannot be certain* about what is outside. And the collapse of the wave function also represents accurately that the subject transitions from uncertainty to certainty only when she observes in first person. Therefore, the act of observing does not influence the course of nature, but the subject's knowledge.

§28 If physicalism is right, then it is currently wrong

¶1 · So, let us go back to the question of the previous section §27: Can the current laws of physics be wrong? We have different answers depending on which of the Bell's theorem assumptions we negate.

- Negating free will is affirming superdeterminism, which is the strict determinism that negates probabilities which is behind Einstein's famous aphorism: 'God does not play dice with the universe'. Then the quantum laws would not be the complete truth, as they provide probabilistic forecasts instead of superdeterministic ones, and then part of the current laws of physics would not be completely right.
- Negating locality is affirming the instant propagation of effects, sometimes referred to as spooky action at a distance, which contradicts the theory of relativity. Then part of the current laws of physics would be wrong.

- Negating realism is affirming that the laws of nature are subjective. Then 'being right' is to be interpreted intentionally, meaning that the laws of nature are right as long as they can resolve the problems of the subject. Therefore, for some purposes, the current laws of nature could be right. However, as physicalism assumes realism, in this case physicalism would be wrong.

¶2 · Therefore, if physicalism is right, then realism cannot be negated and the current laws of physics are not completely right, or are wrong, so they cannot be the true laws of nature. However, if the current laws of physics are not the true laws of nature, then current physics cannot be the foundation of knowledge, and consequently physicalism is currently wrong. In summary, *if physicalism is right, then it is currently wrong*!

¶3 · On the other hand, if subjectivism is right, then realism is negated and the current laws of physics are right whenever they resolve problems. Note that, even today, engineers may prefer Newton's laws of motion to resolve falling bodies problems because they are simpler than those derived from Einstein's relativity. Of course there are cases, as the perihelion precession of Mercury, where the more complex equations of relativity are required.

¶4 · By the way, for radical physicalism, Newton's laws of motion are false, plainly false. Some pragmatic physicalists would object, arguing that Newton's theory is an approximation to Einstein's relativity theory. It is true that for many experiments both theories provide forecasts that are the same, for the precision of the measurements, and this is enough for us subjectivists. However, their ontologies are incommensurable, that is, the concepts of mass, time, and space in one theory are impossible in the other, as argued by Kuhn (1970), pages 98–102. Therefore, for physicalism only one theory can be right, while for subjectivism both can be right.

§29 Death is absolute for us living beings

¶1 · A consequence of our proposal that life is the source of intentionality, see §11, is that biology is fundamental and physics is a special science, see §25. Again, this reversal is Kant's Copernican revolution applied to the hierarchy of sciences.

¶2 · In a deeper sense, what we are proposing here is to resolve the transcendental problem by using life as the fulcrum on which to place the lever. So yes, we can transcend first person experience because of the way our brain is and works, in agreement with our three philosophers, see §11. And our brain is as it is and works as it works because it was designed by evolution to solve as many individual problems as possible, see §14, where all those problems are ultimately subproblems of the survival problem.

¶3 · In other words, only first person experience is indubitable, but to me, out of everything else, the less dubitable statement is that *death is absolute for us living beings*. So, to go beyond first person experience, we use life, which being the source of intentionality we model as a problem, the problem of survival, to which evolution is its resolver. And it happened that Darwinian evolution has designed a Turing complete human brain, see §18, as expressed by the law of Post, see §14.

¶4 · So, as anticipated in the Introduction, see §1, our ideas are built on Kant, who was completing Hume's solution to Descartes' transcendental problem. On top of Kant, we take also ideas by Darwin and Turing, yielding a Post-Kantian solution to the transcendental problem. And now, with these antecedents, it is time to elucidate why Kant is not mentioned in Kim's (2011) textbook.

§30 Physicalism has limits

¶1 · The last regular section of Kim's textbook, titled "The Limits of Physicalism" in Chapter 10, summarizes his position. There he questions whether the mental can be reduced to the physical or not. Before answering it, he explain us that: "It may well be that some mental properties are reducible while others are not." So he splits "mental phenomena into two kinds" and his answer is that: "There is a view on the current scene according to which the former, states with qualia, are irreducible, whereas the latter, intentional-cognitive states, are so reducible." And then he argues his answer.

¶2 · He starts explaining why the intentional-cognitive states are reducible. However, he firstly informs us that the intentional-cognitive states "cannot be reduced by identity reduction—that is, it is not possible to identify them with neural-physical states." This means that Kim is not a radical physicalist, but rather a pragmatic physicalist because he sees possible a functional reduction. Although: "It has to be admitted that [...] no one has yet produced a complete functional definition or analysis of belief and that none is in sight." "However, there are reasons for thinking that belief and other intentional-cognitive states are functionally conceived states". He gives us two reasons:

- "First, there seems ample ground for believing that intentional-cognitive states are supervenient on the physical-behavioral properties of creatures."
- Second, because "there probably already are robots with such capabilities in limited form. We know how to proceed with the design of such a machine because processes and states like perception, memory, information processing, and using information to guide behavior and action are defined by job descriptions. That is, these concepts are functional concepts."

Lastly he adds a warning, let us call it the causal-intentional warning: "It may be true [...] that we will never have complete functional specifications of intentional states like belief, desire, and intention. But that is only because, as just noted, the causal tasks involved with belief are open-ended and perhaps essentially so."

¶3 · Infelicitously, I am not convinced by Kim's arguments.

- To me, the causal-intentional warning is a deal breaker, because intentionality requires values and freedom while causality negates values and freedom, see §16, and I am not a compatibilist, see §21. To avoid confusion, when interpreting Kim's use of the word *functional* above, note that its base word *function* has definitions on both sides of the causal-intentional divide: by the definition he uses, the function of a mechanism is its purpose, so it is the intention of the mechanism, that is, the problem that it resolves, instead of the mathematical function that the mechanism implements, which describes its causal behavior, see §15.
- Supervenience does not imply reduction, see §22. In computing, we could say that software supervenes on hardware, because software is implemented in hardware. However, this does not imply that a mind, which is implemented in a brain, which is an intentional hardware device, can be reduced to the causal laws of physics, see §16.
- And, being design an intentional concept, see §13: "We know how to proceed with the design of [robots]" because we are resolvers, because we are intentional. That we can understand the problem solving capabilities of intentional robots does not imply that intentionality can be reduced to physics, it implies that we are intentional. We use our intentionality to understand the intentionality of whatever has it, including robots.

¶4 · Regarding states with qualia, which is the other part of his answer, Kim writes:

> *We can conclude, therefore, that qualia are not entirely lost to epiphenomenalism; we can save qualia differences and similarities, if not qualia as intrinsic qualities. So what we may lose to epiphenomenalism, and something for which we cannot solve the explanatory gap problem, is this small mental residue, qualia as intrinsic qualities, untouched and untouchable by physicalism. And that represents the limits of physicalism.*

¶5 · An *epiphenomenon* is something that happens but that has not any physical effect, thus breaking the causal closure of the physical domain. Therefore, epiphenomenalism is another compromising concept that pragmatic physicalists need to cope with things that happen that cannot be framed into physics. Now, although what is outside the limits of physicalism were as small as Kim wants it to be, the very fact that *physicalism has limits* already implies that it is not true that 'everything is physical', and then it implies that physicalism is wrong. Of course I am referring to radical, consequent and uncompromising physicalism; for pragmatic physicalism following Kim, 'save for qualia and perhaps intentionality, everything is physical', or rather its tautologically true extension 'save for what is not physical, everything is physical'.

§31 Our only point of view is the first person one

¶1 · Kim uses the problem of induction to justify behaviorism, where the problem of induction is the transcendental problem with a more positivist name. In the first section of Chapter 3, where Wittgenstein's beetle in the box is presented, Kim argues that, first person experience being private, "It makes knowledge of other minds not possible at all". Well, while this is a bit of an overstatement, it is true that knowledge of other minds is not indubitable, but hypothetical, that is, theoretical. However, for you this is as true of my mind and of my pain as it is of the falling red stone I am seeing; all my first person experiences, including my perceptions, are indubitable for me but hypothetical for you. How can you be certain that you are seeing the same thing that I am seeing?

¶2 · If qualia are as private as any other first person experience, and this includes all objective reality, then nearly everything is out of physics. Except the equations expressing the laws of nature (together with its mathematical infrastructure), everything else is out of physics. In fact, if you are not a physicist, for example if you are a philosopher, then everything you know is out of the limits of physicalism. Therefore, regarding the limits of physicalism, most is out, contradicting Kim's optimistic estimation, see §30.

¶3 · However, physicalists as Kim affirm that qualia, as the redness that I am experiencing, are private but that material objects, as the falling stone I am seeing, are public because they are observable by any third person there. In front of this, I wonder: Why do they discriminate first person perception from other first person experiences? My guess is that they are dazzled by the huge success of physics, which is founded on first person perception, see §4, and that they are deceived because every human brain implements perception the same way, or similarly enough, see §10. However, as pointed by Descartes, *our only point of view is the first person one*, because it is the only source of data which is certain, and then the third person point of view is a theory rather than a point of view.

I then conclude that physicalism confuses a theory with a point of view, a hypothesis with the evidence, see §5 and §23, and this way physicalism ignores the transcendental problem, which is rendered pointless by this erroneous reversal of priorities that gives more credit to a theory (physics) than to the evidence of first person experience.

¶4 · Since intentionality cannot fit whithin physics, see §16 and §23, then this error is negligible when the object of study is not intentional and the subject, who is always intentional, does not interfere. This last was the case of classical physics, but the subject already interferes in relativity and quantum theory:

- The theory of relativity is based on the principle that the laws of physics should be the same for all observing subjects.
- In quantum theory the measuring subject determines when and where the wave function collapses.

So even physics cannot ignore the subject any longer, implying that the objectivist simplification does not work anymore; this is elaborated in Casares (B).

¶5 · And in psychology, including the cognitive sciences, where the object of study is intentional, this error is devastating. In my opinion, this is precisely the kind of issues that philosophy, in this case epistemology and the philosophy of mind, should address and clarify. So let us see this devastating error closer. If the input data taken as certain is a theory saying that all that exists is physical stuff ruled by the causal laws of nature, then the necessary conclusion is that the mind, or in fact whatever, is some physical stuff ruled by the causal laws of nature. And, because the laws are causal, other consequences are that freedom does not exist and that intentionality is impossible. But we are free and the mind is intentional.

¶6 · However devastating, the error is easy to spot: the only source of input data that is certain is first person experience. That is, in order to prevent this devastating error, you just need to follow Descartes' method, as physics does, see §4. So now I know why Kim ignores Kant in his textbook: because, after ignoring the transcendental problem raised by Descartes, its solution by Kant is pointless.

§32 Conclusion: The world is an enigmatic problem

¶1 · It is time to terminate. It is not that this is the best time to finish, but I do not want to repeat what I have already written elsewhere. So now I will conclude this paper, but it must be clear that this is not a comprehensive article on Post-Kantian subjectivism, and that you can find some more consequences of it in Casares (B, I, S, and T).

¶2 · As you have seen by reading all along till here, I am yet playing the husband rôle of the joke in the Introduction, see §1, since I am still trying to convince everybody that they should reverse their ways to adopt mine. Then, the question to myself is: How could it be that so many people is confused on this? My answer is that an effective mix of good intentions with the will of applying quick and simple solutions to complex problems is at work here. Religion shows how effective this mix could be. And now, in order to give you a more detailed answer, let me start summarizing the errors of physicalism that I see.

¶3 · Kim's diagnosis of the limits of physicalism, see §30, is revealing. In analyzing the difficulties that physicalism finds when trying the reduce the mental to the physical, he classifies mental phenomena into two kinds: phenomena with qualia and intentional phenomena. To me, each kind of difficulty shows an error of physicalism, see §23.

- Qualia shows the epistemological error of physicalism: Physicalism forgets that the only source of data which is certain is first person experience. Instead, physicalism considers that a hypothetical theory, physics, is the evidence. So physicalism credits a hypothesis as if it were evident, thus confusing a theory with the evidence.
- Intentionality shows the ontological error of physicalism: The ontology of physicalism is insufficient, because it is too poor to include intentions, means, and goals. Thus, physicalism fails to explain causally what is intentional.

Now, I will try to reconstruct the history that have led to these errors.

¶4 · Descartes was wise in being skeptical, *only what I experience in first person is certain*, and consequent in raising the transcendental problem: *Can I go beyond first person experience?* Hume was right in reasoning that by causality alone we can go beyond the evidence of first person experience, and wise in giving a skeptical solution to the transcendental problem by arguing that causality cannot be founded on experience, but that causality is like an instinct that helps us to subsist. Kant was wise in giving a reversed solution to the transcendental problem, by concluding that first person experience is founded on causality, and on other devices also implemented in our brain. However, because of their time, they could suggest but they could not answer the main question of the cognitive sciences: *Why is our brain as it is and it is not otherwise?* In any case, I still consider that the transcendental problem and the answers to this problem given by these three philosophers are currently valuable and fundamental for epistemology, and then necessary to establish any philosophy of mind.

¶5 · In parallel to this epistemological path towards the cognitive sciences which could explain the mind, physics advanced enormously on the basis of first person perception, that is, based on Descartes' skeptical method, too. In retrospect, the overwhelming success of physics can be explained by three factors:

- Descartes' method, already mentioned, which liberated physics, and science generally, from the tyranny of the authority, which in medieval Europe was Aristotle tailored by the Church. Note that Galileo's law of inertia was against the physics of Aristotle, and that Galileo was thirty two years older than Descartes, so it seems possible that Descartes adopted his philosophical method from Galilean physics.
- The fact that perception is implemented the same way in every human brain, or similarly enough, resulting that first person perception, although it is as private as any other first person experience, can be nonetheless shared. Note, in the figure in page 9, that our linguistic Reason ($\mathfrak{u}$) is Turing complete, and so it is completely expressive, but that Perception (i) is a set of computing devices, none of them Turing complete, explaining the difference between our conceptual freedom and our perceptual inflexibility.
- The lucky fact that the objects of physics are non-intentional, so their behaviors and interactions can be modeled as computable functions, as for example using the infinitesimal calculus of Newton. Note that this is why everything is causal in physics, and why the physical universe is like a huge machine.

¶6 · That is my explanation of the success of physics, but physicalists have a different and simpler one: physics is successful because the outside reality is ruled by the laws of physics. They argue that the very success of physics shows that we have found the true laws of nature, or at least good enough approximations. It could be, and the consequence would be that everything is causal and the world is like a huge machine. For radical, consequent and uncompromising physicalists, the outside reality is causal, and then deterministic, so when the subject feels herself free to do otherwise she is just deceived, and in any case this is something that only happens inside the subject, as feeling pain, so it can be dismissed as subjective.

¶7 · I have to admit that physicalism could be right. You could easily accuse me of cheating should I would say otherwise, because both physicalism and subjectivism are theories, and I am repeating all over that only first person experience is certain so that all theories are hypothetical at best. I have to admit also that physicalism explains the success of physics in a simpler way than subjectivism. However, physicalism is badly founded because of its epistemological error, see §5, and it fails with psychology and the social sciences because of its ontological insufficiency, see §16. Meanwhile, our subjectivism is firmly founded, it succeeds with psychology and the social sciences, and it explains physicalism's failure. That has been my argument in this paper.

¶8 · Physicalism's intention of translating the huge success of physics to the social sciences, including psychology and the cognitive sciences, is laudable. Unfortunately, being a noble intention does not grant success, and in this case, as I see it, it is the opposite: because of its epistemological and ontological errors, physicalism prevents the use of intentionality, precluding the advance of psychology and the social sciences. My way out of this obstacle is to go back to the essentials, that is, to consider again the transcendental problem raised by Descartes and its solutions by Hume and Kant. After that consideration, and on top of it, we should take advantage of Darwin and Turing. It is critical, however, to extend our ontology beyond causality to include intentionality, and my proposal is problem solving. Then you could finally join me: The world is not a huge machine, as physicalism proposes, but an enigmatic problem. *The world is an enigmatic problem.*

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