



## **The Demarcation between Philosophy and Science**

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## *The Demarcation between Philosophy and Science*

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*This paper is based on a criterion recently proposed by Richard Fumerton for demarcating philosophy of mind and cognitive science. I suggest to extend it to a demarcation criterion between philosophy and science in general, and put it in the context of the historical changes of boundaries between the philosophical and the scientific field. I point to a number of philosophical claims and approaches that have been made utterly obsolete by the advancement of science, and conjecture that a similar thing may happen in the future with today's philosophy of mind: under the supposition that cognitive science manages to progress very successfully in a certain direction, our concepts for mental states could change, and the type of philosophical interest we put in them, thus reshaping the whole debate on the subject.*

**Keywords:** Richard Fumerton, demarcation criterion, philosophy (of mind), (cognitive) science, intimate pain, clinical pain

### *1. Fumerton's demarcation criterion*

The purpose of this paper is to present a new demarcation criterion between philosophy and science. This criterion is directly inspired in a recent proposal by Richard Fumerton, concerning the division between philosophy of mind and cognitive science. My suggestion is that we take the criterion which Fumerton has advanced for distinguishing between philosophy and science in the area of the study of mind, and extend it into a global criterion for distinguishing between philosophy and science in general.

My interest in this criterion does not come, no need to say, from a desire to dismiss philosophy as less valuable or worthwhile than science. Neither I intend to prevent any professional philosopher, or professional scientist, from dealing with matters outside their current ex-

pertise. I believe that both science and philosophy are important parts of human knowledge as a whole, and that it is inevitable and beneficial that philosophers and scientists cooperate with each other, mix with each other, and occasionally interchange roles. If I think the demarcation between philosophy and science may be of some interest it is because it may help us to know more about what philosophy is, about what science is, and perhaps it may even provide some clarification with respect to concrete philosophical problems.

Fumerton's original proposal appeared in his article "Render Unto Philosophy that Which Is Philosophy's", published in 2007, in an issue of the *Midwest Studies in Philosophy* devoted to "Philosophy and the Empirical". Fumerton focused his attention on philosophy of mind, and more in particular, on his "desire to clearly demarcate philosophy of mind from cognitive science" (Fumerton 2007, 67). As a means to do this, he put forward a suggestion which, I believe, constitutes one of the most interesting contributions in recent times to the philosophical 'argumentative tool kit':

"I suggest that (...) we imagine the development of a utopian neural science with an eye to discovering what questions are left unanswered even after wildly successful empirical research. By proceeding this way, we may discover those questions that are in the province of philosophy" (Fumerton 2007, 58).

Although Fumerton, at least in that article, does not consider the possibility of applying such a suggestion to other areas of philosophy, and indeed all of the paper is circumscribed to the discussion of philosophy of mind only, there is an obvious way in which his criterion can be widened for the comparison between philosophy as a whole and science as a whole. In order to do so, we only have to drop the specific reference to the 'neural' science, and add that the scientific research might be empirical 'or mathematical', so as to cover philosophical expectations over logical and mathematical challenges (which so prominent were, for instance, at the beginning of the 20th century):

Imagine the development of a utopian science with an eye to discovering what questions are left unanswered even after wildly successful empirical or mathematical research. By proceeding this way, we may discover those questions that are in the province of philosophy.

## 2. *The demarcation problem*

The problem of the demarcation between science and non-science has led to much philosophical discussion since the early 20th century. Various criteria have been proposed for it: verifiability of sentences (Carnap 1936, 420–421), falsifiability of theories (Popper 1962, 36–37), existence of a puzzle-solving tradition (Kuhn 1970, 4–10), progressiveness of the research programme (Lakatos 1970, 118), among many others.

It has also been argued that the problem is too complex to be solved by one single criterion (Bunge 1982, 372; Derksen 1993, 17), and most recent proposals rely on multi criteria approaches (Kitcher 1982, 30–54; Bunge 1983, 223–228; Derksen 1993; 2001; Ruse 1996, 300–306; Mahner 2007, 523–536; Hansson 2008, §4.6).

For instance, Mario Bunge's model is based on an integrating picture of the so-called '*epistemic fields*', composite entities consisting of several ingredients: a social community, an underlying philosophy, a background of accepted knowledge, a collection of distinctive problems and methods, etc. Each of these elements leads to particular differences depending on whether the field has a scientific or a non-scientific status (Bunge 1983, 197–200, 223–228; Mahner 2007, 523–536, 544–567). In any case, opinion surveys show that most philosophers of science do not believe that an adequate criterion or set of criteria which solves the demarcation problem has yet been found (Mahner 2007, 515).

Fumerton's demarcation criterion differs from the majority of the proposed criteria in two respects: first, it focuses on the status of *questions*, instead of that of propositions, theories, research programmes, etc (Siitonen 1984 is another example of approach to the demarcation of science from the point of view of problems and problem-stating). Second, it is not intended to demarcate science from non-science, but *philosophy* from science, and that implies a change of perspective. Indeed, the idea behind Fumerton's criterion is to single out a specific aspect or attribute of philosophy which marks its difference from science. In the extended version that I have just outlined, such an attribute is that true philosophical problems cannot—supposedly—be solved or expected to be solved by empirical or mathematical research. In the original version this reduces to the claim that problems in the philosophy of mind cannot—supposedly—be solved or expected to be solved by empirical research.

Hence our criterion does not *prima facie* stand as a proposed characterization of science, but of philosophy (in the original version, to philosophy of mind only). And because of this it will only be relevant to the science demarcation problem in a rather tangential way, in respect to the differences between science and one particular unscientific item, namely philosophy. However, it is clear that as much as Fumerton's criterion is fair, or correct, any complete and adequate definition of science, and any complete and adequate definition of philosophy should contain it, or have it as a consequence. A somewhat similar criterion, the fact of having "mostly conceptual methods", has been frequently pointed out as a major difference, not only of philosophy, but of humanities in general, in opposition to science (Mahner 2007, 542).

Another salient feature of Fumerton's criterion is that it seems to be subject to a certain temporal relativity. This applies equally to the extended and the original version, although Fumerton's own understanding of how his criterion works seems to be a rather static one: "I

want to urge that (...) we render unto philosophy the fundamental epistemological and ontological questions that empirical science *never will* and *never could* answer” (Fumerton 2007, 56, my italics; and similarly in 61, 67). However, it must be pointed out that our expectations that a given philosophical problem be solved by scientific research can change quite dramatically over time. And indeed history teaches us that such expectations *have* changed, as I will try to show with a few examples in the following sections.

### 3. *A bit of historical perspective*

We have to recall that the frontiers between philosophy and science have varied considerably over history. The most remarkable example is that of natural philosophy, which included all natural sciences up to well beyond the rise of modern science in the 16th and 17th centuries.

Indeed, in 1686 Isaac Newton entitled his life masterpiece *Mathematical Principles of Natural Philosophy*, making it clear from the beginning that he considered the book a genuine *philosophical* contribution: “therefore our present work sets forth mathematical principles of natural philosophy. For the basic problem of philosophy seems to be to discover the forces of nature from the phenomena of motions and then to demonstrate the other phenomena from these forces (...) philosophers have hitherto made trial of nature in vain. But I hope that the principles set down here will shed some light on either this mode of philosophizing or some truer one” (Preface to the First Edition). One hundred years later, Kant wrote his *Metaphysical Foundations of Natural Science* (1786). And still in 1817, Hegel devoted an important part of his *Encyclopedia of the Philosophical Sciences* to the ‘Philosophy of Nature’, including ‘Mechanics’, ‘Physics’ and ‘Organic Physics’.

As is well-known, many of the views at one time held by the classic philosophers in the area of natural philosophy, were completely discredited later on by the advancement of science. Thus, Pythagoras was said to have heard the “music of the spheres” produced by the motion of celestial bodies (Iamblichus, *Life of Pythagoras*, XV; Plato, *Republic*, Book 10, 616b–617d). Plato suggested that the four elements (earth, air, fire and water) were made up from the regular polyhedra: the hexahedron, the octahedron, the tetrahedron and the icosahedron, respectively (*Timaeus*, 54b–55c, adapted to today’s terminology). Aristotle strongly opposed to the heliocentric system (*On the Heavens*, Book 2, 296b6–297a26); and considered that “the soul is the cause or source of the living body” (whether “plant, man or beast”), including “the original source of local movement: the power of locomotion (...) sensation (...) growth and decay” (*On the Soul*, Book 2, 414b33, 415b9–28).

Descartes described the heart as a hot container, in which drops of blood quickly heat up and expand, thus producing blood flow. He was so strikingly confident of this theory, that according to him it followed “as necessarily from the very arrangement of the parts, which may be

observed in the heart by the eye alone, and from the heat which may be felt with the fingers, and from the nature of the blood as learned from experience, as does the motion of a clock from the power, the situation, and shape of its counter-weights and wheels” (*Discourse on the Method*, Part 5, AT 6, 50; and a similar description of heart in *Treatise of Man*, AT 11, 123–6, *Description of the Human Body*, AT 11, 227–45, and *The Passions of the Soul*, AT 11, 331–4).

Kant formulated a ‘metaphysical demonstration’ that “matter can be compressed to infinity” and “is divisible to infinity” (*Metaphysical Foundations of Natural Sciences*, Ch. 2, Propositions 3 and 4). And Hegel provided a philosophical definition of medical illness as an organ that “establishes itself for itself and persists in its particular activity against the activity of the whole” (*Encyclopedia of the Philosophical Sciences*, §371).

Of course these ‘philosophical contributions’ look today utterly outdated and obsolete: no one dares any more to address plant growth, the compression of matter, or the concept of disease, by means of conceptual elucidation alone. Although these questions were at a time regarded as true philosophical problems, later on they turned out to be answered, or at least substantially enlightened, by the progress of empirical science. And what is more: once they were successfully addressed by the experimental method, they emerged away from philosophy, to grow apart into specialized disciplines. As a result, the whole of natural philosophy, after having belonged to the philosophy curricula for a vastly long period, ceased to be included in it.

In the words of a historian of science, “it was in the 19th century that the modern disciplines of chemistry, physics, mathematics, biology and the earth sciences, as well as the social sciences, assumed their more or less contemporary form and simultaneously reshaped the institutional landscape of science. (...) Certainly by the final third of the 19th century, one could speak legitimately, that is, in a modern sense, of “science”, “scientists”, and the disciplines of science. These new labels and categories reflected the fact that science had both delimited itself more fully from philosophy, theology, and other types of traditional learning and culture and differentiated itself internally into increasingly specialized regions of knowledge” (David Cahan 2003, 4).

A similar thing may be said about social sciences, most of which also emerged from philosophy, leaving behind many claims which were later made obsolete. We will only recall here John Stuart Mill’s dissociation of economic production and distribution, on the assumption that “The laws and conditions of the production of wealth, partake of the character of physical truths. There is nothing optional or arbitrary in them” whereas “It is not so with the Distribution of Wealth. That is a matter of human institution solely” (*Principles of Political Economy*, Book 2, Chapter 1, §1, 199–200). Of course such a view is nowadays completely abandoned.

#### 4. *The case of formal logic*

It could be argued that even if the subject matter of philosophy underwent important changes in the past, its typical method (i.e., conceptual analysis) has remained essentially unchanged. But the fact is that many of the issues that were addressed at a time by means of philosophical thinking, lie today in the side of the sciences; and that as a consequence of such transfer, many of the conclusions that were once extracted by theoretical reasoning alone, have become untenable.

According to the same line of argument, the method of philosophy should be distinguished as well from that of mathematics. This is particularly relevant to understand the case of logic, another established philosophical discipline which—or at least an important part of which—became at one time scientific. And not to join the empirical sciences this time, but mathematics.

Indeed, the work of Frege and other thinkers at the end of the 19th century represented a revolutionary step forward with respect to the previous logicians: the analysis of proposition as subject-predicate (the only one known to Aristotle or Kant) was overcome, quantifiers and the logic of relations were introduced, predicate logic was unified with propositional logic, second-order logic was delimited from them, etc. None of these improvements was derived from new evidence, but from philosophical insight alone, combined with the adoption of the mathematical style in a particularly conspicuous way. As a result, a substantial part of the discipline (the so-called ‘formal’ or ‘mathematical logic’) reshaped into a mature scientific subject, which is studied today in most mathematics departments around the world.

Formal logic has adopted since then a neat mathematical format: symbolic, highly sophisticated, interconnected with other branches of mathematics. And what is more important: a format which enables the obtention of conclusive results in the form of proved theorems. These aspects, even more enhanced as the discipline has continued growing, mark the difference between what had been for centuries a philosophical branch, and the new scientific discipline that emerged from it. Meanwhile, other parts of logic have remained in a more obscure pre-scientific stage, namely philosophy of language and the so-called ‘philosophy of logic’. The fragment of logic which stopped being philosophical was just the mathematical part, much in the same way as the whole of natural philosophy had ceased to be philosophical long earlier, when it was embraced by the experimental method.

Along this transfer, many other philosophical claims were also shown to be untenable. Thus Leibniz dreamt of a mechanical decision procedure for the whole of human reasoning (the ‘Universal Characteristic’), so that “when there are disputes among persons, we can simply say: Let us calculate [calculemus], without further ado, to see who is right” (*The Art of Discovery*, 51, and similarly in *On the Universal Science: Characteristic*, 17–19, and *Preface to the General Science*, 14–15).

As is well known such a dream was shown impossible by Church's Undecidability Theorem, in 1936.

Kant endorsed the 3-dimensional euclidean geometry of his time as "a science which determines the properties of space synthetically, and yet a priori" (*Critique of Pure Reason*, B40), without suspecting the range of  $n$ -dimensional non-euclidean geometrical systems yet to appear, and the use that physics would make of them. That same philosopher, Professor of Logic at Königsberg, considered that there were no occasion for new celebrated logicians or discoveries in logic (*Logic*, Introduction, §2), 79 years before Frege's *Begriffsschrift*.

Frege himself relied in the so-called 'comprehension principle' as a purely logical law, and built over it his programme for establishing that arithmetic is part of logic ("Function and Concept", 26; *Grundgesetze der Arithmetik*, Volume 1, Preface, 138), only a few years before Russell proved that it leads to contradiction. David Hilbert presented as an axiom his conviction "of the solvability of every mathematical problem" (1900, 412; 1917, 1113; 1925, 200–201), only to be virtually refuted soon afterwards by Gödel's incompleteness theorems (ironically enough, Hilbert repeated his claim in his 1930 Königsberg radio address, the very day after Gödel, who was also at Königsberg attending a Philosophical Congress, announced work in progress which would lead to the incompleteness results, cf. Thiele 2003, 10). And Wittgenstein coined his dictum that "there can never be surprises in logic" (*Tractatus*, 6.125), just 10 years before those same epoch-making theorems by Gödel.

Many of these expectations, no matter how wrong they turned out, had however an extremely valuable motivating effect. Thus, it was Frege's desire to establish that arithmetic is part of logic which led him to make his monumental revision of logic in the first place (*Begriffsschrift*, Preface, 5–6). And Hilbert's formalist conception of mathematics represented no doubt a decisive stimulus on the birth of proof theory and metatheoretical studies.

## 5. *Some conclusions*

We have just seen that many of the questions that were once treated as philosophical, changed their status at some point in history, to become part of the sciences. The boundaries between science and philosophy have not remained unaltered over the centuries. And hence we have some reason to believe that the same might happen again in the future, i.e., that new sciences can spring out from today's philosophical research. The 'province of philosophy' has a perimeter which varies over time: it has varied in the past, and it may continue to do so in the time to come.

We have also seen that many of the views that were held (sometimes quite strongly) by philosophers regarding those questions, were later on ruthlessly overthrown by the advancement of science. Hence, we have some reason to believe that the same might happen as well with



some of the views that are currently being held and discussed today, inside that territory which today is perceived to be the 'philosophical territory'. In other words: we have some reason to believe that some of the views that are held and discussed today in the present philosophical field, may end up being, in a more or less distant future, completely dismissed by the science to come.

Coming back to Fumerton's demarcation criterion, it is worthy remarking that it is based on an appeal to the power of our imagination. Indeed, it requires us to try to imagine possible ways in which our questions could be answered by science in a utopian future: if we find it very difficult to figure out how that can be possible, we might say that those questions lie—still—in the province of philosophy; otherwise, we might suspect that those questions have been absorbed by science, or are in the process of being absorbed by science.

But our power of imagination applied in this way is not absolute: it is context-dependent, time-dependent, and dependent on the subject's background. Our imagination power is *relative* to the particular circumstances of the person who imagines. The kind of things that we are able to imagine today is completely different from the kind of things that Plato in his time could imagine; or Aristotle, Descartes, Kant, etc. Actually, many of the things that we positively *know* today, were simply unimaginable for them.

It should not come to a surprise, then, that the application of Fumerton's criterion does not yield an absolute result, permanent over time, but only a relative one, temporally limited. In other words: the whole validity of Fumerton's criterion is temporally limited. Just as a house appraisal is valid for a limited period of time only. Which is not a flaw of house appraisals, but a virtue, given that the value of houses do change over time. The important thing is that at the time the house appraisal is made, it turns out to be informative and useful.

Similarly, given that the boundaries between science and philosophy change over time, it is only a virtue of Fumerton's criterion that its application adapts to the circumstances in a flexible way. The important thing is that at the time it is applied, it turns out to be of some use.

For similar reasons, it should not come to a surprise that the application of the criterion, even by contemporaneous persons, yields different results. If such is the case, then the confrontation of the different imagined scenarios may be an interesting and enriching task.

I shall devote the last three sections of this paper to the application of Fumerton's criterion to a particular case study. One of those which motivated Fumerton to formulate his criterion in the first place, and hence, one which falls under the scope of the original, non-extended version of his criterion. The question is that of the incorrigibility of first-person ascription of pain. As a matter of fact, as we are going to see, the conclusions that I draw from this case, and his, are completely different.

## 6. A case study

David Armstrong argued years ago that “no introspective awareness can be logically guaranteed to be free from mistake”; from which he concluded that “once it has been admitted that I can be wrong about my current inner states, then we must allow the possibility that somebody else (for example, a brain technician) reaches a true belief about my inner state when I reach a false one” (“Is Introspective Knowledge Incorrigible?”, Armstrong 1963, 129).

Fumerton disputes this view, and applying his criterion, reaches the conclusion that there is no imaginable way in which pain self-ascription incorrigibility may be ever turned down by empirical science: “if we imagine the scientist in question monitoring his own brain state as he introspects a stabbing pain, it seems just obvious that when he can’t find the expected brain state he will have no alternative but to reject his theory or to construe as flawed some other aspect of the monitoring that is supposed to reveal the brain states” (Fumerton 2007, 59–60). Hence, according to Fumerton, the incorrigibility of pain self-ascription is one of the philosophical “questions that empirical science never will and never could answer” (*ibid.*, 56, 60).

However, if the scientist is introspecting a stabbing pain and yet cannot find the expected brain state, then he would probably not say that his empirical research has been so “wildly successful”, which is what Fumerton’s demarcation criterion required in the first place. Instead, in such a scenario we would be rather inclined to say, as Fumerton rightly indicates, that it is the brain monitoring theory the one to blame. But perhaps Fumerton has not been imaginative enough in addressing this matter, and we can make an effort of imagination somewhat stronger.

I would like to suggest an alternative scenario in which it simply *never* happens that a person feels pain without the monitor reflecting it. That is to say, an scenario in which empirical research on pain brain detecting has been so “successful”, that a 100% reliable monitoring system has come to be produced. We can even add that such a machine is relatively easy to manufacture, and has come to be cheaply sold in superstores, so that thousands of people test its realibility in their homes every day, as a sort of peculiar console game. Out of those vastly generalised tests, it becomes clear that the monitor never fails to detect occurring pain, unless it is a broken or defective unit.

Of course this sounds as a very remote hypothesis, but we *can imagine* it. Even then, it could not be said that empirical research had disproven the incorrigibility of pain self-ascription, but merely provided an auxiliary way of reflecting it. Indeed, such a way which would always be regarded as subsidiary to the first-person authority itself.

But let us go on then to an even more sophisticated imaginary hypothesis. One which I shall call the ‘corrigibility scenario’. Let us suppose now that:

- (1) there is a pain detecting brain monitoring machine;
- (2) such a machine is cheaply sold in superstores so that everyone can try it;
- (3) that machine actually *fails* to detect occurrent pain, although only in a very small percentage of cases;
- (4) those cases (putting aside defective units and the like), turn out to correspond exactly to either a particular genetic alteration, or a sort of hypnotic state.

Furthermore, we shall assume that the genetic alteration results in some pain experiences not being reflected in the monitor; and that the hypnotic states have the doubly misleading effect of: (a) some cases of monitor displayed pains passing completely unfelt by the subject, under the influence of the hypnotizer; and (b) some cases of stabbing pain induced by the hypnotizer, not appearing in the monitors at all. And that the presence of the genetic alteration is identifiable by means of a genetic analysis, whereas that of the hypnotic state is in turn verifiable scanning the brains waves by means of an EEG. So that, in this scenario, the only two exceptions to the reliability of the pain monitor are both exactly identifiable independently of the monitor failure.

Finally, let us suppose that in this so-called ‘*corrigibility scenario*’ the pain detecting monitors enable us to classify pain (when detected) into sharp categories, as well as to measure its degree by means of a precise numerical scale. Let us further suppose that the scientific theory behind them provides a detailed explanation of all the underlying biological processes, for both the cases where the monitors detect the existing pain and the two specific cases where they fail to do it and why they do so. And that the monitors have been very largely tested with an overwhelming success, in which the few instances of reported failure have always turned out to correspond to either the genetic alteration or the hypnotic state just pointed.

Again, all this is very speculative and hypothetical. But that was precisely the point of Fumerton’s criterion: to place ourselves in the kind of most wildly successful science scenario that we can imagine, and see what are the consequences that we can draw from it. What are then the consequences that we could draw from the ‘*corrigibility scenario*’ that I have just depicted? What would it happen to our conception of pain, if were we to live in such a world for a sufficiently long time?

### 7. *‘Intimate pain’ versus ‘clinical pain’*

I think a likely consequence of this latter scenario would be that *the very word ‘pain’ ended up splitting into two different meanings*: one for our present every-day sense, which could be denoted as ‘*introspective*’ or ‘*intimate pain*’, and another one for its scientific monitorable counterpart, which could in turn get to be known as ‘*monitor detectable*’ or ‘*clinical pain*’.

Of course we would continue to use the word 'pain' with the present every-day sense in all kinds of every-day situations, and we would not normally admit that our self-ascription of pain was challenged or put into question by anyone. But being aware of the existence of the pain detector and its efficacy outside the two anomalous exceptions, in case of doubt about the origin, nature or exact degree of our pain, we would use it. And should the monitor not detect the pain we are feeling, we would go on to pass the two supplementary tests, relative to the genetic and the state of consciousness alterations.

The two meanings of 'pain' could then co-exist quite peacefully: the every-day meaning (intimate pain), for every-day situations, and the scientific sophisticated meaning (clinical pain), for serious investigation, medical or otherwise. Even the laws could change so as to allow the use of the pain detector, together with the two supplementary tests, in order to determine whether a car accident victim is really suffering from cervical pain, or just pretending it.

As a consequence of the failure of detecting intimate pain in the two mentioned cases, the terms 'intimate pain' and 'clinical pain' would not be coextensional. Some instances of pain would only be 'intimate' but not 'clinical' (namely, pain suffered by genetically altered and hypnotized subjects), and some instances of pain would only be 'clinical' but not 'intimate' (namely, pain suffered by subjects hypnotized into not noticing it). Intimate pain self-ascription would remain to be incorrigible, but clinical pain self-ascription will not. And the point is that, under such circumstances as those depicted in this scenario, the theoretical interest in the notion of intimate pain would probably decline in favour of its scientific, more elaborated counterpart

The distinction I am suggesting does not have much sense in our world as we know it today, because the pain detecting monitors with the particular properties described simply do not exist. Nor are there exactly the two cases of unmonitorable pain referred to. The distinction only helps us to imagine how it would be to live in a world in which a pain detector of the type described had been invented. It is just an example of what could happen if empirical research about pain gets to be 'wildly successful' in one (very) particular way.

The distinction between intimate and clinical pain does not coincide with the common distinction between somatic and psychosomatic pain. In our corrigibility scenario, psychosomatic pain (pain without physical cause) would be detectable and measurable by the brain monitors just as much as somatic pain, except in the two exceptional cases described. Hence both somatic and psychosomatic pain would be considered 'clinical pains' in the full sense. And exactly the same applies to all types of 'misleading pain', which are not caused by the body part which hurts (such as left arm pain during a heart attack, phantom pains after amputations, or chronic pain syndromes produced by pathologies of the nervous system).

Our distinction is closer to, but still does not coincide, with the distinction between pain as a mental property and the pain as a physical property (neurological, biological or otherwise) which would constitute its counterpart. Indeed, it is normally assumed that these two properties should be coextensive, at least in the sense that “if you experience pain at a time, you must instantiate a certain physical property at the time” (Kim 1998, 7–8). Whereas in our corrigibility scenario, as we have remarked, there are well-defined cases in which the clinical and the intimate pain do not appear together.

Finally, our distinction does not exactly coincide either with the usual distinction between cognitive (or representative) and non-cognitive (or expressive) uses of pain, as reflected in statements such as: “when philosophers have considered sentences like ‘I am in pain now’, they have been misled by their ambiguity between their noncognitive use, where the question of intellectual mistake does not come up but equally there is no question of cognition, and their autobiographical use, where there is no doubt cognitive certainty but simply an *empirical* certainty” (Armstrong 1963, 131); or: “there are two main threads the common-sense conception of pain ... *ambiguity* embedded in our ordinary concept of pain”: “pain as something in a body part ... [which] favours an understanding of pains as if they were the *objects* of our perceptions” and “pain as subjective experience ... [and as such] private, subjective, self-intimating, and the source of incorrigible knowledge” (Aydede 2008, §1, §1.3 and §1.2 respectively).

The reason is, again, that in such a distinction an overall coincidence is normally postulated between the instances to which the two uses of the word apply, while in the concrete circumstances or our recreated scenario we positively ascertain that intimate and clinical pain do *not* always appear together.

## 8. *Changes in our philosophical interests*

The fact that in our imaginary scenario the two meanings of the word ‘pain’ (the common-sense ordinary one, and its sophisticated scientific counterpart) are not coextensive, does not have to be seen as derived from some sort of mysterious gap between the physical kingdom and the mental kingdom. It can be simply regarded as a consequence of the fact that one of the terms is much more sophisticated than the other. The same has often happened in the history of philosophy and science with other common-sense terms, at the time they have been replaced for theoretical purposes by a more sophisticated one.

Thus, we continue to use today the common-sense acceptance of ‘movement’ with a meaning which, according to present science, could by no means be said to coincide exactly with its scientific counterpart. For example, when I am about to take a picture of somebody and ask her ‘not to move’, I am completely ignoring many basic facts about the exact meaning of the word ‘movement’ in physics, such as the Earth’s rotation on its axis at a giddy speed to start with.

In fact these two meanings of ‘movement’ behave quite in the same way as the two meanings for ‘pain’ which I have just described in the so-called ‘corrigibility scenario’. They are roughly, but not completely, coincident. The ordinary common-sense one is chronologically much older than its scientific counterpart, but it has been maintained without important changes after the appearance of the latter, for ordinary, everyday life uses.

To be sure, historically there was a period of tension between the two, by the time the scientific sense began to incorporate aspects which collided with the intuitive sense: “a common objection to the Copernican/Galilean/Newtonian claim that we humans and the ground we stand on, are constantly moving eastwards at something close to 1.000 miles per hour was that our subjective impressions are wholly incompatible with our being engaged in any motion of such an extreme and unprecedented character ... This reaction is entirely understandable, given the default or domain-central prototypes of motion common among people at the time” (Paul Churchland 2007, 163). That period of tension was in due time overcome, and today the two meanings of the word co-exist in peace.

The philosophical interest in ‘movement’, however, did not remain indifferent to that change. We have already seen how the whole of natural philosophy greatly declined after the birth of modern science. Today’s philosophical interest in movement is much more lateral, circumscribed to the so-called ‘philosophy of physics’ and requiring highly specialized background knowledge of this science (and similarly with other parts of the old natural philosophy, reconverted today into ‘philosophy of chemistry’, ‘philosophy of biology’, etc). The kind of conceptual analysis based on common-sense observation and on the idiosyncrasies of the common-sense meaning of the word, completely lost the importance and topicality that it had had. The rise of the scientific counterpart of the term, and of the theory behind it, had the effect of completely *changing* our philosophical interests on the matter.

What I am suggesting is that something similar could happen in the scenario I have just described, or another one with a similar degree of singularity. Hence, where Fumerton proclaims that the scientific study of the brain will hardly get to be crucial for “the study of the mind that *interests* us” (ibid, 59, his italics), we could add ‘that *interests* us *now*’. Because as I have tried to show, if we place ourselves in some of the utopian scenarios that Fumerton’s criterion requires us to imagine, our current philosophical interests about mental concepts may undergo radical changes. Just as it happened in the past with other topics, that once were the centre of philosophical attention.

In fact the whole of philosophy of mind is itself a relatively recent philosophical discipline. Its problems are not ‘eternal’ in the sense of having been at the centre of the philosophical debate since its origin, as it happens with other philosophical problems, such as the difference between good and evil, or the nature of aesthetic judgments. In fact,

the typical syllabus of philosophy of mind starts with Descartes (Kenny 1989; Rosenthal 1991; Heil 1998; Chalmers 2002). Before him, the central problems of philosophy of mind had not aroused much attention: “Descartes was the first to formulate complete dualism, that sharp distinction between soul and body, mind and matter, which afterwards became so general a belief and so important a philosophy. Before his day, and among many afterwards, the soul was regarded as of the nature of air or fire; mind and matter differed more in degree than in kind” (William Dampier, *A History of Science*, 136).

Scientific and technological changes bring about changes in our concepts, and in our intellectual interests. Often these changes in meaning do not affect our every-day use, but they are present only for theoretical purposes. Just as we do not care about the scientific concept of ‘movement’, until we start theorizing or philosophizing about movement. But if such a transformation ever takes place in the field of philosophy of mind, then many of our present views about mind and mental states might become, if not untenable, at least as outdated or obsolete as the philosophical proposals of the past that we have recalled earlier in this paper. And it is Fumerton’s demarcation criterion between philosophy and science which teaches us that.<sup>1</sup>

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