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Can Brain Imaging Breach Our Mental Privacy?

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Abstract Brain-imaging technologies have posed the problem of breaching our brain privacy. Until the invention of those technologies, many of us entertained the idea that nothing can threaten our mental privacy, as long as we kept it, for each of us has private access to his or her own mind but no access to any other. Yet, philosophically, the issue of private, mental accessibility appears to be quite unsettled, as there are still many philosophers who reject the idea of private, mental accessibility. I have attempted to refute such rejections and to establish this idea on firmer grounds. My arguments in this paper show that brain imaging allows no access to our mind and that mind privacy is quite different from brain privacy, as the latter can be breached by brain imaging, whereas the former cannot. A reduction of the mind to the body inescapably fails, as there is a categorial difference between mind and body or brain, which is compatible with their inseparability. Brain imaging cannot enable one to "read" the mind or to breach our mental privacy. There is no external access to one's mind. Each of us has exclusive access to his or her own mind.

1 A Current Ambition Concerning Brain Imaging Technologies

More and more people nowadays believe that brain-imaging technologies have posed the problem of breaching our brain privacy as these technologies provide us with an access from the outside of the brain to what occurs in it. Such an access is public in nature and, indeed, its findings can be duplicated and transferred even to the public domain, which undoubtedly entails breaching the privacy of the subjects under observation. To breach one's privacy means to render what was privately accessible to be publicly accessible; transferred as it were to the public domain. What occurs within one's brain and mind had been considered until those technologies have been invented as private and privately accessible only. Moreover, until the invention of those technologies, many of us entertained the idea that nothing can threaten our mental privacy, as long as we kept it, for each of us has private access to his or her own mind but no access, epistemic or otherwise, to any other. Yet, philosophically, the issue of private,

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mental accessibility appears to be quite unsettled, as there are still philosophers, following Alfred Ayer,[1] Donald Davidson,[2] and others, who reject the idea of private, mental accessibility.[3] If brain privacy entails mental privacy, brain-imaging technologies may threaten or endanger our mental privacy, too.

Considering these technologies, Martha Farah claims:

> For the first time it may be possible to breach the privacy of the human mind, and judge people not only by their actions, but also by their thoughts and predilections. (…) Neuroscience is providing us with increasingly comprehensive explanations of human behavior in purely material terms. (Farah 2005, p. 34)[4]

In stating that, she relies upon a "reduction of mental to physical process," and on these grounds, she argues:

> The brain imaging work (…) indicates that important aspects of our individuality, including some of the psychological traits that matter most to us as people, have physical correlates in brain function. (…) is there anything about people that is not a feature of their bodies? (…) The idea that there is somehow more to a person than their physical instantiation runs deep in the human psyche and is a central element in virtually all the world's religions. Neuroscience has begun to challenge this view, by showing that not only perception and motor control, but also character, consciousness and sense of spirituality may all be features of the machine. If they are, then why think there's a ghost in there at all? (Ibid., pp. 38–39)

Whether these paragraphs are representative or not, I consider them as reflecting a current ambition concerning brain-imaging technologies. Such an ambition relies on the assumption that brain privacy entails mental privacy and, thus, that brain imaging can breach mental privacy.

2 Some Preliminary Doubts

To begin, I have two comments about this view. First, there is a major difference between mental privacy and brain privacy. "Mental privacy" does not mean "private

[1] Ayer 1971, pp. 199–205. Following Ayer and Arnold Zuboff (1981, pp. 202–212), Peter Unger attempted to refute the idea of the privacy of experience by means of the "zipper argument" (Unger 1990, pp. 177–184).

[2] Davidson 1989, 1991, 1994, 1996, and 2003.

[3] I have attempted to refute such rejections and to establish this idea on firmer grounds. See Gilead 2003, pp. 43–75; 2008; and especially 2011.

[4] Cf.: "mental privacy could face enormous new challenges, in both legal settings and beyond, as there has been no precedent for being able to look into the mind of another human being" (Tong and Pratte 2012, p. 502; cf. Haynes and Ress 2006). Nevertheless, Farah et al. (2009, p. 119; cf. p. 126) somewhat limit her abovementioned claim. On the other hand, Valtteri Arstila and Franklin Scott argue that brain imaging does not threat mental privacy *yet*, as it depends on the information that the subjects provide voluntarily about their mental states (2011, p. 207). For a criticism of the relevancy of neuroimaging to the study of the mind consult Coltheart 2006a and b; and Tressoldi et al. 2012. For a methodological response to Colheart see Roskies 2009. Roskies concludes: "There are limits to what imaging can tell us about psychology, and we have yet to determine what they are. One can acknowledge this while also accepting that neuroimaging can bear on questions of mind" (op.cit. p. 939).

property" or "private possession." One's mental states are subjective, namely, private, not in the sense of the privacy of a property or possession that belongs to one person only, but, as I will argue below, in the sense that they are accessible only to that person. The privacy of my brain means that it belongs to me only, whereas my mind does not belong to me; instead, as a person, I *consist* of my mind. Note that in general not all kinds of mental states are considered as subjective, whereas all phenomenal states are subjective. Intentional states have a content that many maintain that it has a nature we can identify. This content should not be considered as subjective.

The second point is about the familiar metaphor "the ghost in the machine," which Gilbert Ryle and Arthur Koestler used in criticizing psychophysical dualism, especially the Cartesian one. This metaphor wrongly suggests that the idea that there is more to persons than their "physical instantiation" implies a psychophysical dualism that is aporetic, blocking from the very beginning every possible way that might lead us to any solution or reasonable treatment of the old psychophysical problem. Nevertheless, it is possible to avoid both Cartesian psychophysical dualism and any reduction of the mental to the physical, of the mind to the body. If the mental is irreducible to the physical, brain privacy does not entail mental privacy. Moreover, if the mental is irreducible to the physical, there is certainly more to persons than their bodies.

As a mental being, I am a subject whose states are subjective, namely, the subject consists of subjective states. Since many of my mental states are subjective,[5] I am the only one who consists of them; it is impossible to share them with other person(s). Still, are we allowed to conclude that as subjective my mental states must be private or accessible only to me (as a mental subject or person)?[6]

Though the reality of one's mental states is subjective, this *reality* is beyond any possible doubt, and it is impossible to consider it as a fiction or an illusion. When I am in pain,[7] there is no illusion in such an experience, and what someone might call "an illusion of pain" is pain no less, whose *reality* is beyond any possible doubt.[8] Yet, based on some "objective" or intersubjective data, other people may suspect that I am really *not* in pain whereas I certainly am (even when there are no objective or external indications or data—behavioral, physical, or medical—that I am in pain). Though its reality is beyond any doubt, nobody except me can feel or experience this pain; moreover, nobody else has access, epistemic or otherwise, to it or to any of my experiences, *if* all they have is *merely* subjective, namely, *if* it is impossible to convert or reduce them into intersubjective or objective states. Below I will explain what it

[5] Thomas Nagel, Geoffrey Madell, and John Searle rightly assume that subjectivity characterizes any mental or conscious trait. See: Nagel 1979 and 1986; Madell 1988, p. 124; and Searle 1994.

[6] There are philosophers who dissociate subjectivity from private accessibility. An exception, for instance, is Madell, who considers subjectivity as a matter of privacy, namely, of what is epistemically, phenomenally, or experientially accessible only to a single subject (Madell 1988, p. 88; and 2003). Note that Nagel's view on subjectivity or the mental does not imply an endorsement of the idea of private mental accessibility: "I am not adverting here to the alleged privacy of experience to its possessor. The point of view in question is not one accessible only to a single individual. Rather it is a *type*" (1979, p. 171). According to Nagel, we practically do have access, though not a direct one but at least a partial one, to other people's minds; it is only other species, such as bats, to whose minds access is denied to us (ibid., p. 172).

[7] For the strong relatedness of pain to subjectivity and consciousness see Chalmers 1996, pp 4–9.

[8] Cf.: "we are somewhat inclined to say there is some sort of falsidical pain hallucination, but we are not really inclined to speak of pain illusions or of illusory itch experiences. If we did, we would probably be talking of a case where we mistake the phenomenal character of an experience, not where we mistake its object" (Chalmers 2010, p. 451).

means that others are aware or know, on intersubjective or objective grounds, that I am in pain, though they have no epistemic access to any of my experiences and mental states. In any event, the reality of this pain is entirely mental, for with no consciousness or awareness, which is undoubtedly mental, there cannot be any pain. Not only ecstatic or euphoric states of mind (which may be followed by some biochemical changes in my brain) but even various forms of abstraction or distraction of my mind may result in "killing" the pain. Suppose that my leg is broken, which is extremely painful; nevertheless, my mind can be entirely distracted from this state, if I am completely absorbed in something that is most important, attractive, or valuable for me at the moment, with no mind-independent change in the objective state of my leg. In such a state, I would not feel any pain; I would *not be in* pain at all. Alternatively, I may be in pain for mental reasons only, i.e. without any objective, physical grounds. Thus, my mental state is different from my physical state at the same moment.[9] Being in pain is a subjective, mental state, and it is irreducible to my physical state (in this case, my broken leg and the way it affects my nervous system and brain).

The reality of the subjective is beyond any doubt (at least no less than the objective).[10] Yet, is there any convincing way to reduce subjective states to objective ones, which are publicly accessible (accessible from the outside, from without)?[11]

Real, irreducible subjectivity necessarily entails privacy. Can two or more persons share anything subjective? This would turn such a thing into something quite different, into something *inter*subjective. Were subjectivity shared with others, it would have been redundant, meaningless, or insignificant. If we take subjectivity seriously as real and irreducible, which we should, we are not allowed to consider it as something which can be shared with others. Since my pain, like any of my mental states, is subjective, there is no possible way to transfer it to another person, however close and intimate. Thus, my pain, like any of my mental states, is strictly private and it is impossible to share it with any other mental subject. Transference of a subjective state to another person is simply an illusion or worse. Indeed, as a mental subject, I *consist* of my mental, subjective states, and it is impossible for any other mental subject to consist of them; otherwise, I would have a duplicate, which is also impossible: If two mental subjects were doubles, this would reduce subjectivity to something quite different; more precisely, it would eliminate it entirely. Thus, we can conceive the possibility of a *physical* or biological cloning of human beings without contradicting ourselves, but it is impossible to think about mental subjects as doubles without contradicting ourselves or

[9] In Saul Kripke's words "the relation between (…) [pain and C-fiber stimulation] is not that of identity" (Kripke 1980, p. 154).

[10] The indubitability of the reality of the mental-subjective can be along some Cartesian lines. Prominent defenders of the indubitability and irreducibility of the mental-subjective and the first-person ontology are John Searle and Galen Strawson (1994). Thomas Nagel's criticism of mental reductionism and his defense of the irreducible reality of the mental and the subjective have much force. The same holds true for the views of Colin McGinn (1983) and John Foster (1991), concerning, in different ways, the irreducible reality of the subjective and the mental.

[11] Fred Dretske claims that as a "result of thinking about the mind in naturalistic terms[,] subjectivity becomes part of the objective order" (Dretske 1997, p. 65). On these grounds, he excludes private accessibility. One of the possibilities to refute such a naturalistic view is Madell's. Madell argues that "there is (…) no way in which phenomenal, or perspectival, or first-person awareness can be accommodated in a materialist framework" (Madell 2003, p. 125), a framework which is subject to objective viewpoint. In contrast, Galen Strawson (1994) and some other materialists or naturalists argue that the irreducibility of the subjective can be quite compatible with their views.

without understanding what a mental subject is and what subjectivity is. Thus, irreducible subjectivity entails strict privacy. In contrast, intersubjectivity or objectivity implies no privacy, unless in the sense of possession, property, or ownership, whereas subjectivity is a matter of consisting, of what the mental subject or individual consists.

These are my preliminary doubts concerning our issue. Nevertheless, physicalists may still argue that subjective and intersubjective perspectives are either reducible to the objective one or, at least, allow us some access, a sort of an indirect one, to what is going on in the mind of other persons. In what follows I will attempt to show that my arguments cut the ground from under such physicalist or naturalist views, without begging the question, and, hence, their ambition to provide us with access to the mind of other persons must be frustrated.

3 What Does It Really Mean that We Know What Other People Think?

Even if the mental is irreducible to the physical, still—the reader may argue—judging from my physical state, behavior, and on the grounds of intersubjective relationships, other people may be aware of the fact or even truly know that I am in pain and what my feelings, beliefs, expectations, hopes, or thoughts really are. Moreover, why not accepting the possibility that relying only upon brain imaging techniques, while entirely ignoring my expressions (verbal or otherwise), behavior, physical state, and the like, a neuroscientist may know for sure that I am in pain? Again, why should we not accept the possibility that in the future, relying only on brain imaging, neuroscientists will be able to tell what is going on in our mind, especially what are our "propositional attitudes"? Are we telling the truth or lying? And, moreover, what are our unconscious thoughts, desires, and emotions? After all, our bodies and behavior may *reflect* quite sufficiently what is going on in our mind. The same holds true for our dialogues with other persons. Such dialogues may, furthermore, provide us with insights about our mental states. Some of such insights may pertain to other persons whereas we may remain completely blind to them, while deceiving ourselves about our mental states, ignoring or repressing them, and the like.

What does it mean that other people know or understand what is *in* my mind? They know nothing whatsoever *of* it intrinsically, but they may know enough *about* the intersubjective meaning and objective significance of what is on in my mind. My subjectivity certainly has some intersubjective and objective implications or imprints. And when my wife relates to what is in my mind, she does not refer to what is there but only to the imprints or reflections that what is there leave on our shared interpersonal and objective reality. Of course, she knows quite well what are my wishes, volitions, ideas, beliefs, and the like, *not intrinsically*, as they are solely in my mind, but only *relationally*, namely, in the ways these mental states reflect on our shared interpersonal and objective reality.

When my wife tells me, "I know better than you what is on your mind this morning," she does not consider or "see" from a different perspective or viewpoint, indirectly or by inference, what is in my mind; instead, she considers herself as knowing and understanding better what is the *interpersonal* meaning and significance of what is in my mind (I use "interpersonal" to designate an intimate intersubjective relationship). She refers to these meaning and significance (which we both share in our

interpersonal reality), not to what exists or occurs in my mind, which is entirely inaccessible to her. She knows me quite well as a subject, sharing an intimate, interpersonal, reality with her, but this does not allow her any access to my mind, to my private reality. She, like other people, may know that I am in pain, not because they have any access to my brain, let alone to my mind, but because my mental state reflects on the intersubjective and objective reality, which we share. They may know about my pain, more precisely, of the intersubjective significance of my pain, judging from my behavior, expressions, verbal or otherwise, and other means of intersubjective communication. But none of them allows any access, epistemic or otherwise, direct or indirect, to what exists or is going on in my mind as it is in itself.

In summary, once someone relates to my mental states, one does not refer to these mental states of mine intrinsically. One *refers* then to intersubjective or objective signals or imprints *relating* to what is there in my mind. In intersubjective relationships, language plays an indispensable role. I assume that, semantically and syntactically, nothing in any language is private. Even the most intimate word, "I," is not private, and no "private" name is really private—other persons may be called by the same name, as every person uses the same word "I." When we claim to capture what is in one's mind, which is strictly private, by means of language, we must fail, because no language is private. What we really capture by means of language is only the intersubjective meaning of what in one's mind. The referents to which intersubjective means of communication refer are in fact not mental or private. Such means refer to the relationality of these referents, not to them as they are in themselves, intrinsically. They thus refer to the relations that they have with the mental referents of other persons. One cannot break out of the intersubjective relationship to get into the other person's mind. One cannot have access to other minds by means of intersubjective imprints or implications.[12]

The relationship between the mind and the intersubjective or public-objective reality is analogous to the relationship between the mind as a "thing-in-itself" and its phenomena. This is a Kantian analogy but I use it with a principal reservation, as each of us has an epistemic access to his or her mind as it is itself, intrinsically, and not as a phenomenon. This is certainly not a Kantian view. Nevertheless, the analogy holds true for the idea that the reflection or the imprints of the mind on the intersubjective and objective reality allows no epistemic access from without to the mind as it is in itself, namely, intrinsically. Thus, the intersubjective and public-objective reflections or imprints of the mind are strongly, even inseparably, connected with and related to the

[12] The noted problem of other minds is related to the issue of mental privacy for a crucial philosophical question is: How can I be sure about the existence of other minds although I have no access to them? The other minds problem, nevertheless, cannot be properly discussed within the limited scope of this paper, and, thus, I will comment about it as little as the following sentences. One of the ways to deal with the problem of other minds is to show how do I know that the person just in front of me now is not an object but a subject even though it is only his or her body that I perceive now by means of my senses. The subjective states of this person are mental and epistemically accessible to him or her alone—they are privately accessible. In contrast, no private accessibility can be ascribed to any object, which, in principle, is publically accessible. As a physical-biological object, the brain is in principle externally, publicly accessible dependently on the technological progress of brain imaging. We refer and relate to persons or subjects quite differently from the way we refer and relate to objects—only with persons or subjects we can have an intersubjective relationship. This clearly distinguishes between objects and other minds. As we clearly know, the relations between persons and objects are quite different—category-different—from the relations between persons and other minds.

mind but, as in the case of the relationship between the thing-in-itself and its phenomena, the dependence and connection in discussion does not allow any epistemic "trespassing" beyond the phenomena to the thing-in-itself. As a result, we know nothing intrinsically about what is going on in the mind of other persons, but we have adequate access to the intersubjective or public-objective reflections or phenomena *of* what is going on there. This is all there is in what we really mean in claiming that we may know, in some circumstances, what other people think. This knowledge, however well-established, allows us no access whatsoever, epistemic or otherwise, to another person's mind. Even an imaginary omniscient observer, completely knowing what there is to know about a person, her behavior, bodily states, and intersubjective relationships, has no epistemic access to what is going on in her mind.

The father of psychoanalysis and modern psychotherapy also teaches us a similar lesson. Preliminary instructing the analysand, Freud demands:

> . . . say whatsoever goes through your mind. Act as though, for instance, you were a traveler sitting next to the window of a railway carriage and describing to someone inside the carriage the changing views which you see outside. (Freud 1913, p. 135)

The analyst is the traveler who is sitting inside the carriage and who can see absolutely nothing of what can be seen outside—unlike the traveler sitting next to the window, i.e. the analysand. Nothing of the changing views which only the analysand can observe is accessible to the analyst, namely, nothing of what is going on in the analysand's mind is accessible to the analyst. For this reason, the analyst needs the analysand's free, spontaneous report of what is going on in his or her mind. No other way exists for the analyst to know anything about this without such a report or description. Only the analysand has access to his or her inner, mental reality. He or she is incapable of transmitting anything of that reality to the analyst. What is possible is the report, the description, which reveals the intersubjective meanings and significance of what occurs in that private reality. An intersubjective reality can be shared both by the analyst and the analysand. In contrast, they can share nothing of their mental, inner realities. Note that this fine example is not about different point of views or perspectives. The analyst cannot observe what the analysand observes from a different point of view. There is no way for the analyst to observe the changing view, as he or she is sitting inside the carriage, with no access to the window. The analyst thus can analyze only the analysand's report, which is an intersubjective linguistic or communicative object. No outside intrinsic analysis of what is going on in the analysand's mind is possible.

4 The Irreducibility of Individual or Personal Differences

Still, the reader may doubt as follows: perhaps all I have argued above refers to the indisputable fact that nobody else can undergo my experiences, can think, be aware of, feel, and so on in the same way that I, singularly, subjectively, or privately, think, am aware of, feel, and so on—but this fact does not prevent other people from having epistemic access to what is going on in my mind. For instance, my friend may know for

sure that I am not in pain right now, that I believe that tomorrow will be a nice day, that I want to read my mail as soon as possible, plan to visit my friends the day after tomorrow, and so on, without considering all these from my "point of view" but from a viewpoint of hers. The point that Farah and others make is that they have, at least some, epistemic access to what is going on in a subject's mind, while analyzing and decoding his or her brain imaging. On the grounds of such an analysis or "reading" they know or will know, in the foreseeable future, much more and even with certainty what is going on in the subject's mind.

Unlike other authors but along the lines of Freud's example mentioned above, I do not consider the subjective, intersubjective, and objective merely as points of view or perspectives. Instead, to begin with, these are three kinds of *reality*, each of which is irreducible to the other and which are yet necessarily connected. It is quite wrong to consider *what intrinsically I myself* think, feel, or want as something that can be considered or seen from other viewpoints or perspectives. What I think, feel, or want, being entirely private or subjective, cannot be shared with others and, thus, cannot be considered from other viewpoints or perspectives but is accessible to me alone. In contrast, intersubjective and objective kinds of reality are, by their nature, shareable by various persons and are accessible to them.

Nevertheless, there have been philosophers, call them "physicalists" or "naturalists" of some kinds, who would argue in opposition to me that in fact there is only one kind of reality, there is one nature—objective, physical reality. All the rest, what I call the subjective and the intersubjective, are simply fictions, epiphenomena, or even illusions. The question is whether as epiphenomena or illusions (as it were), the subjective and the intersubjective should be considered as perspectival only and, if so, they are simply points of view on physicalist or naturalist grounds (as if the subject were merely a sort of "a cerebral eye" instead of "a mental eye"). In this manner, points of view are considered spatiotemporally only, that is, as modes or states of one and the same physical reality. Were such the case, the subjective and the intersubjective could have been in fact reduced to states or modes of the objective-physical. Nevertheless, to ignore personal, individual differences or to reduce them to a physical-objective perspective is simply to ignore the very idea of mental life in any of its forms, materialist or otherwise. No physicalist or naturalist reduction of the mental is allowed to ignore these differences, as they are real also from any physicalist or naturalist point of view.

Suppose, with the physicalist that the subjective is merely a state or activity of my brain, and suppose that the relevant brain cells and the connections between them can be copied or transferred to another brain.[13] In such a case, neuroscientists would have to overcome the immune system of the other brain to avoid a rejection of the transplantation. In other words, they would have to overcome the individual differences between the brains (which their immune systems indicate) and to neutralize, rather, nullify the identity of each of them, as if they had become one brain instead of two. Nevertheless, physicalism or naturalism has to acknowledge the identity of each brain, for these theories have attempted to rest on physical or natural grounds all the individual differences, which are undeniably real, of persons. To deny such differences, to deny

[13] It is beyond the scope of this paper to discuss Peter Unger's zipper arguments or Alfred Ayer's arguments against the privacy of experience. I have discussed them elsewhere. See Gilead 2011, pp. 71–91.

the identity of each brain, which is different from that of any other brain, leaves personal differences, which are undoubtedly real even if they could have been reduced to the physical, outside these theories. Hence, there is no way, even for the physicalist or the naturalist, to entertain the idea of transplantation of brain cells, such as those governing the experience of illusion or of subjectivity, from one brain to another unless by neutralizing or eliminating the identity of each brain. Thus, even according to physicalists or naturalists, the physical-biological differences between us are not perspectival, let alone spatiotemporally perspectival. This holds true even for clones: cloning rests on genetic identity but this leaves room for many differences in implementing the same genetic code in each of the clones, each of which still maintains its physical-biological uniqueness despite their common genetic identity. In concluding, even ardent physicalists or naturalists cannot deny, on physicalist grounds, the irreducible individuality pertaining to each person *as a physical entity.*

To decipher, let alone correctly, my brain imaging tests, a neuroscientist must rely not only upon many other brain imaging tests but also, and first of all, on the reports and reactions of the relevant subjects, and these are clearly intersubjective grounds, which are indispensable for neuroscience. Neuroscientists cannot dispense with them by relying only upon the findings of brain imaging. Secondly, the subjective factor (whether of the examiner or of the subject) also plays an indispensible and irreducible role in deciphering the signals that the tests exhibit. The subject must be aware of what is going on in his or her mind and, without such awareness, he or she cannot answer the examiner's question: for instance, "What are you thinking right now?" The subjective and the intersubjective factors in such studies are indispensable and irreducible, and the brain imaging technique cannot do without them and has no substitutes for them to decipher the brain signals. Suppose that while my brain is being scanned by means of fMRI, the examiner says nothing to me and I keep silent, yet he thinks: "The subject right now is thinking about a white rose." The only way to confirm this as much as possible is not to rely only upon other tests of other subjects or even upon many other scans of myself but to ask me again in each of the tests what I am thinking about. Thus, the intersubjective communicative factors as well as the subjective factors are indispensable and irreplaceable for obtaining such information. Again, we should not ignore the fact that human brains, not to mention human minds, are different one from the other. No one can be sure that the signals in one's brain imaging have the same meaning and significance as those of another brain. Furthermore, owing to the variability or plasticity of the brain, even the same cerebral signals of the same brain may have quite different meanings or significances at different times or under different circumstances.

When it comes to the mental, individual differences are overwhelming. Think of a fantastic possibility, far from being actual, that a signal in the brain imaging of great number of subjects previously to my tests was deciphered as "the subject is now thinking about a white rose," and suppose that this signal appeared previously hundred of times in my brain imaging tests while I was, in fact, thinking about a white rose—even this does not exclude the real possibility that this time, when the signal appears, I do *not* think about a white rose or any other flower. One of the reasons for this is that there is not any known specific law bridging the mind with the brain: because of the inescapable singularity (namely, subjectivity) of each mental subject, there is no law for his or her physical actualizations. Thus the singularity (subjectivity) of my thinking of a white rose cannot be recognized in the activity of my brain, for it shares some common

traits with other brains, whereas my singularity shares nothing in common with that of another person. Even additional further data of such tests or experiments including recurrent patterns in the findings will not allow scientists to discover specific laws governing the brain-mind bridge. Suppose that neuroscientists can allow "bridge principles or auxiliary assumptions that enable one to infer function from location" (Roskies 2009, p. 932); nevertheless, to locate brain activity correlating to mental functions allows no epistemic access to one's mind. Judging from the behavior of a person, we can infer that right now he is thinking, peacefully or anxiously, about something, and yet we can have not even the slightest idea about what he is thinking. Could brain imaging give us more information about that? As long as two subjects cannot share one and the same subjectivity, and in this sense they are entirely different one from the other, no such putative principles or laws can govern the psychophysical unity. The physical, biochemical, and biological similarities between our brains do not reflect the singularity of each of our minds, which even a physicalist theory of the mind should not overlook. Moreover, owing to cerebral flexibility ("plasticity"), changes of the same person, as well as individual differences, the signal may appear in the subject's brain without relating at all to the same mental state despite the well-established fact of the psychophysical unity or inseparability. Even if neuroscience is able to find statistically high correlations between brain imaging findings and some mental states, as have been reported by the subjects to the examiners, the information about these correlations cannot be considered as an established knowledge of what there was in the subject's mind. Against this background, the correlation in question must be intersubjectively interpreted or deciphered anew in any single case and it entirely supervenes on the inescapable individual mental differences of the subjects involved. In each case, neuroscientists have to consider the individual, though necessary, psychophysical connection, for it must be different from one person to another. The brain is subject to physical, biochemical, and physical laws yet owing to the singularity of each person, the subjective, the mental, is anomalous, whereas the intersubjective is subject to rules (such as those of syntax and semantics). These rules are different from the laws of nature to which the objective is subject. The necessary psychophysical unity is anomalous specifically, namely, though it is subject to some common or general traits, there are no specific laws that govern this unity as long as the mental, as subjective, is independent of any rule and law. Indeed, the subjective, also in physicalist terms, is not subject to rules and laws, which are general and can be shared.

The indispensability of an interpretation of the brain-imaging signals discloses the conventions within which neuroscientists interpret these signals, and this interpretation, deciphering, or decoding strongly depends on subjective and intersubjective factors which are entirely and inescapably independent of the tests themselves. To the extent that metal functioning or states are concerned, the machinery of fMRI or any brain imaging is a useless tool without these factors. The machine which enables neuroscientists to watch the images of the subject's brain does not exempt them from the indispensable intersubjective relationship—they have to maintain a dialogue with the examined person to enable them to decipher, decode, or interpret the images or signals of his or her brain. No dialogue is maintained between subjects and machines; dialogues are maintained between subjects—dialogues are intersubjective, whereas machines are objects and cannot be considered as subjects.

Intersubjective, let alone interpersonal (which is intimately intersubjective), relationships allow us much more and better information *about* the mental life of a person, namely, about its reflection or bearing on the intersubjective or interpersonal reality, than any brain imaging can do. On the abovementioned grounds, intersubjective relationships reflect the subjective much better and clearly than any brain imaging can do. Yet this reflection allows no access from outside, epistemic or otherwise, to one's mind.

My conclusion is that, to the extent that our mental life is concerned, neuroscience cannot ignore the subjective and the intersubjective on which this science depends from the outset and which, as such, are beyond the reach of any brain imaging. Nor can it ignore personal differences and identities which are not subject to laws. Brain imaging cannot depend on itself alone; it is a human-created phenomenon which can be informed, deciphered, or interpreted only by persons who are mental subjects.

5 Mental Possibilities and Their Physical Actualities; Psychophysical Inseparability or Unity

Farah mentions "physical instantiation," as if the body were the physical instantiation of the mind.[14] Does the body instantiate the mind? Do bodily or, rather, brain manifestations concretely represent the mind? Is the mind something abstract that bodily manifestations concretizing? All these expressions are misleading, first, for mental states are no less concrete than physical states, as we feel or experience them both quite concretely and should not conceive any of them as abstract entities. Secondly, mind-body relation, connection, or unity is not like the relation between type and tokens, between abstract, general entity and concrete ones.

Instead of "instantiation," we might prefer to use "actualization." As I have suggested, the body actualizes the mind and an adequate conception of the psychophysical unity can be quite satisfactorily termed as that between *a possibility and its actualization*.[15] Any mental possibility is concrete; it should not be considered as abstract at all. The actualization under discussion is quite different from the "realization" that functionalists commonly use and that allows multiple realization of the same function. In contrast, I treat the possibility in question as an individual possibility which rules out any multiple actualization of the same possibility in different individual actualities (bodies). The brain actualizes mental possibilities, or mental possibilities are actualized in the brain. Hence, there is a necessary connection between mind and body, which ensures their unity or inseparability—this is the unity between the mental possibility and its actualization. This unity should be sharply distinguished from identity—mind and body are not identical and yet they are inseparable. We cannot refer to mental

[14] Unfortunately, "instantiation" plays a similar role in the current discussion regarding to what extent brain imaging has to do with the mind. See, for instance, Roskies 2010, p. 659. Roskies's paper fluctuates between various, even conflicting, terms concerning the psychophysical relation: the brain is the "material *basis* of the mind" (ibid., p. 635); the mind is "*realized* in the brain" (ibid., p. 640); and "the mind *is* the brain" (ibid., 653; all italics are mine).

[15] See Gilead 1999, 2003, and 2009. Studies of the brain thus illuminate greatly how the brain *actualizes* mental states. Yet, none of these studies can serve as a substitute for a psychological, intersubjective study or for any study that relates to the mind or to the mental as such.

activity without physical actualization. Thus, any mental activity is a brain activity (though not every brain activity is a mental activity), but this does not mean that the brain and the mind are the same; it means that they are inseparably united. There is a difference between the possible and the actual, though no actuality is separable from its possibility. The purely possible[16] is not subject to any spatiotemporal and causal conditions, whereas the actual is inevitably subject to them. Equally, there is a difference between the mental and the physical (or the bodily), though no mental subject is separable from its actualization (whenever such actualization exists), which is inescapably physical. I treat the actual and the physical as identical to the extent that both are subject to the same spatiotemporal and causal conditions. It is clear enough that psychophysical unity or inseparability does not entail psychophysical identity or reductiveness: it is impossible to reduce a possibility to its actuality, as each of them is subject to quite different conditions and as quite different properties are ascribed to each of them. Nevertheless, the possibility and its actuality are inseparable: mental possibility, the mind, and its actuality, the body, are inseparable.

On these grounds, we can see the images of the brain's functioning on a computer screen, but we cannot see the images of the mental states that this functioning actualizes. Anything physical is actual and can be publicly accessible. By means of imaging techniques, we may have access enough to anything that takes place or occurs in one's brain, but this does not entail that by means of such techniques we may have access to other person's mind. No physical accessibility can replace mental accessibility. If indeed the mental is privately accessible, as I think the case necessarily is, no physical accessibility, such as by means of brain imaging, can elude or overcome private, mental accessibility.

Thus, we are facing two kinds of reality concerning our existence, each is irreducible to the other—the mental and the physical. The former is private-subjective, the latter is public-objective. Brain imaging is valid only for a part of the latter. Since no reduction of the mental-subjective to the physical-objective is possible, no brain imaging, which is an objective means of access to my brain, has any access to my mental states as such. Yet, these two kinds of reality are absolutely inseparable one from the other.

Given the aforementioned considerations, character, consciousness, and "sense of spirituality" are not features or traits of our brain at all. They are "features" of our mind. Otherwise, we would reduce mind to brain, and such a reduction begs the question, suggesting with no proof at all that brain imaging entails mind reading. By "mind reading" I understand an epistemic accessibility to other mind(s). The question is not whether this accessibility is direct or indirect but whether it is possible at all. It is obvious that the first-person accessibility pertains exclusively to each person, but this is not the point that I make in this paper. Were access from the outside to other minds possible, another person would not be aware of my mental state, for instance, in the same way that I am aware of it, but he or she would have been aware only of *what* it is (which, my argument concludes, is impossible, too).

[16] Pure possibilities are individual possibilities which are entirely independent on spatiotemporal and causal conditions or restrictions as well as on any actual circumstances or actualities. Independent or regardless of any such conditions or restrictions and on any actual circumstances or actualities, *any* possibility is pure. Gilead's publications to which this paper refers are about individual pure possibilities in various branches of philosophy, to begin with metaphysics. This original metaphysics is called "panenmentalism." Whenever the term "possibilities" is mentioned in this paper, it refers to individual pure possibilities.

Any reduction of the mind to the body or to the brain requires a solid justification. I do not think that such a justification has been suggested so far. If the arguments—that brain imaging allows or enables access to the mind or that brain imaging entails mind reading in the epistemic sense—rely upon the presumption that the mind is reducible to the body or the brain, these arguments are groundless.

6 Can We Decode Simple Mental States on the Grounds of Brain Imaging?

Considering all these, what about brain imaging that allegedly makes possible "to accurately decode a person's conscious experience based only on non-invasive measurements of their brain activity" (Haynes and Ress 2006, p. 523)?[17] In fact, based on the discussion and arguments above, the epistemic access under discussion is *not* to the mental states or to mental representations of the subjects under the brain-imaging tests or observations, but only to the signals of their brain activity and states. These states and activity actualize or render physical the mental states or representations in question. In other words, the activity and states of the brain accompany, are connected to, or are inseparable from those mental states but they are not identical to them. The only person, in any of the reports such as the above-cited one, who has a private epistemic access to such mental states, is the subject under observation or experiments who can report the experimenters about these states at the moment that those signals appear. There are all the differences in the world between mental states and their physical-biological actualities. Assuming an identity of such actualities to the mental states is simply a grave category-mistake. There is no other way but a complete reliance upon the subjects' sincere reports to gain any veridical information about their mental states. Such must be the case especially because of the irreducible personal differences among the subjects under these experiments or observations. Hence, one is also not allowed to infer from the brain states and activity of a subject to the mental states of another subject, though these states are actualized in similar brain states based on similar signals in their brain imaging.

The reader may object in the following manner: even if for the time being decoding mental states by means of deciphering their brain signals has not gain a significant success (if at all), prospective progress in decoding such states (whatever their interpretations may be) appears to strengthen reductive physicalism, which posits mental accessibility from brain decoding. My answer lies on the principle and metaphysical level—the decoding under discussion does not and will never serve as an access to one's mental states, for the decoding is about physical, brain signals, never, in principle, about the mental states per se. It is the decoding or *identifying of the physical actualization* of the mental states, never of the mental states themselves, per se. Mental states are not brain states and they are not subject to such signals; they have no shape, physical, chemical, or biological properties, physical energy, and so on and so forth, which brain states necessarily have. In any event, all non-reductive theories of the mental put forward such mental properties that cannot be validly inferred from brain

[17] Cf. Brouwer and Heeger 2009; Nishimoto et al. 2011; Soon et al. 2008; Naselaris et al. 2011; Freeman et al. 2011; Tong and Pratte 2012; Rissman and Wagner 2012; Chun and Johnson 2011; Çukur et al. 2013; and others.

properties. As I have explained above, while brain states are subject to natural laws (physically, chemically, biochemically, and biologically) and statistics as well, mental states are anomalous in nature and are not subject to strict statistics, if to statistics at all. For this reason, Freud refused to subject psychological phenomena to statistics, as the personal variations of our mental life are numerous, heterogeneous, and even incommensurable.[18] Physicalism on the basis of the capabilities, perspective or current, of brain imagining is thus entirely groundless as long as there is no legitimate way to reduce the mental to the physical.

All these and the above considerations should explain away the ambitions and the alleged results in decoding mental states on the grounds of brain imaging.

7 Why Our Body and Behavior Do Not Allow Any Epistemic Access to the Mind

Even if we reject any reduction of the mental to the physical, of the mind to the brain, and assuming that they are inseparable one from the other, why does this inseparability not enable brain imaging to read our mind, namely, to have some epistemic access to my mind?

If, on the one hand, the views that assume the mind to supervene on the body or on the brain are not reductionist (which I doubt), such views, too, cannot imply mind reading from brain imaging. For even if our mental traits or states were completely dependent (namely, supervene) on our brain (which I do not accept), such dependence (namely, such supervenience) would not enable psychophysical identity. Thus, inspecting brain imaging does not imply inspecting anything mental even according to such views. If brain imaging allows access to the brain, this does not mean that it allows access to the mental states "supervening" on the brain. If, on the other hand, supervenient views of the mind are reductionist, the question remains whether there is a solid justification for any reduction of the mind to the body or the brain, whereas I have shown above that there are solid reasons to reject any reduction of the mind to the body or to the brain. If there is no such a justification, these views fail to prove that brain imaging implies mind reading or that this technique allows access to the mind.

Nevertheless, you may argue that what we inspect by means of brain-imaging techniques is not our mind but the *behavior* of our mind, which, like our behavior in general, intersubjectively or objectively reflects or indicates what going on in our mind. As much as we can observe, diagnose, or infer from one's behavior what one's state of mind actually is, this argument goes, we can expand our observing or watching of one's behavior by means of those techniques, and, thus, enable access to one's mind.

First, watching one's behavior, cerebral or otherwise, does not allow the observer any access, epistemic or otherwise, to one's mind. Our behavior is external and can be publically, intersubjectively, or interpersonally (that is, intimately) watched or observed, whereas nothing mental or privately inner is reducible to anything external, such as behavior. Anything behavioral is observable, whereas nothing mental can be

[18] "Friends of analysis have advised us to meet the threatened publication of our failures with statistics of our successes drawn up by ourselves. I did not agree to this. I pointed out that statistics are worthless if the items assembled in them are too heterogeneous; and the cases of neurotic illness which we had taken into treatment were in fact incomparable in a great variety of respects" (Freud 1917, p. 460).

watched. Nobody can infer from one's behavior what there is in one's mind intrinsically.

Second, is our brain's activity a behavior at all? Can we inspect or observe cerebral behavior or actions? Brain imaging is valid for cerebral facts, events, activity, functioning, occurrences, processes, or states; it is not valid for actions. Though some of the events and states of one's brain are relevant to one's action, they do not take part in such an action. Thus, if one decides to stretch out her hand to take a piece of bread, but is incapable of doing so (because of paralysis following spinal damage, for instance), she does not perform an action at all, even though her decision to stretch out her hand is (physically) actualized in her cerebral events or states. Thus, inspecting or observing our brains by means of imaging techniques is not of our actions or behavior. Actions and behaviors must be external to the brain, notwithstanding its relevance to them.

In concluding, observing our cerebral events and states is unlike our inspecting or observing one's behavior. For this reason, *even* a behaviorist approach cannot really help one in inferring mental privacy from brain privacy, mental accessibility from brain accessibility, or mind reading from brain imaging.

The situation becomes more crucial when it comes to morality and ethics in judging one's action or behavior. Observing and inspecting cerebral facts, events, activity, functioning, occurrences, and states, we do not observe values, moral attitudes, rules, or laws, all of which are entirely different from the former or from anything cerebral. As nothing cerebral is behavioral, we cannot even *infer* from the former what the latter possibly are. Moral attitudes are special mental states, which no brain imaging can detect or capture. Judging from our behavior, one can tell whether we are following a moral rule or not. If moral rules are transformable to laws—to use a Kantian distinction, if maxims are transformable to moral laws—according to one's behavior, we may judge whether one is following a moral law. In contrast, if there is no such a thing as a cerebral behavior (there are only cerebral events or activities), no brain imaging can serve us in knowing whether one is following a moral rule or law. Even more, no such imaging can reveal to us what are one's moral attitudes and, especially, values.

Nevertheless, assuming that mind and brain are not identical one to the other and rejecting any reduction of the mind to the body, why does psychophysical inseparability not enable brain imaging to read the mind? If the connection between mind and body is the most intimate, direct, deepest, strongest one we can imagine, why should this not enable brain imaging to read the mind on the basis of its inseparability from the brain? Such cannot be the case, for the fact that the brain and the mind are inseparable does not allow external, non-private access to the mind. As long as the mind is not reducible to the brain or identical to it, even their inseparability does not allow external access to the mind. The mind and the mind only is accessible to itself, whereas it is only the physical component or part of the psychophysical unity that is accessible from the outside. Hence, the psychophysical inseparability does not imply that brain imaging entails mind reading. In other words, it does not imply that brain imaging allows access to our mind.

8 Conclusions

My arguments above clearly show that brain imaging allows no access to our mind and that mind privacy is quite different from brain privacy, as the latter can be breached by

brain imaging, whereas the former cannot. We should not worry whether brain imaging can or will be able to read our mind. We have nothing to worry about regarding our mental privacy, for there is no external access to one's mind. Each of us has exclusive access to his or her own mind. I also show above that a reduction of the mind to the body inescapably fails, as there is a difference of categories between mind and body or brain, which is compatible with their inseparability.[19]

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