From I. Johansson and N. Lynøe,
Medicine & Philosophy. A Twenty-First Century Introduction
(Ontos Verlag, 2008), pp. 224–234.

7.5 The ghost in the machine

The question whether psychosomatic health improvements and health impairments really exist touches a core issue in both the biomedical paradigm itself and in its relation to the sub-paradigm that we have labeled the clinical medical paradigm. There is a tension between the general paradigm and the sub-paradigm that we think deserves more attention than it has received so far.

The expression that constitutes the title of this section comes from the English philosopher Gilbert Ryle (1900-1976), who used it in his famous book, *The Concept of Mind* (1949). He maintains that the view that there is a mind, a psyche, or a mental substance is a ghost created by our language. If he is right, there can be no placebo and nocebo effects since there is no mind that can produce any somatic effects.

We have previously claimed that, with respect to the medical realm, the ontology of the biomedical paradigm is an *epiphenomenalist materialism* (Chapter 6.1). In relation to the patients' normal daily life, the ontology is the common sense one where agency (Chapter 2.1) on part of persons is simply taken for granted. The biomedical paradigm has never said that patients should be treated simply as machines, even though it was not until the second half of the twentieth century that it became an official norm that physicians have to respect the integrity of their patients (and, where this is not possible, respect the views of some close relatives or friends). In the biomedical paradigm, to repeat:

- there is no complete denial of the existence of mental phenomena
- it is taken for granted that brain states can cause mental phenomena
- there is a denial that something mental can cause a bodily medical change
- mental phenomena are regarded as being phenomena within the spatiotemporal world.

From a philosophical point of view, this list immediately raises two questions: ‘What characterizes mental phenomena?’ and ‘What characterizes here causality?’ Crucial to the contemporary philosophical characterization of the mental are two concepts: ‘qualia’ and ‘intentionality’. Our presentation of the causal problem will bring in the concepts of ‘mental causation’ and ‘agency’.

7.5.1 Qualia and intentionality

The following kind of situation is quite common. I look at a red thing from a certain perspective and you from another; since the light is reflected a bit differently in the two directions, I see a certain hue of red but you see another. These two hues of red belong to our different perceptions as mental conscious phenomena, and they are examples of *qualia*. To suffer from tinnitus is to suffer from the existence of a certain kind of qualia. Whatever the head and the brain looks like, a person that does not hear anything cannot have tinnitus. There are qualia in relation to all the classical sensory systems. A person born blind cannot really know what it is like to have visual qualia; a person born deaf cannot really know what it is like to have auditory qualia. Pains are another kind of qualia. They exist only as mental apprehensions. In a mind-independent world there are no pains, only pure pain *behavior*. In order to find out whether or not a certain anesthesia works, one has to find out if those who receive it still *feels* pain or not. Corpses, and persons in coma or dreamless sleep, have no qualia. They cannot feel any pain, but, on the other hand, neither can they feel anything pleasant. A quale is a mental phenomenon. The existence of qualia is no anomaly to the biomedical paradigm.

Intentionality means ‘directedness’ and ‘aboutness’ in a sense now to be explained. When I think *of* past and future events, I am *directed towards* and think *about* them; when I have a desire *towards* something, my desire can be said to be *about* this something; when I am angry *at* somebody, my anger is *directed towards* and is *about* this person; and so on. Most mental states and acts contain intentionality, but having the feature of intentionality should not be considered a necessary condition for something to be mental. For instance, some experiences of pure qualia lack intentionality. Whether having the feature of intentionality is in general a sufficient condition for there to be a mental phenomenon, is a question that we will not consider,

but, definitely, we do not today ascribe intentionality to dead matter and plants. To be a quale is in itself to be a mental phenomenon, but there can be mental states and acts even if there are no qualia; thinking, for instance, can exist unaccompanied by qualia.

The aboutness characteristic of intentionality comes out vividly if one focuses on spatial and temporal relations. At each moment of time, dead matter and plants are *completely confined* within their spatiotemporal region. Not so with us. Our bodies are, but we can nonetheless think and talk of things that are far away from the spatiotemporal region that our bodies happen to occupy. Even perception is an intentional phenomenon. For instance, when we perceive another person, we are directed at something that exists *at another place* in space than our perceiving bodies do. Our perception is in a sense *about* the other person. In ordinary perceptions, intentionality and qualia are intimately fused.

Perhaps the most peculiar feature of the directedness and aboutness of intentionality is that it can be directed towards, and be about, entities that do not exist at all. We talk more or less every day about fictional figures from novels and cartoons, and these figures do neither exist in space and time nor in some other kind of man-independent realm (such as the realm of ideas postulated by Plato or the realm of mathematical numbers as postulated by many mathematicians). Nonetheless, we can identify and re-identify these figures, be it Hamlet or Superman, in such a way that a conversation about them is possible. The same goes for what is false in false assertions. If such assertions were not about anything, they could not be false. If fictional literature and cartoons were not about anything, we would not read them. False assertions and fictional assertions are similar in that none of them refers to anything in reality that corresponds to them exactly, but they differ in that false empirical assertions only as a matter of fact lack truthmakers, whereas fictional assertions cannot have any. No inorganic matter and no plants can have this kind of directedness and aboutness.

In summary, individual intentional states and acts can, although anchored in our body (especially our brain) at a certain time, be directed towards entities that:

1. are spatially distinct from the body
2. are both in the past, in the present, and in the future

3. do not in the ordinary sense exist at all.

The third point may seem remarkable. Does it not imply the logical contradiction ‘there are non-existent things’. No, it doesn’t. It implies only: ‘there are intentional states and acts that are directed towards non-existent things’. The fact that an intentional state or act is about something does not imply that this something can exist independently of acts of apprehension of it. Now, since in everyday language we speak as if fictional figures really exist (‘Have you read the last book *about* Harry Potter?’), one might perhaps have better say that falsities and fictional figures exist, but that they have a special *mode* of existence. They can only exist in and through intentional states and acts of human beings, but they can nonetheless be the same (be re-identified) in many different such intentional acts.

Having made clear that in one sense fictions do not exist, but in another they do exist, we would like to point out that most measurement scales in medicine and the natural sciences (blood pressure, mass, electric charge, etc.) are constructed without any constraint that every magnitude on the scale has to refer to a really existing quantity in the world. Many magnitudes must be taken as having fictions as referents; it seems odd to think that all the infinitely many magnitudes of continuous scales have referents. Similarly, it makes good sense to speak of entities such as purely hypothetical kinds of genomes. In this sense there are fictions in science as well as in novels and cartoons, but this does not imply that fictions exist in some mind-independent realm of their own. Often, in both novels and science, the fictional is mixed with the real (compare the comments on ‘fictionality content’ in Chapter 3.5).

Intentional states and acts seem to be able to inhere in at least humans and some other higher animals, but not in pure matter and plants. What then about texts and pictures? Are they not pure matter, and mustn’t they be said to contain intentionality? No, a further distinction is here needed. Texts and pictures have only a *derived*, not an *intrinsic*, form of intentionality. They can *cause* specific intrinsic intentional states and acts in beings with consciousness, but they do not in themselves contain the kind of directedness and aboutness that we have when are reading the texts and are seeing the pictures.

We call texts and pictures ‘representations’, as if they in and of themselves were directed towards and were about (represent) something distinct from themselves. But this way of speaking is probably due to the fact that in everyday life we take our own presence so much for granted, that a distinction between intrinsic and derived intentionality is of no pragmatic value. But in the ‘ghostly’ context now at hand, such a distinction is strongly needed.

It is in relation to derived intentionality, especially words and sentences, that talk of *meaning* and *symbolic significance* is truly adequate. Nouns, verbs, adjectives, and adverbs have meaning because (i) they can cause intrinsic intentional states, and we can by analytical thinking (ii) divide such signs/terms into two parts: (iia) a purely graphical sign and (iib) what contains the directedness in question. The latter *is* the meaning (symbolic significance), and the former, the graphical sign, *has* meaning (symbolic significance). The same meaning can be connected to different graphical signs (e.g., the German word ‘Hund’ and the English word ‘dog’ have the same meaning), and two different meanings can be connected to the same graphical sign (e.g., ‘blade’ as meaning the cutting part of things such as knives and machines and as meaning the leaf of plants).

7.5.2 Intentional states and brain states

Only when something with *derived* intentionality interacts with a brain can the corresponding *intrinsic* intentionality come into being. In other words, only when a representation of X (entity with derived intentionality) interacts with a brain can there be a real representation of X, i.e., an intentional state or act that really is about X. The sentence ‘Clouds consist of water’ is a representation of the fact that clouds consist of water only because it can cause people to be directed towards this fact and have thoughts about it.

Obviously, the feature of intentionality is not to be found among any of the scalar properties of physics and chemistry (length, mass, energy, etc.), but neither is it to be found among vector properties such as velocity, acceleration, and field strength. The directedness and aboutness of intentionality must not be confused with the directionality of motions and forces.

Intentionality is not even to be found in what quantum physicists call ‘physical information’ or what molecular biologists call ‘genetic

information’. When an intentional state contains information there is either a true assertion or a true belief about some state of affairs. But even though in fact true, the same kind of intentional states might have been false. Assertions and beliefs lay claim to be about something, and if this something does not obtain they are false. Assertions and beliefs have a true-falsity dimension built into their very nature. Nothing of the sorts is to be found in what is called information in the natural sciences. A distinction between two kinds of information is needed. Assertions and beliefs can contain ‘intentional(-ity) information’, whereas physical information and genetic information exemplify ‘non-intentional(-ity) information’

According to (some interpretations of) quantum physics, there is ‘physical information’ that can move between ‘entangled states’ faster than light and ‘inform’ one of the entangled states about what has happened in the other. But such states contain neither intrinsic nor derived intentional directedness towards the other state; they completely lack a true-falsity dimension.

Genetic information exists in the double helix two-molecule combination DNA, and it can be represented by so-called DNA sequences consisting of a number of individual letters chosen (for human beings) out four different types of letters (A, C, G, T), each of which represents a certain nucleotide. Such information can be transferred from DNA to other molecules, in particular to ‘messenger-RNA molecules’, which, in turn, can transfer the information to places where the protein syntheses that create new cells can take place. In the sense of information used here, things such as vinyl records, tapes, and cd’s can be said to contain information about melodies. And bar codes on commodities can be said to contain information about prizes. In all these cases, to speak about ‘information’ is a way of speaking about complicated causal processes where the internal structures and patterns of the causes and effects are necessary to take into account; here, the causes and effects are not simple events such as a person turning on a switch or a bacterium entering the body (as in Chapter 6.2). Biological information that resides in chemicals is *not* like the derived intentionality that resides in texts. The information contained in DNAs consists of *patterns* constituted by four different kinds of nucleotides that play a certain role in some purely non-intentional processes (taken for granted that no superhuman deity has created DNA the way humans create cd’s).

In the natural-scientific use of 'information' now made clear, i.e., 'non-intentional information', our perceptual systems can be said to receive perceptual information about the environment even when there are no associated intentional perceptual states (or acts). Perceptual psychology has made the expression 'to perceive' ambiguous. Today, it can mean both 'to receive perceptual information' and 'to be in a perceptual intentional state'. What makes the problem of perceptual intentionality even more confusing is that in order for us as persons to have veridical perceptual intentional (mental) states, our brains have to receive some corresponding perceptual information. However, this fact cannot possibly cancel the conceptual distinction between intentional and non-intentional information. Therefore, nor can it in itself show that brain states (and/or processes) containing perceptual non-intentional information are identical with the corresponding intentional states. *Put in another way, the fact that brain states can (even without external stimuli) cause intentional states (even dreams are intentional states) does not show that intentional states are brain states*; at least not in the way the latter are conceived of in today's physics, chemistry, and molecular biology.

When thinking about philosophical identity problems such as those concerned with brain states and intentional states, one should be acutely aware of the fact that ordinary language often relies heavily on the context and the speakers' background knowledge. For instance, to say in our culture 'Sean Connery *is* James Bond' is to say that Sean Connery *is (playing)* James Bond, not that SC and JB are identical. Similarly, nothing can be wrong in saying 'intentional states *are* brain states' as long as one means that intentional states *are (caused by)* brain states.

That there is an oddity in a complete identification of intentional states with brain states can be illustrated as follows. Touch your head with your hands. You have now a tactual percept of the outside of your head. Assume, next, that this percept is *completely identical* with some of your brain states. If so, what you perceive as happening on the outside of your head must in fact be happening inside your head. And the same must be true of all your veridical perceptions of events in the external world; they seem to exist outside your head, but (on the assumptions stated) they only exist inside of it. If one thinks that all intentional states are completely identical with one's brain states, then one implicitly places one's percepts of the ordinary world

in one's brain. On such an analysis, veridical perceptions differ from dreams only in the way they are caused: dreams only have proximate causes, but veridical perceptions have distal causes too.

To accept that there are mental phenomena (qualia and intentional states) that in some way or other are connected to or inhere in the body is to accept *property dualism*. This dualism differs from Descartes' *substance dualism* in that it is not assumed that what is mental can exist apart from what is material. According to property dualism, mental phenomena can inhere in matter even though they are not like properties such as shape and volume. Property dualism is compatible with a naturalist outlook. Qualia and intentional phenomena exist in the spatiotemporal world, but they differ in their very nature from everything that so far has been postulated in physics, chemistry, and molecular biology.

7.5.3 Psyche-to-soma causation

Without intentional states there can by definition be no placebo effects; these effects are by definition caused by self-fulfilling mental expectations, and such expectations are intentional states. If there are neither intentional states nor qualia there are no mental phenomena at all and, consequently, no psychosomatic effects whatsoever. In order for there to be any psychosomatic effects there have to be mental phenomena, but, equally trivially, there also has to be a causal relation that goes from the mental to the bodily, from psyche to soma. In contemporary philosophy, the possibility or impossibility of such a relation is discussed under the label 'mental causation', but we will call it 'psyche-to-soma causation'. Although causal talk is ubiquitous in both everyday life and scientific life, the notion of causality is philosophically elusive (cf. Chapter 6.2). The special problem that pops up in the context now at hand is that the causes and the effects are of radically different kinds.

Conspicuous cases of causality are those where one material body affects another: a stone breaks a window, a saw cuts a piece of wood, a billiard ball pushes another billiard ball, etc. Here, some philosophical reflection may even find a metaphysical explanation: since two material bodies cannot be in the same place at the same time, something simply has to happen when two material bodies 'compete' for occupying in the same place. Such a kind of reasoning cannot be used when it comes to psyche-to-soma causation.

Mental phenomena do not compete with matter about spatial regions. What then about an electrically charged particle in an electromagnetic field? The field causes the particle to move even though they occupy the same place and they are not of exactly the same ontological kind. Instead of soma-to-soma causation there is field-to-soma causation. This is closer to psyche-to-soma causation, but the difference between the mental and the bodily seems to be much greater than that between electromagnetic fields and electrically charged particles. However, if the epiphenomenalistic materialism of the biomedical paradigm is already taken for granted, one might argue as below. The form of the argument to be presented is the indirect form that is used in RCTs: assume the opposite of what you hope to prove (namely that the null hypothesis is false), and then prove that your assumption (the null hypothesis) cannot be true.

Assume that psyche-to-soma causation is impossible. For reasons of symmetry, it then follows that even soma-to-psyche causation is impossible. Surely, this must be wrong. This means that all our experiences that being hit hard creates pain must be illusory, and that all our knowledge that alcohol and drugs can influence mental states is only presumed knowledge. The fact that somatic changes may cause mental changes is not a fact related only to the biomedical paradigm; it is a fact that is generally accepted. That bodily events can cause pain, is in common sense as obvious as the fact that one billiard ball can cause another such ball to move. Therefore, for reasons of symmetry psyche-to-soma causation is just as possible as soma-to-psyche causation, which, in turn, according to everyday perception, is just as possible as soma-to-soma causation.

7.5.4 Agency

So far, we have spoken of psyche-to-soma causation the way we spoke of causal relations between purely material events, soma-to-soma causation. Even agency (Chapter 2.1) is, if it exists, a kind of psyche-to-soma causation; one which brings in free will and human freedom. It shall explain why soft (and not hard) determinism is true. This issue, let it be noted, is of no relevance for the question of the existence of placebo and nocebo effects and other passive psychosomatic processes. But since it belongs to the general issue of psyche-to-soma causation, and is a necessary condition for the existence of what we termed *active* psychosomatic curing, we will take

the opportunity to make some remarks on it here; especially, since experiments by a physiologist, Benjamin Libet (b. 1916), has become prominent in the discussion.

Agency contains a special kind of intentionality: intentions. Obviously, some unconscious electric processes in the brain are necessary preconditions for our actions; without a brain no agency. In Libet's experiments, the actions were very simple ones such as pressing a button, which we know are correlated with neuron activity in the supplementary cortex. If his results are generalized to all kinds of actions, one can state his conclusions as follows. The neurons in the brain that are responsible for a certain physical movement in a certain body part start firing about 500 milliseconds before this movement takes place, but conscious intentions or urges to make such a movement/action arise about 150 ms before the action starts. That is, seemingly free actions are triggered about (500–150=) 350 ms before the presumably free urge or free decision to act appears. It might be tempting to conclude that the experienced decision to act is merely an epiphenomenon to the first 350 ms of the relevant brain processes, and that we should look upon agency as a complete illusion. Libet's own conclusion, however, is not that radical. He says that we are still free to inhibit actions that are on their way; there is at least 150 ms left for intervention by a free will. On his view, true agency can only be controlling, stopping some actions and letting others through.

As we have said, science and philosophy overlap. One kind of criticism leveled at Libet from a neurologist-philosopher pair says that he has neglected the fact that voluntary actions need not be preceded by any felt urge or decision to act (Bennet and Hacker, 8.2). Let us put it as follows: sometimes we have in the mind's eye a specific intention to act *before* we act, but often we become aware of our intention only *in* our very acting. That is, there are two kinds of intentions, reflective (or prior) intentions and non-reflective intentions. Libet seems to think that all free actions require reflective intentions.

The distinction between reflective and non-reflective intentions is quite in conformance with common sense and judicial praxis. We talk of children as performing actions long before they are able to have any reflective intentions; they are said to *act* spontaneously, not to be mere stimulus-response machines. We even take it for granted that we often directly in a

movement can see whether or not it is an action or ‘mere movement’; and we cannot see reflective intentions, only be told about them. For instance, in soccer, where playing with the hands is forbidden, the referees are expected to be able to see whether or not an arm that touches the ball is *intentionally* touching it. If there is an intention, they give a free-kick; otherwise not. Usually, players have no time to form prior intentions before they are acting. In most laws, ever since ancient times, there is some distinction between law-breakings that are done reflectively (e.g., murder) and the same ones done un-reflectively (manslaughter). In judicial Latin, they are called ‘dolus’ and ‘culpa’, respectively.