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2 The theoretical basis of the biopsychosocial model

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Summary

This chapter addresses the philosophy behind the biopsychosocial model, moving it on from George Engel's original description. I start by summarizing five aetiological problems that the biopsychosocial model must address, with a focus on the core issue of the relationship between mind and body (the mind-body problem). To understand this, I first define consciousness (awareness) in three dimensions: cognitive, experiential, and functional. I go on to consider the nature of the unconscious and then address the mind-body problem, suggesting that a consideration of the relationship between computer software and hardware is a useful analogy. Both are necessary to describe and understand the workings of a computer, even though without the hardware no software would function. Similarly descriptions and measures of both mind and body are necessary in order to understand human beings, even though the mind is 'supervenient', or completely dependent on the brain. We are fortunate in the study of humans to be able to use information from first-, second-, and third-person perspectives. All are necessary for a complete understanding.

Introduction

I have been asked to speak about the theoretical basis of the biopsychosocial model. This topic can be interpreted in two different ways: either narrowly as the theoretical basis of Engel's actual model,¹⁻³ or more broadly as the theoretical issues involved in any similar approach trying to integrate biological, psychological, and social factors, especially in the field of so-called psychosomatic illnesses.

There are several reasons why I have chosen the broader approach. One is that an explicit biopsychosocial approach is not particularly common among people working with psychosomatic issues. Two alternative theoretical frame-

works are stress theory (Selye) and coping theory (Lazarus). In a recent Medline search, I found 1200 references using the term ‘biopsychosocial’ but 7500 with ‘psychosomatic’, 50 000 with ‘coping’, and no less than 204 000 with the term ‘stress’. A combined search for ‘psychosomatic and coping’ delivered 550 references but ‘psychosomatic and biopsychosocial’ only 50. There is likely to be a lot of biopsychosocial thinking going on in psychosomatics outside the 50 papers that explicitly use Engel’s framework.

The systems perspective and ‘linear’ models

Another reason why I chose the broader perspective is that Engel’s own model can be criticized in several ways from a philosophical viewpoint. Inspired by *General system theory*,⁴ Engel conceptualizes nature as a hierarchy of systems, but he does not go into any detail about the interactions between systems at different levels. He does not explain what really happens when, for example, there is an interaction between the personal and the social level, or the biochemical and the personal level. Also, I think that Engel’s attack on ‘linear causal models’ in traditional biomedical thinking is at least partly misguided. It is true that representatives of the medical sciences sometimes imply that a symptom or a disease has a single cause; too much unicausal thinking is inherent in this (cf. the *Helicobacter* example below). Usually, however, talk about ‘the cause of disease X’ presupposes a whole field of background factors that are taken for granted, so use of such phrases cannot be taken as proof of unicausal thinking. One must not forget that at least since the days of Claude Bernard,⁵ biologists and physicians have been used to thinking in terms of complex causal systems. It is too simplistic to suggest that mainstream biomedical researchers—for example, cell biologists or geneticists—usually think ‘linearly’ (in the sense of using unicausal models). In quite a different sense, linear thinking can truly be said to be the paradigm of much medical research today, namely, in the sense of linear statistical models (as opposed to non-linear ones). However, linearity in this sense (which is compatible with a multivariate, systems approach) was certainly not Engel’s primary concern.

My most important objection to Engel’s model, however, is that it does not attempt to give a detailed account of mind–body relations. Common sense tells us that mental events and processes can influence bodily ones and vice versa. However, there are philosophical arguments against the possibility of such an interaction and these arguments have to be carefully analysed. Without a proper understanding of the role of mind and consciousness in the genesis and shaping of somatic events and processes, one cannot adequately address psychosomatic issues. And it is not sufficient for such an understanding that one thinks in terms of layered systems and multifactorial causality,

because deeper philosophical issues are involved. McLaren even goes as far as saying that Engel's model is not a model at all as it only formulates the *need* for understanding the influence of non-biological factors on biological ones, without contributing to that understanding.⁶

Five core issues

So, this chapter will address the general methodological problems involved in the biopsychosocial model and the emphasis will be on mind–body interactions and consciousness. It is important in this context to keep a number of issues that are often confused apart. These include

- (1) genetic versus environmental influences ('nature versus nurture');
- (2) single-factor versus multifactor causality;
- (3) somatic versus mental causes (the core mind–body problem);
- (4) reasons versus causes;
- (5) conscious versus non-conscious influences.

All these issues are relevant to the biopsychosocial model and conceptual mistakes on each point may be deleterious. For example, a simplistic single-factor concept of causation (2) seems to have led many to take the discovery of the essential role of *Helicobacter pylori* as showing that peptic ulcer is not in any sense a psychosomatic disease; however, because not everybody with a *Helicobacter* infection develops an ulcer, there is an obvious place for psychosocial factors as possibly contributing or even necessary causes.⁷ But although each point on the list above is important, it is at least equally important to keep them apart in the discussion.

As already mentioned, although (2) (single versus complex causality) is very important in the biopsychosocial model, one cannot solve the core mind–body problem (3) by means of the concept of multifactorial causality. Saying that a mental factor is a *partial* cause of a somatic disorder carries with it exactly the same philosophical problems as saying that it is a *complete* cause (more about this point below).

Most importantly, the nature–nurture controversy (1) is distinct from the core mind–body problem (3). Of course many environmental influences are not mental in nature at all. Conversely, it is also conceivable that a psychological character trait, while being a contributing cause of a certain somatic disorder, is not due to environmental influences but belongs to the genetically determined constitution of the individual.

Concerning (4) (reasons versus causes), some philosophers and psychiatrists champion the idea that one should regard mental events and states as *reasons for actions*, rather than as *causes of behaviour*. There may be some

truth in this idea (in certain contexts), but it cannot solve the basic theoretical problems of psychosomatic medicine. We have to find some way to accommodate the possibility that mental factors can actually *change* the course of somatic processes, that they are not *only* reasons, but actually causes. We want to discuss not only the eventuality that mental stress may give a person a *reason* to be ill, but also the possibility that mental stress (in combination with other factors) may *lead to* illness and disease.

Finally, one must reckon with the possibility that not all mental factors that influence the course of a disease are conscious. Hence one has to distinguish clearly between (3) and (5). To better see the relevance of this remark, let us dwell on the concept of consciousness for a while (for an alternative way of characterizing consciousness, compare Searle's perspective on the mind-body problem, which is essentially the same as mine although there are many differences of emphasis and of terminology).⁸

The nature of consciousness

In English there are two terms—'conscious' and 'aware'—that correspond to only one term in German ('bewusst') and in Swedish ('medveten'). The use of these words and their immediate derivatives covers three different dimensions, which we may call the *cognitive*, the *experiential* (or *phenomenal*), and the *functional* dimensions.

Cognitive awareness

If you say that someone is aware of a certain fact, for example, that they are aware that Fermat's last theorem has now been proved, you probably use the term in a purely cognitive sense. What you mean to say is that the person in question *knows* the fact in question and knowledge of a fact does not entail any kind of present experience. All the time, we have a lot of knowledge that is not reflected in present experience. For example, a minute ago you (the reader) knew that $2 + 2 = 4$, but did you then have a specific *experience* related to this mathematical knowledge? Most probably not. So, were you not *aware* of the fact that $2 + 2 = 4$? Yes, in the cognitive sense of 'aware', you were! (Try to say to yourself, 'no, I was not aware that $2 + 2 = 4$.') Similarly, we can say of a person who seems to be sleeping dreamlessly that because they have set the alarm, they are obviously *aware* that they have to get up early the next day.

In Swedish and German, the terms 'bewusst' and 'medveten' can be used in the purely cognitive sense. And as we have just seen, one may use the English 'aware' in this way. I do not know for sure, however, how the English word 'conscious' behaves in this respect. Is it correct to say that an hour ago, you were *conscious* of the fact that $2 + 2 = 4$ (just because you *knew* it then and

even if you did not *think* of it)? I have to leave this question to the reader's linguistic intuition.

Experiential or phenomenal consciousness

The experiential or phenomenal dimension of consciousness is exemplified by having an intense tooth pain or by hearing the sound of a trumpet. These events entail that you actually have specific experiences different from those that you had when not being in pain and before hearing the trumpet. Another pertinent set of examples is given by the recall of stored memories. At any point of time, most of our memories are *not* conscious in the experiential sense. Recall of an episodic memory means that one becomes *experientially* conscious of an earlier event that one otherwise only *knew* to have occurred.

The nature of experiential, or phenomenal, consciousness is a matter of intense philosophical controversy these days and my account of it has been deliberately simplified. A more careful analysis would probably reveal that it has several different components. For the purpose of this chapter the most important thing is that you understand that it is not the same thing as cognitive awareness.

Functional consciousness

Consciousness may have yet another dimension, the functional one: consciousness as a set of *capabilities* or *dispositions* (to be in certain states). If you look at the psychiatric uses of the term 'consciousness', they nearly always refer to such capacities and dispositions. When a psychiatrist says that a delirious person suffers from a 'disturbance of consciousness', they refer not only to changes in the actual contents of his cognitive system or his experience, but also (and primarily) to changes in the patient's mental capabilities and dispositions. The delirious patient does not only lack certain knowledge (for example, of time and temporal relations) and does not only have unusual experiences, but it is also the case that these abnormal mental contents are due to the fact that their mental *capabilities* for knowing the environment and experiencing it in a proper way are disturbed. This is the functional level of consciousness (it is of interest to note that Freud used 'consciousness' in a similar, functional sense in his early writings, but in later writings prefers the term 'ego' for the set of mental functions that he previously referred to as 'consciousness in the systematic sense').⁹ If you look at phenomenologically oriented European psychiatry, you can find broad functional uses of 'consciousness' with the consequence that, for example, depression and mania are classified as 'disturbances of consciousness'.¹⁰

Mind, consciousness, and the unconscious

It is important to appreciate that in *none* of these senses of consciousness—except perhaps in some unusual global–functional sense that some phenomenological psychiatrists might have given to the term—does consciousness equal *mind*. A lot of terms both in psychology and in everyday language refer to mental states or traits, for example, to kindness, aggressiveness, and stubbornness, which are in themselves neither cognitive nor experiential, nor dispositions to certain cognitions or experiences. However, these states or traits are of course *causally relevant* to cognition and experience. Aggressiveness, for example, tends to give rise to experienced anger.

Then we must consider the Freudian unconscious, which is yet another thing. So far we have distinguished three aspects of consciousness: the cognitive, the experiential, and the functional aspects. To understand what one could mean by an *unconscious mental state*, we also have to note another kind of ambiguity in the expression, ‘X is a conscious mental state.’ This expression can refer to the fact that X is itself a state of consciousness, in any of the three possible senses. But it can also mean, and usually means, that the person who is in mental state X is also conscious of X, or of the fact that they are in X. Indeed, when Freud (in his later writings) speaks about *unconscious* mental states and processes, he is primarily referring to the absence of such ‘meta-consciousness’. He discusses its nature at length but here I will only mention the simplest interpretation in which the meta-consciousness is taken in the cognitive sense, that is, an unconscious mental state is one that the owner does not *know* about (is not aware of). Not only Freudians but also several modern cognitive psychologists believe that there are many unconscious mental states in this sense.¹¹

Hence, the concept of mind is in *several* ways wider than the concept of consciousness, which in turn is wider than the concept of *experiential* (phenomenal) consciousness. This means that the problem of how experiential consciousness relates to the brain is only a special case of the more general mind–body problem. But it is the most interesting and problematic case. How can pain, experienced anger, or the conscious hearing of a sound be caused by electrochemical processes in the brain and how can these experiences cause events in the body? We will now discuss the core mind–body problem in the abstract, without specifying which kind of ‘mental’ processes we are talking about. But to make the argument more concrete and easy to follow, you are of course allowed to think of the mental in terms of phenomenal consciousness.

The core mind–body problem

The basic mind–body problem can be summarized as follows: if every event has a sufficient physical cause, then there is no room for intervening in the

course of events by non-physical means. Here is a more complete formulation. Suppose, for the sake of the argument, that

- (1) mental events and processes are not identical to any physical or chemical events or processes.

Most of us would probably agree that

- (2) all bodily events obey the laws of physics and chemistry and are therefore completely determined by earlier physico-chemical events (quantum effects apart).

The last premiss can also be stated as follows:

- (3) for every bodily occurrence there is a set of earlier physico-chemical events, which together act as its sufficient cause (again not counting quantum mechanical effects).

It seems to follow from (1) and (2) that

- (4) mental events cannot change the predetermined course of physical events and hence cannot make any difference to the course of events in the body

and thus

- (5) mental events cannot even be contributory causes to bodily events.

Summarizing the problem so far, how can the mind possibly contribute to the occurrence of bodily events, if the latter already have non-mental events as sufficient causes? However, the mind-body problem has an even wider scope because a very similar argument seems to entail that *mental events cannot even cause other mental events*. Let us add a postulate that is believed by most psychiatrists and psychologists today, usually called the *supervenience postulate* by philosophers of mind (Kim gives a very careful discussion of the concept of supervenience¹²):

- (6) all mental events are completely determined by simultaneous physical and chemical events in the brain.

From (3) above it follows that

- (7) all mental events are completely determined by earlier physicochemical events.

It now seems to follow that

- (8) mental events cannot make any difference to the course of other mental events

and

- (9) mental events cannot even be contributory causes, even to other mental events.

In short, if all mental events are completely determined by earlier non-mental factors, how can they even be partially caused by mental factors?

It seems that if we do not want to accept that there are no mental causes, then we are caught in a dilemma. Either we have to take recourse to quantum gaps in the physical system, or we have to regard the mental and the physical as in some sense *identical*, that is, we must deny premiss (1). However, both horns of the dilemma may seem unattractive. Personally, I find it difficult to take the quantum solution seriously (which does not mean that I do not take quantum physics seriously). So I will say no more about the first horn of the dilemma.

A computer analogy

Do we then have to say that mental events are identical to bodily events? Is my experience of pain really the same as an excitatory pattern in my somatosensory cortex? To elucidate this question, the parallel between on the one hand *human body and mind* and on the other hand *computer hardware and software*, is very apt. Please do not take this to mean that the mind is to the body *exactly* as software is to hardware! But consider the following argument about computers and note the parallel with the body–mind issue above.

- (a) Software states of a computer are not identical to hardware states.
- (b) All hardware states in the computer obey the laws of physics.

Hence,

- (c) every hardware state in the computer is completely determined by earlier hardware states of the computer and its input device (not counting quantum effects).

Hence,

- (d) software events cannot make any difference to the course of hardware events in the computer.

If we then add the supervenience postulate for computers,

- (e) which software state a computer is in at a certain time is completely determined by its simultaneous hardware state,

it seems to follow that

- (f) software states in the computer cannot make any difference to later software states either.

Conclusions (d) and (f) correspond to our conclusions (6) and (9) concerning the mind–body problem, but are even more obviously false than these. How can the paradox be resolved in the case of the computer? Here it is quite clear that the quantum solution does not offer any hope of success. On the other

hand it is perhaps not so intuitively implausible to suppose that software and hardware states are in some sense identical. Let us dwell upon the latter possibility for a while.

To describe a computer as following the routines of a certain programme is to give a *functional* description of it. It is to give a description of the computer from the perspective of the job that it presently does, such as *adding* (while doing a calculation) or *deleting a word* (while word processing). We surely all believe that the computer follows its programme by being in a certain electronic state, or sequence of states. However, saying that it follows its programme is *not* to give a description of such an electronic state or sequence. You may compare the description of a computer doing word processing with describing a household device as a vacuum cleaner. To describe it so is to say that it is a device that can clean your home using a vacuum pump. It does not say anything about the kind of motor or the specific design of the pump.

On the other hand, it is understood by everybody that a vacuum cleaner does its job according to physical principles, using *some* kind of motor and *some* kind of pump system. The physical make-up that makes a certain vacuum cleaner actually perform its function is called the *realization* of that function. Similarly, the hardware transition that makes a certain computer perform a certain software operation is called the *realization* of the software operation (in this computer at this time). Now, the same job on a functional level can be done in many different ways in hardware. This is called *multiple realizability*. Spell checking can be done in many different ways on the hardware level on an ordinary computer, just as *adding* can certainly be done by many different kinds of computers (which need not even be electronic in character) and just as vacuum cleaning can in principle be done using electric motors, combustion engines, hand-driven pumps or nuclear power.

From this account, it emerges clearly in which sense a software state is or is not identical with a hardware state. The operation of *adding* is identical with the underlying hardware process in the adding machine in the sense that the latter realizes the former—the *hardware process is the way this machine adds*. Adding is therefore *supervenient* on the hardware process, or in other words completely dependent on the latter. It is however not *conceptually* identical with the hardware process. In other words, saying ‘the machine adds’ does not have the same *meaning* as any description of the specific hardware process by means of which the present computer adds. Saying that it adds actually leaves the issue completely open as to whether it adds using the one process or the other, just like describing something as a vacuum cleaner leaves the issue open as to how the vacuum cleaning function is realized.

On the other hand, just like vacuum cleaning cannot be done by *any* machine, not *any* hardware state or process can realize a given software state

or process. Software operations constrain the range of possible underlying hardware operations. For example, adding two numbers can only be done by means of hardware processes that are such that if their beginning state realizes a representation of the two numbers, then their end state realizes the representation of their sum.

An integration

To sum up the last three sections: software is realized in hardware, it is multiply realized and it constrains the hardware, but software and hardware descriptions are conceptually independent. Now note that as a consequence of this conceptual independence, *we do not have to know how to describe the hardware in order to be able to recognize, manipulate, and make use of software states*. We can easily find out which software state a computer is in by hitting some keys, moving and clicking the mouse, and looking at the display or the print-out. In this way we can know a lot about the workings of different programmes without having any idea of how they are realized on the hardware level. And when the software does not work as expected, we certainly do not immediately go to hardware diagnosis in order to fix the problem, but first do our best to find the cause in the software or our handling of it. Well, how can there be causes in the software, if physics is a closed system? *Because the software process has a physical, hardware realization*. Speaking of software causation is therefore a roundabout way of speaking about hardware causation—and it is a *necessary roundabout* when we do not know which the relevant hardware states are (as we usually do not).

There is a thesis in the philosophy of mind called ‘functionalism’ (not to be confused with functional concepts of consciousness as defined above). This is a philosophy that accepts a far-reaching parallelism between humans and computers and considers *all* mental states as similar to software states in the computer. There are strong arguments against functionalism, especially when we look at experiential states such as pain. Pain is not (or at least *not only*) a functional state; to say that a pain is sharp rather than dull is to describe it from a phenomenal, not a functional perspective. Yet the parallel between computers and humans is valid in the sense that just as software is supervenient on hardware and there is multiple realizability of software in hardware, mental states are most probably supervenient on brain states and multiply realized in the latter. In neither case is the one kind of description equivalent to the other kind; there is a *conceptual independence* between the *ontologically dependent* levels. And that is why we have to speak about mental causation. In one sense, the real causal processes go on at the physical level. But we can only describe these processes through the mental processes that they realize.

First-, second-, and third-person perspectives

The existence of different conceptual systems to describe people is closely related to the fact that there are several different ways of knowing a person. In psychology, psychiatry, and medicine, as well as in everyday encounters with our fellow people, at least *three* different modes of knowledge are at play, which lead to at least *two* and maybe *three* distinct conceptual systems. First, there is direct self-knowledge or introspection, ‘the first-person perspective’, that is, when we study our own pain, after-images, or thinking. Second, there is objective knowledge about people, ‘the third-person perspective’. This is when we look at magnetic resonance images of the human brain, for example. Third, there is another kind of knowledge that cannot be reduced to the other two categories, which is the knowledge we get from talking to people, looking at them, and assessing them in a personal encounter—I call this ‘the second person perspective’.

These three modes of knowledge typically do not all provide information about the same state. For example, if you ask yourself what you are thinking of, you may come up with an answer like ‘the number 3’. If you tell this to a friend, they will know from your testimony which cognitive state you are in. So it seems that the first- and second-person perspectives can lead to knowledge about the same cognitive state. In contrast, this state—thinking of the number 3—cannot be singled out by means of investigations using *only* the third-person perspective—not today, not in a thousand years. Of course you may one day be able to gather the content of a person’s thought by using some future form of brain scanning. But it is important to understand that using the brain scanner *alone* will never suffice. To know that a certain signal from the future brain scanner means thinking of 3, you must first have sought a correlation between what the scanner says *and what the patient says* (or do you expect the output screen from the scanner suddenly to show a big ‘3’ instead of the usual brain tissue?). So, the element of self-report is essential after all, which shows that first-person descriptions cannot be reduced to third-person descriptions.

Are the first- and second-person perspectives the same?

The question whether the first- and second-person perspectives generate the same conceptual systems is an interesting one, which I would like to tentatively answer in the negative. One case in point is observing unconscious intentions. To take a less controversial example, it happens that you interview a patient and come to a distinct conclusion that this individual is depressed, although the patient him- or herself does not feel depressed. The more-or-less permanent tendency to lowered mood that we call depression is not always

introspectively accessible (compare ‘your friends always know you better than you yourself do’). However, I do not want to press home this point because the important message of this chapter is that you cannot know from the unaided *third-person* perspective that a person has a depression or that they feel depressed right now.

Do we need the first- and second-person perspectives?

You may object that even if my argument shows that several independent conceptual systems to describe people are available to us, it does not show that we cannot do without all except one of them. Specifically, you may say, I have not shown that medicine and psychosomatics cannot do without the first- and second-person perspectives. To counter this I want to revert to the computer parallel once more. There are two reasons why we use functional descriptions of the computer and not only physical ones. First, we have computers because they fulfil certain functions, not because they have an interesting interior. Hence, without functional descriptions we could not even *talk* about the things that make us build and buy computers (such as adding or word processing). Similarly, without the psychological vocabulary we could not even speak about the primary concern of all of medicine: the patient’s well-being (how does subjective quality of life look on the screen of the future brain scanner?).

Second, and equally important, is the fact that without using the software approach we could not predict and manipulate the behaviour of the computer nearly as well as we can. I challenge any computer expert, next time their computer is attacked by a virus, to find out by looking with physical methods at the electronic processes of the computer and *not using any software tool whatsoever* what the virus has done to their machine and how to best avoid damaging consequences of it. In the same vein, to make reliable predictions about human behaviour we need to access the human being from the psychological side. It is obvious to me that a neuroscientist skilled in brain imaging and biochemistry but ignorant of human communication will not be able to tell whether a certain patient will take their medications or not.

It is also quite probable that many other kinds of predictions—not about behaviour—are better made from a psychological standpoint than from a physical one. For example, the mechanisms which in combination with a *Helicobacter* infection lead to peptic ulcer may not be easily accessible for the physiologist, but more easily so for the psychologist or epidemiologist. This is no more mysterious than the fact that the computer hardware specialist sometimes has to cooperate with the software specialist to find out why the machine broke down. Perhaps they can find out by their own methods that the imme-

diate cause of breakdown was that the fan stopped well before the processor did, but the cause of *this* may lay in a faulty algorithm for shutting down the computer—clearly a matter of software.

Do I advance dualism?

It might be thought that my argument reintroduces Cartesian dualism. However, it does not, because Descartes' version of psychophysical interactionism presupposes both that the mental does *not* supervene on the physical and that the system of physical laws is *not* closed. But I am quite willing to call my position a kind of *conceptual dualism*. Indeed, different versions of conceptual dualism are today advanced by many philosophers, while the radical materialist position that mental concepts can be dispensed with is nowadays defended by few.

A final consideration

There is one final detail that must be borne in mind when discussing these issues; it may not be very relevant for today's scientists, but will become more important as more and more is discovered about the neural basis of mind. The point is this: if you want to talk about *joint effects* of two factors, one mental and one physical, you have to take care that the one is not supervenient on the other. Because if they *are* so related, then you are in a sense talking about the same process twice. For example, you may say that a brain contusion together with a premorbid-sensitive disposition has led to paranoid decompensation. If you were a future brain scientist, you could possibly also describe this effect as a joint effect of the contusion and a certain neural process X (which, indeed, happens to be the process which realizes the sensitive disposition in this patient). The contusion and the disposition are independent entities; so are the contusion and process X. Similarly you can consistently say (although what you say may of course be false) that a chronic experience of stress together with a *H. pylori* infection has led to peptic ulcer in a certain case. The *H. pylori* infection is certainly not the neural realization of the chronic experience of stress; these are two independent factors that can interact. But now suppose, however implausibly, that the experience of stress has been found by a future neuroendocrinologist to be supervenient on the neurohormonal response Y to environmental stressors. Then you should *not* say that the bacterial infection, the neurohormonal response Y, *and* the experience of stress have *together* led to a peptic ulcer. Why? Because it would in effect be to count one thing for two in the explanation—just as if I said 'Lena, Helge, and I wrote this lecture together' without mentioning that I am Helge. The mistake we have made is that we have treated an experience and its physical realization as two ontologically independent factors.

Conclusions

With these comments and examples I hope I have succeeded in making sense of causal talk in medicine and psychosomatics. The mystery surrounding mental causes in a closed physical universe disappears when we understand that although *realized* by physical processes, mental events and processes are *known* in a unique way. The concepts we have created to name these events and processes are therefore indispensable in our descriptions of the human being, including our *causal* descriptions.

The original model by Engel should be updated to include recent insights into the nature of mind–body relations and the possibilities of mind–body interactions. It should also be freed from its ties to general systems theory, which is not a bad theory, but does not add any power to the model. With these changes, the biopsychosocial model is philosophically uncontroversial. We can use different conceptual systems to describe our patient and we can mix factors from the different conceptual systems without giving up our belief that the brain is a biochemical and physical system and that the mind is determined solely by processes in the brain. Because the first-, second-, and third-person perspectives offer three distinct ways of decomposing reality and include the unique perspective of the patient, such an updated biopsychosocial model is of vital importance for the proper understanding, practice, and theoretical approaches to psychiatry, psychosomatics, and medicine in general.

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