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## MIND-BODY DUALISM AND THE COMPATIBILITY OF MEDICAL METHODS

**ABSTRACT.** In this paper we analyse some misleading theses concerning the old controversy over the relation between mind and body presented in contemporary medical literature. We undertake an epistemological clarification of the axiomatic structure of medical methods. This clarification, in turn, requires a precise philosophical explanation of the presupposed concepts. This analysis will establish two results: (1) that the mind-body dualism cannot be understood as a kind of biological variation of the subject-object dichotomy in physics, and (2) that the thesis of the incompatibility between somatic and psychosomatic medicine held by naturalists and others lacks solid epistemological foundation.

**KEY WORDS:** mind-body dualism, axiomatic, psychosomatic, medical methodology, ontology, epistemology

### INTRODUCTION

The old philosophical controversy over the relation between mind and body has recently flared up in Germany. One aspect of this modern version of the old quarrel seems to be new: the participants are not only philosophers, but also empirical scientists of various disciplines such as physicists, psychologists and physicians. The reason why medical doctors reflect more and more on this basic philosophical problem comes from their contact with patients who want to be treated, not exclusively as a set of parameters, but as persons, characterised by an individual somatic and psychic biography.

On the one hand, the participation of scientists of different qualifications in this discussion certainly represents an enrichment of ideas and methods; on the other hand it causes many new misunderstandings. The aim of this paper is to present a critical exposition of this discussion. We want to show that many well-defined logical and epistemological concepts are simply misunderstood by physicians and other scientists. The lack of careful epistemic analysis leads to erroneous views, such as the thesis of the incompatibility between somatic and psychosomatic medicine, a thesis,



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which cannot be maintained after further careful analysis, as we will try to show.

One of the central characteristics of contemporary science is the radical specialisation of the various branches of investigation. This applies to human medicine in a very special way. Because of this specialisation it is important to undertake an analysis of the relations between the different areas of investigation in order to guarantee the unity of the *corpus scientificum* and to ensure that scientists are critical of any kind of epistemological rigidity. Of course, the ideal of unity needs to be rendered more precisely, in order to avoid misunderstanding. It means neither the kind of “logical” unity proposed by Hegel in his program of the dialectic of sciences, nor the kind of “constructional” unity proposed by Rudolf Carnap in his program of the logic-phenomenological reconstruction of all sciences in *Der Logische Aufbau der Welt* (1928). Rather, unity in our sense consists of the possibility of a mutual translation of information between one discipline and another, or at least, following Quine, in a relative translation between different scientific systems.

#### SUBJECT-OBJECT VERSUS MIND-BODY

In the paper *Moderne Physik und Grundfragen der Medizin* written by F.W. Schmahl and C.F. von Weizsäcker we find one of the conceptual confusions just mentioned. The authors defend two main theses: (1) Holistic medicine must overcome the Cartesian dualism between *res cogitans* (mind) and *res extensa* (body); and (2) quantum physics must overcome the separation between subjects and objects (the objects in this case being elementary material particles). Despite the validity of each one of these theses, the kind of connection between them proposed by the authors is misleading. They propose a reduction from (1) to (2). The identification of the subject-object dichotomy in physics with the mind-body dualism in medicine is simply wrong. The claims on behalf of holistic medicine should not be confused with a possible subject-object fusion in modern physics.

It is clear that our body, besides a molecular and atomic structure, also has a subatomic one. And there are indeed many attempts to explain the phenomenon of free will with recourse to non-deterministic quantum physics. But Heisenberg’s indeterminacy principle only affirms the dependence of the object upon the subject of inquiry, and not the double nature of the observed object. An analogous epistemological application of this principle to the subject matter of medicine would rather affirm something like the dependence of the patient (the object of medicine) upon

the physician (the subject of medicine). This, of course, would be very interesting, too, but it should not be confused with the double nature of human beings, i.e., their being composed of mind and body.

By the way, the well-known double nature of elementary particles in physics – in terms of waves and particles – gives us a much better analogy for dualism in medicine. Both, the object of medical observation – the human being – and the object of observation in physics – the elementary particle – show a double nature. On the one hand mind and body and on the other hand wave and quantum. But here we have to be careful, too. This analogy could suggest a reduction of the mind-body dualism to a dualism in the subatomic realm. In any case, it is important to avoid the confusion of the ontological mind-body dualism in medicine with the epistemological subject-object dualism in physics. The object of medicine is the human being composed of mind and body, and the subject is also a human being composed of mind and body. Both have the same ontological structure.

We can conclude that the mind-body dualism has nothing to do with the subject-object gap, because they belong to quite different domains. The first refers to an ontological structure, the second reveals an epistemological or methodological problem.

#### A QUESTIONABLE CONCLUSION: BAUER'S THESIS OF INCOMPATIBILITY

More far-reaching regarding its epistemological consequences than the above mentioned trivial confusion is the thesis that somatic and psychosomatic medicine are incompatible because of their different epistemological axiomatic structure. A paradigmatic advocate of this kind of view is Axel Bauer, Professor of the History of Medicine in Heidelberg. Bauer formulates [1] a fundamental dilemma of medical theory and practice: different epistemic processes involved in the acquisition of knowledge are based (at least partially) upon incompatible and non-falsifiable axioms. The foundation of his thesis is a classification of four different types of epistemic systems in medicine (the so-called axioms for the acquisition of knowledge). The term 'axiom' in this context obviously does not have the precise meaning it has in logic or mathematics. In the following discussion it will nevertheless be used without quotation marks in Bauer's sense. These axioms are:

- (1) The axiom of the existence and the influence of transnatural persons or powers such as gods, ghosts and magical entities.

- (2) The axiom of the correspondence between phenomena (principle of analogy)
- (3) The axiom of causality and mechanistic-deterministic processes in nature. This axiom expresses the method of contemporary scientific medicine.
- (4) The axiom of the possibility of intersubjective understanding of the manifestations of life (*Lebensäußerung*) via the hermeneutic interpretation of verbal and non-verbal signs.

The classification and characterisation of medical practice by these four different paradigms seems to be indeed adequate and exhaustive, and therefore we will accept it for the purpose of the following discussion. Given the fact that the thesis of the mutual incompatibility of these four axioms is not a medical, but rather a general epistemological thesis, one could expect that Bauer would provide a general epistemological demonstration of their compatibility or incompatibility. Indeed, proof of the incompatibility of epistemological axioms with the help of formal or quasi-formal methods is one of the most important tasks of epistemology. However, there are no such things as arguments or demonstrations in Bauer's paper. The reason for their absence is very easy to find: a proof of this kind cannot exist, because the axioms (3) and (4) are compatible. We will try to demonstrate this now.

For our discussion we will exclude the first two axioms, because axiom (1) plays only a random role in our western medical practice, and although axiom (2) is related to medical practice, like Chinese medicine and homeopathy, more and more accepted both by patients and doctors at least in Germany, it has only a very small theoretical import.

Given the importance of somatic and psychosomatic medicine represented by the axioms (3) and (4) the thesis of their epistemological incompatibility has serious consequences. If Bauer's thesis were correct, the common practice of medical collaboration and discussion between internists and psychiatrists would be epistemically inconsistent. Therefore, it is important to investigate whether there is sound theoretical support for this thesis.

Bauer writes:

The dilemma described at the beginning (of this paper) consists exactly in the fact that from the epistemological point of view none of the four styles of thinking is really compatible with the other three. Until a possible philosophical or neurobiological solution of the mind-body problem – which is still unavailable – has been found, this fundamental disharmony will hold for the third axiom of causal, mechanistic-deterministic processes in nature and the fourth axiom of the possibility of intersubjective understanding of human manifestations through hermeneutic interpretations of verbal and non-verbal signs . . . [1: 304].

The main statement in this passage seems to be strange, namely that any solution of the mind-body problem would eliminate the incompatibility between the axioms of somatic and psychosomatic medicine. To the contrary, we are of the opinion, that a specific solution to this problem rather will support the incompatibility-thesis, especially in the case where an absolute causal independency between these two fundamental anthropological instances could be proved. But this certainly is not the dominant belief among contemporary psychosomatic doctors or psychologists.

Before we start, however, a preliminary issue needs to be mentioned: we will not deny that the achievements of orthodox contemporary medicine are incomparably greater than those of alternative forms of medicine characterised by the axioms (1) and (2). This article is in no way an attempt to defend these two types of medical practice. Instead, it is a critical epistemological discussion of a possible fundamental logical or ontological dichotomy between somatic and psychosomatic sciences. The target of such an investigation is the justification of an enlargement of the epistemological basis of medicine. Our thesis is simply that somatic medicine is logically and epistemologically compatible with psychology, psychoanalysis and psychosomatic science.

Thus our first question is: how can we check with the help of logic and epistemology whether two scientific (and partly axiomatic) systems are compatible or not? There are two possibilities or procedures, a direct and an indirect one. In the first case the axioms of the two systems are evaluated in order to find contradictions. If the axioms are – as is the case in our investigation – complex propositions, i.e., propositions consisting of less complex ones, we have to analyse the most elementary propositions and then investigate the consistency of these propositional elements. They might then show two kinds of inconsistency: contradiction (e.g., it is the case, that p and it is not the case, that p) or contrariety (e.g., a is red and a is blue). If inconsistencies of this kind are to be found, the system has to be rejected.

The second or indirect procedure consists in the careful evaluation of a representative set of theorems which can be deduced from the basic axioms. Of course, even systems with a very small axiomatic basis can yield infinitely many theorems, so that the analysis of all the theorems is impossible. This is a fundamental limit for all consistency proofs. In order to gain moral security it is sufficient to analyse only a set of basic theorems. It is not our aim to prove the incompatibility between two axiomatic systems, but to show that they are not *prima facie* incompatible. After this deduction the theorems of the two different systems have to be compared in order to find contradictions or contraries.

### THE LOGICAL ANALYSIS OF SYSTEMS OF SOMATIC AND PSYCHOSOMATIC MEDICINE

A further analysis of axiom (3) shows that it contains five elementary statements:

- (3a) Processes in nature are constantly submitted to the mechanistic-deterministic principle of cause (etiology) and effect (symptom).
- (3b) These processes can be expressed in a mathematical form via so-called laws of nature.
- (3c) These processes must be accessible by sense experience.
- (3d) These processes can be controlled by experiments, and the truth-values of the representing propositions can be established.
- (3e) Additional premises such as vitalistic and teleological speculations must be rejected following the principle of axiomatic minimalism.

These five fundamental statements contained in axiom (3) characterise the structure of modern empirical science. According to this approach, scientific investigation is based on the method of observation of particular facts, followed by induction, postulation of hypotheses, and their experimental control.

The analysis of the axiomatic system of psychosomatic science (4) is much more difficult. First, we have to note that the characterisation given in Bauer's paper is not a generally accepted one. Nevertheless, we will accept it as correct in order to show that even in this case the thesis of incompatibility is false. Bauer's characterisation of the fourth medical axiomatic system contains the following elementary systems:

- (4a) The use of the hermeneutic procedure of retrospective interpretation of pathological somatic and psychosomatic phenomena.
- (4b) The use of the biographic-interpretative procedure in order to understand and to treat pathological psychic symptoms.
- (4c) Body and mind are understood as instances of mutual representation, and their 'behaviour' can be understood via the analysis of the patient's biography.

This axiomatic system has theologico-philosophical sources, and it was established by the German protestant theologian Friedrich Schleiermacher (1768–1834) who was the first to formulate the theory of the hermeneutic method. Wilhelm Dilthey's (1833–1911) further development of this theory has secured its scientific continuity. He is responsible for the methodological distinction between natural and human sciences, typical for the German philosophical tradition. On the one hand, processes,

events and phenomena in nature, which are independent of human influence, are described and systematically ordered by inductive-hypothetical methods, and on the other hand social and historical facts and events, dependent upon human thinking and behaviour, should be understood via the hermeneutic method of “understanding”. At the beginning of the 20th century Sigmund Freud (1886–1957) introduced a combination of the two methods, the inductive method of natural science, and the biographic-interpretative method of historical science, thus developing his own method for diagnosis and therapy of psychic maladies.

Bauer’s account of psychoanalysis is somewhat controversial. The incorporation of elements of psychoanalytic theory into somatic medicine was effected by the internist and neurologist Viktor von Weizsäcker (1886–1957) via the development of what he called ‘psychosomatic medicine’. Von Weizsäcker wanted to establish an anthropological medicine, and he assumed Leibniz’s idea that mind and body are instances of mutual representation. From this there follows the dictum: “What we banish in our mind will become effective in our body, and what we drag into the mind, diminishes the body’s power”. This dictum becomes concrete both in psychoanalysis and psychotherapy and also in psychosomatic medicine and psychiatry. Important for Bauer’s argumentation [1, 2] is his thesis that:

(...) the hermeneutical strategy of anthropological medicine and of early psychosomatic theory was based in the first place on the divinistic-intuitive procedure rather than on the comparative-objective procedure for the interpretation of verbal (symbolic) and non-verbal (symptomatic) signs (1997: 304).

This – in our opinion – unjustifiable view of the speculative way of thinking in anthropological medicine and psychosomatics serves to support Bauer’s thesis of incompatibility. Nevertheless, he does not formulate any convincing argument in favour of this view. He rather refers us to his paper entitled *Die Anwendung zeichentheoretischer Methoden auf Geschichte und Gegenwart der Medizin* (The use of semiotic methods in historical and contemporary medicine). We will come back to this paper later.

To come to the point: Possessing and analysing the elementary propositional constituents of axioms (3) and (4) enables us to answer the central question of our paper: are axioms (3) and (4) compatible or incompatible? The systematically complete procedure would consist in the comparison of each elementary statement of (3) with the corresponding elementary statements of (4). But this comparison would not do the job, because axioms (3) and (4) and their propositional constituents belong to different categorical levels. Axiom (3) tells us something about the structure of objective reality

(we adopt here, as most contemporary scientists do, a realist position), axiom (4) on the contrary tells us something about the structure of human thinking.

#### COMPATIBILITY FROM AN ONTOLOGICAL POINT OF VIEW

The ontologically relevant statements of somatic medicine are (3a) and (3e) which together assert the exclusive validity of the principle of homogeneous causality in nature. From this formulation it becomes clear that this principle is not only an ontological premise of medicine, but of modern science in general. Our question is now whether this ontological thesis is in opposition to the axiomatic system of psychosomatic theory. A second look at this axiomatic system reveals, however, that it does not contain any explicit ontological premise. One might suppose that (4b) and (4c) are in some way ontologically relevant statements. (4b) asserts the possibility not only of understanding pathological mental phenomena (this would be an epistemological assumption), but also of their treatment with the help of the biographic-interpretative procedure. Each treatment presupposes a positive real effectiveness, i.e., it presupposes an ontological (and not only epistemological) relation between real phenomena, i.e., psychological or somatic pathological processes, their treatment, and their healing.

Further (4c) asserts the correlation between body and soul as instances of continuous exchange. To sum up, the ontological premise of the fourth axiom of medicine consists of the thesis of the relation of mutual causality between mind and body.

In comparing both approaches, i.e., the homogeneous causality of natural phenomena and the mind-body causality, we cannot find an incompatibility between them. On the contrary, both axioms assert causality as an ontological principle in nature. The apparent stronger affinity of somatic medicine to the principle of causality is due to the physical and empirical accessibility of its phenomena and the relations between them. But the psychoanalytic and psychosomatic methods reveal a search for causal relations between the given data of experience analogous to that of the somatic methods. Of course the concept of data of experience in psychosomatics has a broader extension than it has in somatic medicine but not a different meaning.

The application of hermeneutic methods in psychological sciences is a convenient epistemological procedure, because a neurosis cannot be diagnosed with the help of a microscope or a biochemical test, but only through interpretation of verbal and non-verbal signs. But this epistemological aspect will be discussed in the next section. Jürgen Habermas (born 1929) is to



blame for the mistaken view that Freudian psychoanalysis does not make use of the notion of causality. Adolf Grünbaum (1987, 1988) has formulated very strong and convincing arguments against this view. He shows, for example, that Habermas has completely misunderstood the concept of causality. The fact that the cause of a neurosis is suspended during the procedure of psychoanalytical therapy and a process of healing is possible, does not mean that the principle of causality is also suspended. On the contrary, the psychoanalyst makes use of this principle, and the law of connection between traumatic experience and neurosis is confirmed. Thus psychology, psychoanalysis, and psychosomatics presuppose the validity of the principle of causality as much as somatic medicine does.

In spite of this, one might suppose an incompatibility in asserting that the mind or the soul are not natural, but transnatural entities, i.e., entities which transcend nature and thereby the range of empirical experience, too. But this incompatibility could only exist if we interpret the ontological statement of the system (3) in a radically exclusive form: all relations which hold between natural phenomena are causal relations, and this is valid exclusively between so-called natural phenomena. This is indeed a deeply rooted and widespread conviction of the contemporary scientific community. And it is probably one of the most important reasons for the scepticism of the partisans of classical medicine in relation to psychological tendencies.

Bauer's classification of the mind as a transnatural entity is typical for the inability of classical medicine to take account of psychic phenomena in everyday practice. All patients think, wish, and feel, i.e., they have psychic activities. The doctor must take note of this in his daily practice and he should comprehend it with the help of adequate theories. And because of this, disciplines such as psychosomatics, psychoanalysis, and psychiatry have been developed.

If we look both at the history of philosophy and psychology and contemporary philosophy and psychology we cannot find such a thing as a transnatural mind or soul, except in the case of God and the angels. Aristotle founded western psychology with his famous book "De Anima" in which he has described and analysed all that makes up the mind. It is the locus where both sensory perceptions and cognitive acts of different kinds are present. For Aristotle and his successors the properties of the mind, namely psychic acts such as acts of imagination, judgements, and valuations are empirically accessible and describable in an intersubjective context. The mind has two advantages: It is originally a unity and it is also a true whole and not merely an aggregate like matter.

From this point of view it is not surprising that psychology and psychoanalysis were developed in the context of 19th century Aristotelianism, represented in the person of Franz Brentano (1838–1917) and his school. Brentano distinguished between empirical and descriptive psychology. Whilst descriptive psychology should analyse the structure of the different psychic acts and the relations between them, empirical psychology should categorise psychic phenomena. His disciple Carl Stumpf (1848–1936) established in Berlin one of the world's first psychological laboratories, and Alexius Meinong (1853–1920) another disciple of Brentano, is the founder of the psychological school of Graz, from which came the father of Italian psychology, Vittorio Benussi (1878–1927). Freud attended Brentano's lectures in Vienna and he adopted his term 'Descriptive Psychologie'. There was also a quite intensive exchange of letters between Freud and another student of Brentano, Christian von Ehrenfels, the founder of *Gestaltpsychologie*.

Considering the concept of mind in contemporary psychology and philosophy, we can see that it is not conceived as related to a transnatural entity. The basic concept of scientific psychology does not express an ethereal or mystical entity, but a complex and quite natural system of actual and potential states or contents of consciousness.

Bauer, however, seems to advocate the transnatural status of the soul as the foundation for his incompatibility-thesis. Since he does not refer to entities such as God and the angels, one might have the impression that from his point of view any metaphysical position is automatically transnatural, i.e., contains transnatural entities. If this were the case then also philosophical positions like materialism or somatism – which are surely metaphysical positions – would contain transnatural concepts such as matter and soma. Independent of the question whether science will ever be successful in reducing mind-properties to matter-properties or mind or soul to purely organic constituents, there is no reason for the belief that mind or soul are transnatural entities. And therefore the so-called transnaturalness of the mind is not an appropriate support for the incompatibility-thesis.

By the way, the term "mind" rarely occurs in textbooks of clinical psychology in which psychology is usually conceived as an empirical science, and the usual Greek word "psyche" does not deny the empirical character of contemporary psychology [7: 24]. The indeterminateness of psychic phenomena is explained by reference to the so-called thesis of the "hiddenness of psychic phenomena" i.e., the claim that psychic phenomena like honesty cannot be directly but only indirectly observed – namely through indicators.

This thesis can be considered as a kind of truism of modern psychology, and it is based on a principle of philosophical psychology or philosophy of mind known and accepted since early scholasticism, and later shared by radically different traditions such as rationalism and empiricism of the 17th century. This thesis claims that different psychic acts both non-cognitive, such as emotions, and cognitive, such as judgements, or thoughts are immediately given to the subject *qua* bearer of these acts. In contradistinction to the *external* experience given by the senses, this kind of experience is called *internal*. The first philosopher analysing internal experience was St. Augustin. Rationalists like Descartes added the idea of the subject being an *a priori* condition for the existence of such states concluding that from the evident existence of psychic acts follows the existence of the subject itself (*cogito ergo sum*). His thesis became one of the fundamental truths of modern philosophy. In a similar way the transcendental and idealistic German Philosophers transformed this subject into a metaphysical instance – the transcendental subject became the *a priori* condition for all experience.

A very different and new philosophical perspective emerged at the beginning of the 20th century. Partisans of the so-called logical empiricism, e.g., Bertrand Russell in “Our Knowledge of the External World” (1914) and Rudolf Carnap in “Der Logische Aufbau der Welt” (1928), held that the private *qualias*, i.e., the simple mental states with a determined phenomenal content, are the basic elements for a phenomenological construction of our whole world experience, because they are immediately given to our consciousness. From these basic sensorial perceptions we just build the external world, presented to us as composed of several organic and inorganic material bodies. We identify some organic bodies as human subjects *qua* bearers of psychic states and cognitive acts as similar to us by an interpretation of their verbal or mimic manifestations. That another person might have similar feelings and thoughts can only be inferred by analogy – I shall never feel someone’s headache nor is anybody else able to think my thoughts. In this sense each subject is a higher instance of authority relative to its own private states and acts. J.M. Bocheński (1902–1995) considered it as a special kind of epistemic authority [3: 55]. We never can be sure about the nature of another person’s psychic states and acts, not only because of the human faculty to simulate or its inability to express its own states and acts, but also because of the impossibility of objective or intersubjective access to these states and acts. More than this: from a purely logical point of view, we can never be sure that other bodies possess psychic states at all. In German tradition it is called “das Fremdpsychische”. From the fact that so many different philosophical positions

agree with the principle of the immediateness of our own psychic acts and states in contrast to the obscurity of the content of other people's mind and soul, we can infer that its assumption does not necessarily imply an exclusive hermeneutic approach to psychology or psychosomatics, as Bauer has suggested.

The "hiddenness" of psychic phenomena therefore has an epistemic and not an ontological character. Besides, it is often observed that psychology is a young science, and therefore the connection between its phenomena cannot be expressed in the form of logical implication [7: 38–41]. Indeed, the relations between psychic phenomena can only be expressed by certain degrees of probability – and we doubt if this will fundamentally change in the future. And this is exactly the reason why mathematical-statistical methods are of such importance for psychology.

The question whether the mind is a substance or not is absent in contemporary psychology, but present in philosophy, even with a positive answer, as for example in the work of the influential analytic philosopher Roderick Chisholm (1916–1998). This approach is – like many others – compatible with the present status of the psychological sciences. Mario Bunge has presented in a very interesting paper of 1987 ten different positions vis à vis the mind-body problem; on the one side five monistic positions such as panpsychism and materialism, and on the other side five dualistic positions such as parallelism and autonomism. And it is surprising that most of these positions are held not only in traditional philosophy but also by contemporary philosophers and scientists.

Thus consider the claim of the psychologists Selg and Dörner [7], that in psychology – insofar as the discussion [about the mind-body relation] takes place at all – the view is generally accepted that psychic processes are functions of the central nervous system, especially of the brain [7: 24].

This claim is inaccurate and not at all a scientific statement, since no neurophysiologist has in fact proven that a precise correspondence (a function) exists between a psychic act and a neuroanatomic or neurophysiological state or process. In addition, the word "function" in this psychological-medical context is extremely vague, since Selg and Dörner should show that a change in the neurophysiological and neurochemical sphere causes a corresponding definite change in the psyche verifiable in quality and quantity, i.e., the quality must represent the kind of psychic act, and the quantity its intensity.

From all this it follows that mind and soul in contemporary philosophy are not conceived as transnatural entities, so that even in the case in which a dualistic view of human nature is held, nature cannot be identified with the object of psychology and psychosomatics. The claim that there exists a

categorial-ontological gap between mind and body and of a correspondent incompatibility between axiom three and four does not have any rational foundation. There is no such entity as a transnatural psyche, neither in the tradition of rational philosophy, nor in psychoanalysis, psychosomatics, or psychiatry. The mind and its properties are conceived from the very beginning as empirically accessible.

### THE EPISTEMICAL POINT OF VIEW

An analysis of the elementary statements (3b), (3c) and (3d) of somatic medicine also reveals that there is no reason to suppose an incompatibility between them and contemporary psychosomatics. The axiom (3d) does not need an explicit treatment, since it follows necessarily from (3c). If we accept the experiential and observable status of psychic phenomena in scientific psychological practice, then it is clear that its statements are verifiable, too. All empirical statements are synthetic *a posteriori* and have to be controlled by experience. Therefore we can focus here on the mathematical character of natural laws (3b) and on the empirical accessibility of natural processes.

According to the axiom of somatic medicine, natural processes can be expressed in a mathematical form, since they present an observable regularity. But also in the context of hermeneutic methods we find regularities of human behaviour, and any phenomenal regularity can be submitted to mathematical formulation and analysis. The presentation of mathematical regularities in natural processes is not only common to physiologico-material sciences, but also represents a great part of the investigations in psychological sciences. Statistics is not exclusively an instrument of somatic medicine, but it is a common method in psychology. Meyer [14] says:

A great part of psychological investigation consists in the task of bringing the connections between complex psychic phenomena in a mathematical form, presenting them in linear equations, via polynomial, exponential equations and similar forms [14: 41].

The mathematical character of explanatory models for fundamental psychic phenomena is based on another particularity of psychology, namely on the result of its self-assessment as an empirical science. This leads us to the next fundamental statement, which claims the empirical accessibility of natural processes.

We have already suggested the different conceptions concerning the constitution of the mind in traditional philosophy, e.g., whether it is substance or not. Nevertheless psychology from its beginning – at the latest

since its independence from philosophy at the end of the 19th century – sees itself as an empirical science in contradistinction to non-empirical sciences such as mathematics, logic, metaphysics, and ethics. Psychology is based on experience, its statements are controlled by observation and behaviour.

Insofar as the axiom of empirical accessibility holds not only for physiological phenomena but also for psychic ones, one might assume that the hermeneutic interpretation of human psychic manifestation is a kind of mythic perception of empirical reality. This is apparently Bauer's attitude. In his aforementioned paper: *Die Anwendung zeichentheoretischer Methoden auf Geschichte und Gegenwart der Medizin* (1995) he claims that the concept of prognosis at the beginning of scientific medicine in the school of Hippocrates was not a symptomatic but a symbolic one. But *Facies Hippocratica*, for example, is not a mythic or a divine-intuitive diagnosis, as Bauer claims, but the result of a diagnostic method based on an inductive empirical principle – as an analysis of Hippocrates's development from ideographic to nomothetic thoughts. There is not enough space to criticize this strange thesis, but it seems more than clear that psychosomatic medicine at the beginning of the 20th century – in the form it was developed by its pioneers Viktor von Weizsäcker and Alexander Mitscherlich in the Institute of Neurosis at the University of Heidelberg – only deals with comparative-objective methods and not with divine-intuitive ones. As usual epistemology follows from ontology. All psychological sciences have an empirical foundation and underlie the general principle of probabilistic deterministic causation.

## CONCLUSION

Contemporary psychosomatics presupposes an ontologically founded concept of mind – even when psychic properties are conceived to be supervenient to physical ones. From the epistemic point of view psychosomatics is an empirically working science. Psychosomatic phenomena are causally related to each other. Therefore a psychosomatic diagnosis does not depend on a symbolic or divine-intuitive method, but on a normal symptomatic one. Psychosomatics also makes use of comparative-objective methods. Data of different kinds – be it of biological or sociological origin – are collected, ordered, and systematised by hypothetico-empirical procedures. From the fact that the human being or even the human individual is the object of psychic investigation it does not at all follow that the appropriate method of analysis should be subjective.

If we recognise the objective character of psychosomatics as a natural science, we can suppose not only an epistemic compatibility between somatic and psychosomatic medicine, but also a unity of epistemological methods. Instead, to confirm an incompatibility, we have to accept the complementarity of the two branches of medical research. Since both somatic and psychosomatic medicine make use of analogous methods based on the analysis of the relation of empirical causation, their epistemological axioms and their scientific results are comparable and mutually translatable. Thus they fulfil Quine's minimal condition for the unity of science.

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