

Martin Carrier and Jürgen Mittelstrass
Mind, Brain, Behavior



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Jürgen Mittelstrass

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The Mind-Body Problem
and the Philosophy of Psychology

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To Johanna Sophie
and Marcus Benedict

Preface

This book began with a discussion between Jürgen Mittelstrass and Ernst Pöppel within the framework of the “Dortmund University Debates” (May, 1986). The discussion was preceded by two lectures – under the thematic heading “Information and Consciousness” – in which the neurophysiologist Pöppel espoused a strict monism and the philosopher of science Mittelstrass a pragmatic dualism. In this book the approach of a pragmatic dualism is further developed in the context of philosophy of science in the direction of an interactionist dualism as a theoretical position and is supplemented by a practical dualism. This is carried out in particular by Carrier’s joining of the interpretation of psychological terms as theoretical terms to Quine’s conception of the ontological commitments that theories bring with them. Carrier also supplied the demonstration that all monistic positions display the same conceptual and logical structure (reduction structure) as well as the differentiations applied to the concept of physicalism. The systematic ideas of the empiricist Carrier and the constructivist Mittelstrass meet in the methodological concept of explanatory construction. Above and beyond the treatment of the mind-body problem, the analyses and constructions developed here are to be understood as a contribution to the philosophy of psychology.

The book was originally published in German in 1989. In general, the present English version closely follows the German text. We have, however, corrected some flaws and introduced some minor modifications where we felt that things had not been spelled out as clearly as they could have been. The only exceptions are sections VII.2 and VII.4 which have been revised more extensively. In particular, we have added a discussion of “connectionism” (VII.2.§ 6) and of the information-theoretic account of psychosemantics (VII.4.§ 6). In these sections, too, the main thrust of the argumentation has remained unaffected.

The book owes much to a long-standing cooperation among philosophers and philosophers of science at the university of Konstanz that found a concrete and institutionalized expression in the foundation of the “Center for Philosophy of Science.” We would like to thank again

all the friends, colleagues, and Center co-members who carefully read the original version before it had been completed. Their criticism, recommendations and advice did much to further and improve the manuscript. In particular, we are grateful to Hubert Schleichert and Gereon Wolters for important objections to and suggestions on several parts of the text. Heinrich Kehl's critical remarks and bibliographical hints contributed a great deal to the final version of Chapter III. Intensive discussions with Alexander Rürger led, among other things, to essential improvements in section VIII.2. Gabriele Heister and Peter Schroeder-Heister carefully examined section V.2. We gratefully acknowledge the benefit of their cooperation.

After the publication of the German edition we received various remarks, objections, and comments that occasioned some of the modifications and alterations indicated above. We are especially grateful to Gad Freudenthal for an examination of our account of Aristotelian psychology in I.1 and to Peter McLaughlin who, while editing the translation, came up with several valuable suggestions. We heartily thank all of them.

The translation is the result of a joint effort of Steven Lindberg and Peter McLaughlin, and the final editing was done by the latter (in cooperation with the authors). Erika Fraiss carefully arranged the word processor files and adapted them to printer's needs (which proved to be a much more laborious job than expected in advance). It is thanks to their kind cooperation that this edition could see the light of day.

Konstanz, June 1990

Martin Carrier
Jürgen Mittelstrass

Table of Contents

Preface	vii
Introduction	1
I. The Philosophical and the Scientific Career of the Mind-Body Problem	9
1. Aristotelian Psychology	10
2. Descartes and the Aftermath	16
3. Monistic Research Programs	28
II. What is Mind-Body Identity? Reconstruction of the Identity Theory	35
1. The Theory of Type-Type-Identity	36
2. The Reduction of Theories	42
3. Routes to Mind-Body Identity	51
4. The Functionalist Interpretation of Psychological Concepts	58
5. Functional Materialism and Human Psychology	66
6. Mind-Body Identity and Eliminative Materialism	74
7. Monism and Reductionism	78
III. The Contingent Nature of Mind-Body Identity	81
1. Psychophysical Identification and Leibniz's Principle	81
2. Necessary Identity and the Contingent Nature of Psychophysical Identity	92
3. Intentionality of the Mental and Anomalous Monism	99
IV. The Self as Pilot	114
V. Science and Mind: Explanations of Behavior and Mentalistic Language	126
1. Reduction Programs in Psychology and the James-Lange Theory	127
2. The Example of Cognitive Psychology: Mental Events and Behavior	131

VI. Philosophy and Mind: Psychophysical Dualism	142
1. The Logical Status of Psychological Terms	142
2. The Ontological Status of Mental States	148
3. Dualism and its Problems	154
4. Dualism, Physicalism and the Unity of Science	167
VII. Psychology and Consciousness	180
1. The Empirical Basis of Psychology	181
2. Intentionality and Cognitive Science	189
3. Intentionality and Syntactic Psychology	208
4. Psychosemantics and Folk Psychology	223
VIII. Epistemic Limitations of the Mind-Body Relation	251
1. Epistemic Limitations? Principles of Finitism and Gödelian Incompleteness	251
2. Epistemic Limitations? The Brain and the Theory of Self- Organization	257
IX. The Mind-Body Relation and Human Self-Understanding . .	271
Conclusion	283
Bibliography	287
Index of Names	307
Index of Subjects	311

Introduction

Schopenhauer called it a “world knot,” the mind-body problem, the enigma of the relation between psychological and physical states. In its prevalent philosophical form the knot was tied in the philosophy of Descartes at the beginning of the modern age, and the attempt has been made since then to unravel it – up to the present day. The history of the mind-body problem is also the history of unsuccessful philosophical endeavors to resolve it. Thus it is no surprise that the mind body problem seems to those, who consider it anyway to be a philosophical invention, to be an example of the superfluous character of philosophical endeavors in the border areas of philosophy and science, while for others it provides the proof of the lack of fruitfulness of philosophy. In either case one might share the evaluation of Du Bois-Reymond given in 1880 who placed the mind-body problem – formulated as the question of the origin of sense qualities and states of consciousness – among the seven riddles of the universe and considered it to be insoluble.¹ In the present, too, such resignative positions can be found. Thus Shaffer declares:

It may well be that the relation between mind and body is an ultimate, unique, and unanalyzable one. If so, philosophical wisdom would consist in giving up the attempt to understand the relation in terms of other, more familiar ones and accepting it as the anomaly it is.²

The study presented here shares this resignation neither in respect to philosophy nor to science. On the contrary we shall attempt with new means and methods of philosophy of science to contribute to a solution to this problem that has become a riddle. In the process we want to develop and defend in a novel way the position of *interactionist dualism*, which takes mental states and events and physiological processes as different in kind but as entities that interact with one another.³

¹ Du Bois-Reymond 1880, 85, 88 – 89. Cf. Kuhlenbeck 1982, III, 425.

² Shaffer 1967, 345.

³ In the following we shall not distinguish conceptually between “mental,” “psychological,” and “cognitive,” nor between “event,” “process,” and “state” when related to psychological or mental and physical or physiological objects. Thus, we shall speak

The opposing, monistic interpretation of the mind-body relation is concretized in various versions of the *identity theory*. This theory holds that brain states and psychological processes (in a sense that will be articulated and clarified) are identical with one another. We consider this position to be meaningful, contingent, but probably empirically false.

The questions we are pursuing are basically epistemic in nature. On the basis of the current state of knowledge and research we shall examine which interpretation of the mind-body relation is philosophically and scientifically best supported and most convincingly grounded. We shall use the instruments of modern philosophy of science and shall focus on a reconstruction or explication of the relevant scientific theories. The point of contact is modern cognitive psychology, whose scientific importance for the further development of a philosophy of mind has not yet sufficiently been taken into account.

It is characteristic of our approach that we orient the philosophy of mind on the interpretation of the sciences of the mind – especially psychology. This means, philosophically speaking, a demarcation both from phenomenologically oriented philosophical conceptions, in which insights on the nature of the mind are to be gained out of the depth of inner experience of consciousness as well as from those conceptions – mainly fixated on Wittgenstein – that think they have found the key to almost all problems in the relation of mind and body in the analysis of everyday language. We shall neither take the purported wisdom of an inner perception as the basis of philosophical thought nor give the final word to the “language games” of everyday understanding. Nor shall we erect conceptual barriers between science and the philosophy of mind in a fearful attitude of “*noli me tangere*” or in a jealous guarding of a philosophical preserve – only to wonder later that philosophical reflection remains alone with itself. When philosophy withdraws to problems it can handle exclusively on its own, science plods onward philosophically unimpeded.

In opposition to this already traditional division of labor between science and philosophy, usually expressed in the (comfortable) notion that scientific and philosophical modes of research can be mutually isolated, we shall here advocate a philosophy of mind (or of conscious-

in general of “states” and “events.” On the conceptual distinction between event and process, cf. K. Lorenz 1980, 568.

ness) based on a critical interpretation and a philosophical treatment of the relevant scientific theories. To the extent that the question, whether the course of all events is determined by strict laws or contains essential elements of accident, is to be answered in an interpretation of quantum mechanics and the problem, whether a relational or a substantialist account of space (or space-time) is appropriate, is to be decided through the explication of General Relativity Theory: to this extent, the possible peculiarities of psychological processes are to be explicated on the basis of an interpretation of cognitive psychology.⁴ This means that the relation of mind and body is translated into the problem of the relation between neurophysiology and psychology. With this approach by way of the philosophy of science, we hope to free dualism from the stigma of obscurantism that has attached to it (to a certain extent justly) in the discussion of the mind-body problem up to the present. We take mind to be a *natural* phenomenon.

The core of the question that constitutes our point of departure is thus: what ontological commitments are implied by the acceptance of modern psychological theories, which are essentially characterized by mentalistic vocabulary. These commitments are not as a rule thematized by the scientific theories themselves; their explication is the job of philosophy or philosophy of science. The prerequisite, once again, is that one bases philosophy of mind on the present state of research, on the best available theories – or their foreseeable continuations – and dispenses with the attempt to base arguments on fictitious (philosophical) improvements on this state of research. One would not, after all, orient an analysis of the nature of space on an estimate of the physics of the 25th century. Our plea is thus to take the state of science seriously in the philosophy of mind, too, and to distinguish properly between possibility and reality.

In the framework of this approach philosophy of science has a double task. On the one hand, *conceptual analysis* is needed insofar as it is necessary to clarify the logical structure of the various positions through an analysis of the language of science. On the other hand, a discussion of the *criteria* for judging the adequacy of claims is needed. Here, it is important to realize that the philosophical interpretation of the various theories cannot simply be deduced from them, but rather itself rests on philosophical presuppositions. These presuppositions are primarily those

⁴ By this we mean theory explication in the sense of Mittelstrass 1988, 315.

of a theory of the semantics of science and the method of science, that is, notions of the means by which scientific concepts acquire their meanings and of what characteristics a good theory should display. In philosophy little is self-evident. Therefore, analysis without presuppositions cannot be the goal, but rather analysis supplemented by a reflection about its own presuppositions.

Beyond this, let us point out at the start, that for us, too, the relationship of the mind to the body seems unclear and confused, and that this study will not be able to offer any smooth solutions. Philosophy — aside from strong self-convictions that quickly lead to dogmatic philosophical schools — cannot provide firm ground or “ultimate foundations;” and we are not in a position to imagine with visionary powers the ultimate results and to present with deductive stringency the ultimate solution of the mind-body riddle. Accordingly, most of the arguments that follow are characterized by claims to plausibility and by the conscientious weighing of quite legitimate assertions. The reader who feels even after working through this study on the philosophy of mind that he has not attained absolute clarity about the nature of the mental has our sympathy. What we nonetheless hope to have achieved is to have thrown a little (new) light on an old puzzle.

The argument will be carried out in the following steps.

We begin (Chapter I) with a short survey of the history of the mind-body problem. We trace the origins of some elements of the problem in classical Greek thought but also show that the problem really starts its philosophical and scientific career only with modern dualism, meaning the Cartesian dualism of substances. The road leads from Aristotelian psychology and its scholastic reformulations — by way of Descartes’ formulation of the problem and his attempted solution based on dualism — to monistic conceptions (among them Fechner’s double aspect theory in the nineteenth century). The history of the mind-body problem issues in the history of modern (empirical) psychology but remains present in the form of cognitive psychology with its philosophical orientations.

Chapter II reconstructs the logical structure of the currently most widespread monistic positions, namely the theories of type identity, functionalism, and eliminative materialism. Each of these positions can be treated as the assumption of a particular intertheoretical relation between psychology and neurophysiology. Our reconstruction concentrates on the *concept of reduction* and attempts to show that all these

positions can be grasped as assertions of a reduction relation between psychology and neurophysiology. The versions of monism bear a stronger resemblance in their logical structure than is commonly thought. Furthermore, we want to show that such a reduction of psychology to neurophysiology represents the *only* legitimate ground for an identification of mind and body, and in particular that there is no direct experimental way to justify this kind of identification.

In Chapter III we defend the view that the identity thesis is in fact *meaningful* and *contingent*, and that it can therefore neither be proved nor refuted from the philosophical armchair. In the philosophical discussion a great number of logical and conceptual objections have been advanced that are supposed to show that the impediments to an identification of mind and body are of a fundamental nature. A large number of these objections are based on Leibniz's criterion of identity, which only allows the identification of two entities if all of their features agree. Psychological and physical phenomena (at least to all appearances) clearly display different features, so that an identification seems to be excluded. We attempt to show that such arguments are ill-supported. We also reject Kripke's objection to mind-body identity, which is based on the premise that in the world of the mental, sensation is the fundamental reality, whereas in the physical world it is not. Finally, we also reject Davidson's reservations about the possibility of psychophysical laws.

In Chapter IV we extend the discussion to the dualistic theory of Popper and Eccles. We present and submit to critical scrutiny both Popper's *anti-reductionism thesis* and the closely connected *emergence thesis* in the context of Popper's three-world theory, which provides the framework for an *anti-reductionist, interactionist dualism*. It will be seen that both theses are insufficiently grounded: the anti-reductionism thesis is too narrow and in fact permits a replacement of psychology by neurophysiology; the emergence thesis in the form in which it is presented cannot be protected from being co-opted by monism. The same holds for the attempt to present the identity theory as incompatible with a Darwinist viewpoint. Finally in Eccles' endeavor to ground dualism neurophysiologically, we witness the return of Cartesian dualism in modern terminology based on pseudo-physiological hypotheses ("liaison-brains"). Nonetheless, it becomes clear that there is a positive connection between this dualistic conception and the conception we advocate: Popper, too, considers the identity theory to be a meaningful and contingent but empirically implausible assertion; and both Popper and

Eccles advocate the methodological idea of introducing psychological states or events as empirical, testable hypotheses or explanatory constructions.

Chapter V is given over to the analysis of some *reduction programs* in psychology and to the presentation of some aspects of the state of research in modern psychology. We develop an argument here by analogy with the history of science, asserting that psychological reduction programs have too often failed in the course of history to justify (so to speak inductively) the hope of future success for such reductive claims on the basis of this history. We also give a sketch of some recent developments in a special field of modern cognitive psychology. This presentation of psychological theories serves two purposes. It provides the factual base for the philosophical discussion of cognitive psychology in the subsequent Chapters VI and VII. Furthermore, it should make it plausible that judgments about the adequacy of psychological models rest on the same methodological base as do the corresponding evaluations of theories in the natural sciences.

In Chapter VI we develop our central argument in favor of a dualistic interpretation of the mind-body relation. It is shown that psychological concepts display all the features of *theoretical terms* as these are described in the philosophy of the natural sciences. Therefore, since the logical characteristics of psychological concepts correspond to those of natural scientific concepts and since (as shown in Chapter V) the methodological features of psychological theories basically agree with the corresponding characters of the natural scientific theories, it seems natural to interpret psychological and natural scientific entities ontologically in the same manner and thus to ascribe to both of them the same reference to the real world. This speaks in favor of the assumption of an independent level of mental entities, thus providing an essential prerequisite for a dualist interpretation. However, such an inference from mentalism to dualism could be countered by independent grounds, lying either in the internal incoherence of a dualistic position or in its incompatibility with other well-founded views. We attempt to dispel such reservations. The point here is to make it clear that a dualistic interpretation of psychophysical relations is compatible with a scientific view of the world.

In Chapter VII we examine the consequences of some aspects of modern psychology for the philosophy of mind. Here we are dealing with the relation of psychological entities to subjectively experienced contents of consciousness. The structure of introspective reports is

discussed and compared to the structure of observation statements in natural science. There is extensive agreement. We also take up the subject of *intentionality*, which is attributed great importance in modern philosophy of mind. We discuss the program of cognitive science and of syntactic psychology, arriving at the following results: (1) Intentional characteristics, that is, the semantic features of psychological states are (at present) not specifiable in physical terms. (2) Intentionality is an essential feature of mental states. (3) The content of the mental states considered relevant by psychology can nonetheless diverge from the content of introspectively accessible mental phenomena. The psychodynamics specified by science need not agree with the mental life accessible to our consciousness. In light of these results, doubts once again arise as to the identification of neurophysiological states or events with experienced states of consciousness.

Chapter VIII deals with the question of possible limits to knowledge of the mind-body relation. We reject the view that the *principle of finitism* or *Gödel's incompleteness theorem* stand in the way of the knowability of this relation. We then move to a discussion of the possible impact of new developments in the theory of complex systems on the feasibility of a reduction of psychology to neurophysiology. Our particular focus is on the consequences of *deterministic chaos*, to which some neurobiologists ascribe an essential function in the workings of the brain. We attempt to show that – if such conjectures turn out to be true – the reduction of psychology to neurophysiology is not feasible even if there is in fact an identity between mind and body. Thus, we would lose the only possible ground for accepting the identity theory.

Chapter IX takes a look at the significance of the interpretation of the mind-body relation for human self-understanding. Noting that concepts like “consciousness,” “self-consciousness,” and “ego” are primarily *philosophical* concepts that articulate the self-understanding and situational understanding of humans and only secondarily general *scientific* concepts (with an empirical background), we argue for a cooperative relationship between science and philosophy with regard to the solution to the mind-body problem. Philosophy cannot set itself in the place of science, that is, it should not explain the consciousness that science strives to explain. And science on the other hand cannot set itself in the place of philosophy, that is, it does not describe (explain) the life world that philosophy describes (and explains) with its concepts. Furthermore, science, too, knows that the symbolic representation of the world in life-

world and science is not identical to the representation of the world in the brain, and that our theoretical representations, too, are thus *constructions*. Corresponding to the *theoretical* dualism (of science or philosophy of science) expressed here, there is in philosophy a *practical* dualism. In a critical analysis of the conceptions of Wittgenstein and Ryle it becomes clear that such a dualism can be close to science, for instance in the form of a practical folk psychology (alongside the folk psychology in an intuitive and in a technical sense as presented in VII.4.2). There exists a cooperative complementarity between the scientific and the life-world philosophical description of man, expressed here in the concepts “consciousness,” “self-consciousness,” and “ego.”

Our dualistic interpretation constitutes our motive for developing the ideas on the mind-body problem presented here and also provides the material coherence of the argumentation. Nonetheless, the viability of the philosophical examination of psychology presented here does not depend on the adequacy of dualism. Independent of our intention to help to clarify the mind-body problem on the basis of interactionist dualism, this study also attempts to make a contribution to the *philosophy of psychology* in general. The philosophical analyses and constructions undertaken in the thematic context of the mind-body problem deal not only with one particular problem of modern psychology, whose roots reach far back into the history of a philosophical psychology, but also with its status as science and furthermore with the scientific status of the social sciences as a whole. This is true especially in questions of methodology.

The methodological discussion in psychology and in the social sciences sometimes lags behind the state already reached by the philosophy of the natural sciences. Therefore, — independent of our analytical concentration on the solution to the riddle that the mind-body problem has become — if we have at least succeeded in contributing in a productive manner to the methodological discussion in psychology and the social sciences, we will have achieved one essential constructive goal of this study.

I. The Philosophical and Scientific Career of the Mind-Body Problem

Once were the inner and the outer world
In harmony united.
The clear, distinct philosopher
Discovered this excited.

The inner world
(It had a scare)
Took refuge in the subject.

The outer world,
of this aware,
Retreated to the object.

Philosopher was overjoyed
In light of this dissension.
Forevermore held be employed
In this polite profession.

(after R. Gernhardt,
Philosophie-Geschichte, 1981)

There are problems that only really become visible as problems and occasion scientific research programs after they have found philosophical expression. In this way science gains a philosophical dimension, and philosophy, if it is lucky, gains a realistic relation to its problems.

One of these problems is the *mind-body problem*. In the form influential on philosophy and science the mind-body problem is a consequence of the dualistic construction of reality in Descartes and Cartesianism. This does not mean that there were no reflections before Descartes on the relation of mind and soul, but it does mean that in such earlier reflections the problem did not possess the pressing character that necessitated its scientific treatment and resolution. Whereas before Cartesian dualism, it was possible at least superficially to avoid this exertion by deciding in this case to become an Aristotelian or an atomist, after the advent of Cartesian dualism the situation was completely transformed. Internal and external world had been established; the philosophical and scientific explanation of each of these depended on

the solution to the mind-body problem, for so was the relation of the two worlds to one another now formulated. A philosophical research program became a scientific research program in the modern sense.

1. Aristotelian Psychology

§ 1 The historical background of the problem lies in the notion of a temporally limited connection of body and (immortal) soul which can be traced back to classical antiquity; in fact, Plato in an epistemological context but with allusion to Orphic notions interprets the body as the “prison” of the soul.¹ Plato attacks the Pythagorean notion that the soul is the harmony of the body,² and develops on the one hand a three-tier model of the soul (the highest part being the immortal soul)³ and on the other hand a distinction between life or the soul as the principle of self movement and matter as what is “animated” (ἐμψυχον)⁴ (in some cases) by this principle. At the same time he articulates conceptually the so called *hylozoism* of Pre-socratic philosophy, which conceived life or the power of self-movement to be a property of matter or the “stuff” of which the things are made.

As a philosophical category applied to Pre-socratic philosophy of nature, however, the name “hylozoism” is somewhat problematical, in as much as this philosophy of nature is not characterized more closely by an (explicit) negation of the opposition between animated and inanimate matter or between living and non-living stuff, but rather by the non-existence of such an opposition. Furthermore the designation “hylozoistic” could also be applied to the Aristotelian conception of simple bodies (within the framework of the Aristotelian doctrine of elements), in as much as these are defined as objects that have a source of motion within them.⁵ We can see how problematic it is to undertake classifications of historical positions on the backdrop of later conceptions – here, the

¹ *Phaed.* 82e, cf. 66d/e; *Crat.* 400b/c.

² Cf. Plato, *Phaed.* 85e – 86d; Aristotle, *De an.* A4.407b27 – 408a30.

³ *Rep.* 439c – 441b; *Phaedr.* 246a – d, 253c – 254e. On this part of the history of the mind body problem cf. Specht 1980; Mittelstrass 1984b.

⁴ Cf. *Phaedr.* 245eff, *Laus* 896a.

⁵ Cf. *Phys.* B1.192b13 – 14.

dualistic conception of body (matter) and soul (mind) as well as the Platonic distinction just mentioned.

§ 2 Accordingly, we find in Aristotle neither a dualistic nor a monistic version of the mind-body problem (monistic, e.g., in the sense of the notion adhered to in ancient atomism and in the Stoa that the soul is material or composed of bodies).⁶ Aristotle, on the contrary, emphasizes the unity of body and soul on the background of his theory of form and matter, which – later called hylomorphism – states that finite substances represent a conceptual unity of the “principles” form and matter. For Aristotle, besides the hierarchy of different parts of the soul or powers (δυνάμεις)⁷ of the soul that he formulated, the soul is the first actuality or entelechy (ἐντελέχεια) of an organic body⁸ that moves it and (to a certain extent, namely in the form of the receptive soul or the receptive *nous*) decays with it.⁹

The Aristotelian approach is already the expression of a philosophical and scientific research program that focuses on general psychological processes and prefers empirical problematics. The knowledge of the soul is important, says Aristotle,

in order to understand living nature. Now those who have discussed and investigated the soul [i. e. Plato and his disciples] seem to have had only the human soul in mind; I want to put the question differently; it is pointless to ask what the soul is, for soul and animal as general concepts are something posterior; one must put the question concretely,

⁶ Cf. Democritus, VS 68 A 104a.

⁷ Cf. *De an.* A1.402b9, B3.414a29ff.

⁸ *De an.* B1.412a27–28. Cf. Bernard 1988, 9–20; Kullmann 1974, 40–41, 314–318 (within the framework of a biological definition of the animal). – There has been an extended discussion in the literature as to how this hylomorphic interpretation of the soul fits with the Aristotelian view that the soul resides primarily in the heart. If the soul is the form of the body it should belong to the entire body rather than be located in a single part of it. Two solutions to that problem have been proposed: the development solution and the compatibility solution. The first considers the two claims to be indeed inconsistent and attributes them to different stages of Aristotle’s intellectual development; the second urges that they can be reconciled. One of the arguments adduced in favor of the second position draws upon Aristotle’s comparison of the heart to the ruler of a *polis*. It is argued that the relations between ruler, government, and state are analogous to the relations between heart, soul, and man: The government/soul pervades the whole state/man and is on the other hand primarily concentrated in the ruler/heart; cf. Hartman 1977, 136–137; cf. also Hardie 1964; Irwin 1988, 584–585.

⁹ *De an.* Γ12.434a22–23.

for the soul of a horse is not the same as that of a man. Furthermore, there are different functions of the soul: since we cannot see the soul, we must examine the way the soul expresses itself; from the functions and incidental properties we may hope to know what the soul is.¹⁰

The upshot of Aristotle's critique of his predecessors (who "join the soul to a body, or place it in a body, without adding any specification of the reason of their union")¹¹ includes the following assertions and questions:

Knowing, as a faculty of the soul, is not based on the soul's being composed of parts; the soul possesses no self-movement. We know that the soul has many functions: knowing, perceiving, opining, desiring, wishing, appetite, local motion, growth, maturity and decay. Is it the case that each of these is an attribute of the soul as a whole and that we think, perceive, move ourselves, act or are acted upon with the soul as a whole? Or does each of them require a different part of the soul? Does life depend on one of these parts or on all or has it some quite other cause? If the soul has parts what holds the soul together? Surely not the body, for, on the contrary, the soul seems to hold the body together. If on the other hand the soul is one, why do we then speak of parts?¹²

Besides the determination of the soul as the "first actuality" of the organic body, the major focus of the articulated Aristotelian psychology is the distinction between a vegetative, a sensitive, and a rational soul (*voûς*).¹³ In this form the soul is the principle of the structuring of reality in the sphere of the living.

The soul is identical to life. We attribute life to a creature even if it possesses only one of the following things: reason, perception, local motion or rest, vegetative motion (i. e. respiration, pulse, digestion) growth and decay. There are three levels of the animated: the vegetative, perception and local motion, thinking. From perception arises imagination and appetite, for where there is perception, there is also pleasure and pain; where these are, there is necessarily also desire.¹⁴

With regard to the rational soul Aristotle distinguishes between a receptive *nous* (*voûς παθητικός*) and a constructive¹⁵ (*poietic*) *nous*

¹⁰ *De an.* A1.402a1ff (paraphrase according to Düring 1966, 572). Longer passages from Aristotle are cited in the paraphrase of I. Düring and are here translated from Düring's German taking the standard Oxford English translation into account.

¹¹ *De an.* A3.407b15 – 17.

¹² *De an.* A5.411a24 – b17 (paraphrase according to Düring 1966, 573).

¹³ Cf. *De an.* A5.411a24ff, B2.413a1ff; and Mittelstrass 1984c, 1044.

¹⁴ *De an.* B2.413b10 – 24 (paraphrase according to Düring 1966, 572).

¹⁵ Terminology taken from Düring 1966, 581.

(νοῦς ποιητικός).¹⁶ The receptive *nous*, “becoming all things”¹⁷ is “affected” by the objects that it thinks; along with the body it is mortal (“What this mind thinks, loves, and hates dies with its bearer.”¹⁸) The constructive (poietic) *nous*, “making all things”¹⁹ and standing in relation to its objects as art to its material²⁰ has no physiological connection to the body; it is “impassive” (ἀπαθής) and (as a supra-individual faculty) immortal. Its analysis belongs to (“first”) philosophy. In Düring’s paraphrase:

All functions of the soul except for the *nous* are physiologically bound to the body; thought relates to the bodily like the concave to the convex. We can study the biological soul by observing its visible expressions. Insofar as the soul has functions that are separate from everything bodily, the investigation of them belongs to first philosophy.²¹

With this analysis of Aristotle’s the decisive elements even of later philosophical conceptions of the relation of body and soul are fixed, although one could not say that Aristotle himself had a mind-body theory. Such a theory in the later sense is foreign to classical antiquity. Nonetheless, the basic ideas of Aristotelian psychology determine – along with elements of Platonic psychology (such as the idea of self-movement) – the further development of the mind-body problem.

§ 3 In this development epistemological viewpoints as well as viewpoints of a philosophical psychology that even occasionally made excursions into the realm of the fantastic continue to take center stage. In

¹⁶ *De an.* Γ4.429a10 – Γ5.430a25. On the distinction between perception and *nous* with regard to their receptive and constructive elements, cf. Bernard 1988, 181 – 199.

¹⁷ *De an.* Γ5.430a14 – 15.

¹⁸ Düring 1966, 581.

¹⁹ *De an.* Γ5.430a15.

²⁰ *De an.* Γ5.430a12 – 13.

²¹ Düring 1966, 573. Düring however translates Aristotle’s conception illegitimately into the (metaphorical) terminology of Fechner, i. e., he makes Aristotle the first double aspect theoretician (on Fechner cf. below I.3. § 2). The background of the argument is here, too, Aristotle’s debate with Plato: “Therefore, it was correctly said that the soul is the place of thought forms, though not the whole soul but only the thinking soul and only in the sense that it possesses the ability to receive the forms. That the *nous* is not affected by the objects is shown by the fact that the magnitude and quality of the object do not influence it. The sense organs are weakened or even destroyed by very powerful sensible objects. With thought just the opposite is the case.” (*De an.*, Γ4.429a27 – b5, according to Düring 1966, 579).

Hellenism and in late antiquity both atomistic and Platonic-Aristotelian viewpoints persist. Thus for Epicurus the soul itself is a corporeal element consisting of a reasonable and an unreasonable part which is corrupted at death.²² Marcus Aurelius adopts the Aristotelian triad soul – body – *nous*²³ which Plutarchus in turn gives a cosmological location: the original place of the body is the earth, the original place of the soul is the moon, and of the *nous* the sun.²⁴ After death the soul returns to the moon until called for, i. e. until the next incarnation. For Plotinus the *nous* is the second hypostasis, to be followed by the world-soul and the individual souls, which join themselves to matter to make individuals.²⁵ The triad of Alexander of Aphrodisias is again Aristotelian: in contrast to the *nous* as a material and acquired faculty stands the constructive (poietic) *nous* which comes from without and is divine in nature.²⁶ In Augustine the soul as a divine and immortal substance governs the entire body, as opposed to the animal soul that has just as many parts as the body itself.²⁷ Aristotelianism prevails in the doctrine of mind and body even when expressed in Platonic terminology.

§ 4 The theory of substantial forms in the development of scholasticism also corresponds to Aristotelian notions. Thus, the soul according to Thomas Aquinas is joined to the body as its *substantial form*.

The human soul due to its perfection is not a form immersed in corporeal matter or wholly swallowed up by it. So nothing prohibits it from having some power that is not an activity of the body, even though the soul is in essence the form of a body (*corporis forma*).²⁸

As *anima rationalis* it is not composed of matter and form, nor does it function simply as a mover.²⁹ As in the Augustinian conception it governs the entire body, not only moving it but also organizing it and, in the form of an Aristotelian constructive *nous* (*intellectus agens*), also thinking in

²² Diog. Laert. X 65–67.

²³ *Ad se ipsum* 2,2; 12,3 (= Marcus Aurelius 1979, 10–11, 115–116).

²⁴ *De facie in orbe lunae* 945C (= Plutarchus 1960, 88–89).

²⁵ *Enn.* III 5,4 (= Plotinus 1964–1982, I, 296–297).

²⁶ *De an.*, Suppl. Arist. II 1 (= Alexander of Aphrodisias 1887), 106,19–113,23; 81,20–82,19; 88,24–91,6; 108,22–23.

²⁷ *Ep.* 166,4 (= Augustine 1841–1849, II, 721–722); *de quantitate animae*, 33, 36 (= Augustine 1841–1849, I, 1054, 1055–1056).

²⁸ *S. th.* I, qu. 76, art. 1, ad 4 (= Thomas Aquinas 1970, 48); cf. *S. th.* I, qu. 90, art. 2, ad 1; *S. contra gent.*, II, 68.

²⁹ *S. th.* I, qu. 76, art. 1.

it. The philosophical background for Aquinas, too, is the critique of Plato, in which he takes up the position of Aristotle developing it further in an epistemological direction, according to which the constructive *nous* understands only what it makes itself:

For Plato, the forms of natural things subsist without matter and could therefore be understood, since it is non-materiality that makes a thing actually understandable. These he called species or ideas. And he argued that corporeal matter was formed through participation in these, so that individual things were naturally set up in their genera and species, and also that our intellects were formed by participation in them so that they could have knowledge of the genera and species of things. But Aristotle did not think that the forms of natural things subsist without matter. And so granted that forms existing in matter are not actually intelligible, it followed that the natures or forms of the sensible things we understand are not in actuality intelligible. Now nothing passes from potentiality to actuality except through something actual, as sense is actuated by something actually sensible. So it was necessary to posit a power of the intellectual order which made intelligibles actual by abstracting their species from their material conditions. And herein lies the necessity of positing an active intelligence (*intellectus agens*).³⁰

The soul is individualized as this understanding in a single substance (individual) but is at the same time joined to the “first matter” (*materia prima*).³¹ In the Aristotelian conception, this *prima materia* represents the first material substrate and as such is the bearer of the form of physical things (according to Aristotle matter in general individuates the specific forms of possible objects, whereby real objects, as far as their materiality is concerned, do not consist of “*materia prima*” but of matter or stuff that already possesses a form (“*materia secunda*”). As *anima intellectiva* of the body the soul is separable and immortal:

The soul is not identical with its powers, of which it has many that differ from one another with regard to their actuality and their objects and that stand in an orderly relation to one another. Some of the powers of the soul are rooted in the soul itself and others in the entire human being. The powers of the soul proceed from the substance of the soul as their cause one by way of the others. After the destruction of the body only the powers of the intellect and the will remain in the soul.³²

³⁰ *S. th.* I, qu. 79, art. 3 (= Thomas Aquinas 1970, 154). Cf. Kenny 1980, 68–81.

³¹ *S. th.* I, qu. 76, art. 4.3.

³² Partial summary of quaestio 75 according to Bernath 1969, 91–92. Cf. Sertillanges 1954, 417–423.

William of Ockham argues in a similar vein, though he imagines the *anima intellectiva* to be composed of form and matter and sees the *anima sensitiva* as constructed in the manner of the animal soul in Augustine, that is, that its parts are coordinated to the parts of the body themselves.³³ In spite of obvious differences in content among various authors and conceptions, a theory of substantial forms prevails. It is criticized in late scholasticism by Suarez and others, who join to it constructions that are already tendentially Cartesian.³⁴

2. Descartes and the Aftermath

§ 1 In Cartesian philosophy the mind-body problem arises as a result of a *dualistic* conception, that is, of the establishment of the distinction between “external” and “internal” world. The external world is constituted by extended material bodies (*res extensa*) whose sizes and relations compose the subject matter of geometry and physics; the internal world is constituted by non-extended immaterial consciousness (*res cogitans*) whose analysis is the object of metaphysics. The original Aristotelian conception of the unity of body and soul, still adhered to in the scholastic theory of substantial forms, is destroyed by the dissection of the human being mandated by the commitment to a mechanistic physiology into a composite machine³⁵ on the one hand and a thinking being on the other. The problem of the *interaction* of mind and body becomes dominant in the analyses and constructions of a post-Aristotelian, Cartesian psychology.

The systematic roots of Descartes’ dualistic conception lie in the epistemological attempt to demonstrate the independence of a self-reflective beginning in pure thought. Epistemological analyses make metaphysical history. “Now, there are,” Descartes replies to an objection of Hobbes,

certain acts that we call *corporeal*, such as size, shape, motion and all others that cannot be thought apart from local extension; and we use

³³ *In 2 Sent.*, qu. XVIII (= William of Ockham 1981, 395–409); cf. *Quodl.* 2, qu. 10 (= William of Ockham 1980, 156–161).

³⁴ Cf. Specht 1980, 191.

³⁵ Cf. Descartes 1897–1910, XI, 120.

the term *body* to refer to the substance in which they inhere. [...] There are other acts which we call *acts of thought*, such as understanding, willing, imagining, having sensory perceptions (*sentire*), and so on: these all fall under the common concept of thought or perception or consciousness, and we call the substance in which they inhere a *thinking thing* or a *mind*.³⁶

Descartes conceives the relation between bodily and thinking substance as an *interactionist* relation, that is, he assumes a reciprocal causation of conscious states and events and corporeal states and events. The organic place of interaction between them is the pineal gland.³⁷ This gland is moved on the one hand by the influence of the mind and on the other hand its movement produces physiological effects. "Animal spirits" flow from the pineal gland and are directed into different nerve pathways by the different movements of the gland thus producing the movements of the human body.³⁸

It has been objected, that Descartes' model of psychophysical interaction stands in contradiction to his physics. The physics posits a law of conservation for motions, whereas the soul seems to produce new motion by its effects on the pineal gland.³⁹ However, it should be taken into consideration that Cartesian physics conceived the conservation of motion as the conservation of *scalar momentum*, and therefore a body can in fact change its direction of motion without violating this conservation law.⁴⁰ Accordingly, in Descartes' model the physiological effect of the pineal gland rests precisely on a change in direction of the moving animal spirits and does not demand a change in their scalar motion.

Nonetheless, a further objection suggests itself here, namely, that while the pineal gland may produce no new (Cartesian) motion in the animal spirits, the mind must however produce new (Cartesian) motion in the pineal gland if this gland is to fulfill its directive function. However, such an opposition to Descartes' physics does not necessarily follow. The influence of the mind on changes in the motion of the pineal gland can also be limited to changes in the *direction* ("determination") of motion. In this case the pineal gland would change the direction of

³⁶ Descartes 1641, 159–160 (= Descartes 1897–1910, VII, 176; 1984, II, 124) (emphasis in the original).

³⁷ Descartes 1897–1910, XI, 180.

³⁸ Cf. Descartes 1897–1910, XI, 172–179, 354–355.

³⁹ Cf. Specht 1966, 65; Specht 1976, 355.

⁴⁰ Cf. *Princ. Philos.*, II, § 36, § 41 (= Descartes, 1897–1910, VIII/1, 61–62, 65–66).

motion of the animal spirits by itself moving in different directions, always with unchanged scalar motion. According to this interpretation the pineal gland exercises its directive influences by taking on different forms of motion, i. e., by moving along different paths (circles, ellipses, rectangles, etc.) with constant speed. In this manner, Descartes' notions as a whole can be interpreted consistently.

This remains the case, even if one takes a further objection into account. According to Descartes' third law of nature the direction of motion of a target body is changed only when its scalar momentum is smaller than that of the colliding body.⁴¹ Since the scalar momentum of the mind apparently vanishes, it thus cannot cause any change in direction and thus in particular cannot produce any change in direction of the pineal gland.⁴² It should however be taken into account that Descartes explicitly limits the validity of this law to collisions between bodies and excludes psychophysical interactions.⁴³ In fact, given the special place of the *res cogitans* in Descartes' theory, such an exclusion is natural and plausible. Nothing in Descartes' system obliges us to assume that the mind acts on the pineal gland by impact.

However, within the Cartesian view of the world it is not really plausible to designate a place of psychophysical interaction at all. For, it is hard to comprehend how a non-spatial substance can enter into relations with the world of bodies at a particular organic place; thus Descartes occasionally makes due with a reference to everyday experiences (e.g. in a letter to Arnauld of July 29, 1648).⁴⁴ There are also other difficulties for this interactionist model, both of a physiological and a metaphysical nature. Descartes

explains the functions of the organism not through substantial forms but through the modes of matter *motus* and *figura*, which on the basis of the laws of nature can bring forth an organic arrangement of corpuscles (*dispositio partium*); curing an illness thus corresponds to repairing a mechanical automaton. In a human *dispositio* God funnels a spiritual soul into the machine, which must be taken not as a *forma assistens* but as a *forma substantialis*, for it occasions voluntary motions in the body and the body occasions in it unclear *cogitationes*.⁴⁵

⁴¹ *Princ. Philos.*, II, § 40 (= Descartes, 1897–1910, VIII/1, 65–66).

⁴² Cf. Specht 1966, 65–66; Specht 1976, 355.

⁴³ Cf. *Princ. Philos.*, II, § 40 (= Descartes 1897–1910, VIII/1, 65–66).

⁴⁴ Descartes 1897–1910, V, 222.

⁴⁵ Specht 1980, 192.

The (scholastic) terminology of the older Aristotelian psychology interferes here in a confusing manner with the interaction model and bequeaths to the later philosophical and scientific development a “residual problem” whose treatment in the form of influxionism, occasionalism, and psychophysical parallelism displays traits no less speculative than the Cartesian conception itself.⁴⁶

§ 2 *Influxionism* adheres to the Cartesian notion that the problem of the interaction of the two substances can be resolved by the assumption of a physical connection (in the pineal gland). This “conservative” opinion, which within Cartesianism represents the anti-occasionalist position, was later taken up by Rüdiger, Knutzen, and Herder among others (against the assumption of a psychophysical parallelism in the form of the Leibnizian theory of pre-established harmony) and was criticized by Kant in the Paralogism chapter of the first edition of the *Critique of Pure Reason* under the name “system of physical influence.”

As opposed to influxionism, *occasionalism*, starting from the phenomenal unity of mind and body and thus taking up older notions of a *concurus dei* (for the preservation of creation), sought to explain the problem of a physical connection and causal interaction between a bodily and a mental (spiritual) substance by means of “occasional” divine interventions or by means of a continuous correspondence between both substances caused by God.⁴⁷ In this conception, whose major proponents were Cordemoy, Geulincx, and Malebranche, “natural” causes as opposed to the actions of God play only the role of “occasional” causes (*causae occasionales*).

According to Geulincx the will and the intellect are only the occasion (*causa occasionalis*) not the cause of what they seem to bring about, since one cannot bring something about if one does not know how it happens.⁴⁸ The passivity of bodily substance (of *res extensa* within the Cartesian conception) is expanded, e.g. in Cordemoy, to a property of a thinking substance (*res cogitans*), too, whereby Man as *res cogitans* becomes an observer of a machine, his *res extensa*, which God alone steers.⁴⁹ To explain the constant correspondence of the two substances

⁴⁶ On the history of the mind-body problem in Cartesianism, cf. Specht 1966.

⁴⁷ Cf. Specht 1984; Mittelstrass 1984d.

⁴⁸ *Annotata ad Ethicam* (= Geulincx 1893, 205, 207).

⁴⁹ Cf. *Ethica*, I, 2, § 2 (= Geulincx 1893, 33).

Geulincx introduces the picture (later used by Leibniz to illustrate his theorem of pre-established harmony) of two synchronized clocks.⁵⁰ However, the metaphor must be understood here in such a way that the synchronous running is due to the constant synchronizing intervention of the clockmaker.

In all essential points the conception of Malebranche as well follows the “occasionalist” solution to the mind-body problem. Malebranche’s solution rests on the general assumption that there is no necessary connection between events and that all events, including the interaction of mind and body, occur through the immediate intervention of God.⁵¹ Therefore, according to Malebranche, knowledge, too, is only possible “in God” or “through God,” that is, through participation in the divine ideas which underlie the continuous creation of the world (*creatio continua*). Finally, in the occasionalism of Clauberg a distinction is introduced between *causa libera* (God) and *causae procatacticae*, i. e. bodily causes that can on occasion induce certain notions in the soul.

§ 3 Alongside occasionalism arose the conception of a *psychophysical parallelism* with the metaphysics of Spinoza and the Leibnizian theorem of a pre-established harmony. For Spinoza, both Cartesian substances are mere attributes of another, divine substance or nature (*deus sive natura*). Every state of this substance has a physical and a psychological aspect; the (Cartesian) attributes of extension and thought do not characterize two different objects but one and the same object. According to this notion there is no problem of interaction between different substances:

Therefore, whether we conceive nature under the attribute of Extension, or under the attribute of Thought, or under any other attribute, we shall find one and the same order, or one and the same connection of causes, i. e., that the same things follow one another. [...] Hence, so long as things are considered as modes of thinking, we must explain the order of the whole of nature, or the connection of causes, through the attribute of Thought alone. And insofar as they are considered as modes of Extension, the order of the whole of nature must be explained through the attribute of Extension alone. I understand the same concerning the other attributes. So of things as they are in themselves,

⁵⁰ *Annotata ad Ethicam* (= Geulincx 1893, 212).

⁵¹ *Méditations chrétiennes* (1683), 5.14–5.17 (= Malebranche 1959, 53–55, 62–63).

God is really the cause insofar as he consists of infinite attributes. For the present, I cannot explain these matters more clearly.⁵²

Accordingly, there is no dependence between psychological and physical phenomena. The succession of psychological states is exclusively determined by the laws of the psychological realm; the order of physical states is subject only to laws of nature. Mental and corporeal world are independent spheres and exercise no influence on one another.

In spite of the independence of the mental and the physical, the mental and bodily states correspond precisely to one another. In Spinoza's conception there is a strict correspondence between psychic and physical events so that every corporeal process has exactly one counterpart in the psychological sphere and *vice versa*. This notion is quite characteristic of the idea of psychophysical parallelism which maintains the existence of a one-to-one correspondence between psychological and physical phenomena.

Of course there is a certain tension between the assertion of the autonomy of the mental and the corporeal worlds on the one hand and the assumption of a strict correspondence between mental and corporeal events on the other. Spinoza tries to resolve the conflict with the thesis that both phenomenal areas are only modes, attributes, or aspects of one and the same substance. A common reality that is neither psychological nor physical in nature underlies both the psychological and the physical realm. From this angle Spinoza's position can therefore be viewed as a *monistic* interpretation of the mind-body relation, and it is just this interpretation that was to the largest extent to determine the reception of Spinoza's views in the 19th century.

§ 4 The Leibnizian conception of a psychophysical parallelism is likewise bound to the assumptions of a metaphysical system. According to the doctrine of monads, which in essence is a logical reconstruction of the classical concept of substance, there exists a *pre-established harmony* between monads, in particular between the monads of mind and body. Given that the monad is defined as an individual substance and that an individual substance is characterized by individual concepts which are construed as complete concepts, i. e., as (infinite) conjunctions of all predicates ascribed to an individual (in connection with the

⁵² *Ethica*, II, 7, *schol.* (= Spinoza 1967, 170/171; Spinoza 1985, 451).

postulate of a complete network of concepts),⁵³ this means that every event or state can be understood as the realization of an already (not temporally but logically) given nexus – in a physical context, e.g. an (infinite) physical aggregate system. The complementary assertion is the statement that every monad is a world for itself and that there is no interaction between monads. Monads include the principle and the plan of their changes within themselves (these are parts of their complete concepts). They neither suffer nor cause transeunt effects:

There is likewise no way of explaining how a monad can be altered or changed internally by any other creature, since nothing can be transposed in it, and we cannot conceive in it, as we can in composite things among whose parts there may be changes, that any internal motion can be excited, directed, increased, or diminished from without. [...] Monads have no windows through which anything could enter or depart.⁵⁴

This applies in particular measure to the monads of the soul or mind, that is, to monads with conscious perception and reason. Even the concept of a perception defined as “inner property and activity” (*qualité et action interne*)⁵⁵ of a substance appears in the complete concept of the appropriate substance. Everything that happens to an individual substance (monad) is

solely the result of its own complete idea or concept, since this idea already includes all the predicates or events and expresses the whole universe. Nothing can in fact happen to us except thoughts and perceptions.⁵⁶

Even the perceptions belong to the *internal* determinations of an individual substance, not to its external determinations. The simple, the monad, is represented by the composite, the body.⁵⁷ The world of the monad becomes its own phenomenon.⁵⁸ In this connection Leibniz consciously alludes to the Aristotelian or scholastic terminology: monads

⁵³ For a reconstruction of the doctrine of monads, especially on the connection of logical and metaphysical elements in the construction of this doctrine, cf. Mittelstrass 1970, 477 – 528 (§ 14 “Logik und Metaphysik”).

⁵⁴ *Monadology*, § 7 (= Leibniz 1714, 28/29; Leibniz 1969, 643).

⁵⁵ Cf. *Princ. nat. grâce*, § 2 (= Leibniz 1714, 2/3; Leibniz 1969, 636).

⁵⁶ *Disc. mét.*, § 14 (= Leibniz 1686, 36/37; Leibniz 1969, 312).

⁵⁷ *Monadology*, § 61 – 65 (= Leibniz 1714, 52/53 – 56/57; Leibniz 1969, 649). On this conception, the core of which is the replacement of the empirical subject by a logical subject, cf. K. Lorenz 1975, 323.

⁵⁸ Leibniz 1875 – 1890, III, 636; VII, 319 – 322; Leibniz 1969, 659.

are entelechies,⁵⁹ in accordance with the Aristotelian conception within the scholastic theory of substantial forms. Their realm and the phenomenal realm of nature each follow their own laws:

In this system bodies act as if there were no souls, [...] and souls act as if there were no bodies, and both act as if each influenced the other.⁶⁰

Nonetheless, the world is not divided into two independent parts: “the two kingdoms, that of efficient and that of final causes, are in harmony with each other.”⁶¹ Mind and body behave in empirically observable causal relations (in accord with the metaphor already introduced by Geulincx) like two synchronously running watches synchronized not by a mechanical connection or repeated corrections but secured or “pre-established” by a kind of ideal realization of construction principles.⁶²

The soul follows its own laws, and the body its own likewise, and they agree with each other by virtue of the *harmony pre-established* between all substances, since they are all representations of one and the same universe.⁶³

Again it is the logical possibility (given with the construction of complete concepts or with the postulate of complete networks of concepts) of representing propositions about arbitrary objects as propositions about one and the same object, which is used here to ground the *metaphysical* thesis of the representation of the universe in every monad. Between logic and metaphysics the mind-body problem gains new dimen-

⁵⁹ *Monadology*, § 18 (= Leibniz 1714, 32/33–34/35; Leibniz 1969, 644).

⁶⁰ *Monadology*, § 81 (= Leibniz 1714, 64/65; Leibniz 1969, 651).

⁶¹ *Monadology*, § 79 (= Leibniz 1714, 62/63; Leibniz 1969, 651).

⁶² “Extrait d’une lettre [...]” (Feb., 1696), Leibniz 1875–1890, IV, 500–501.

⁶³ *Monadology*, § 78 (= Leibniz 1714, 62/63; Leibniz 1969, 651). Accordingly Leibniz noted in explanation on a handwritten invitation from Sophie Charlotte (probably 1702/03) (“Mr. Leibniz deals with the subject matter of metaphysics in an easily understandable manner according to the new principle of unity, about which I wish some enlightenment”): “As a consequence of unity I always espouse a complete consideration of the laws of nature. In opposition to the common philosophical notions that the motion of bodies is changed by the souls and that the souls are distracted from their functions by the bodies, I hold that the bodies always follow their laws without the souls’ being able to interfere with them and that the souls are by no means confused by the bodies, but rather that the one move in harmony with the other, because the souls are there to represent the bodies, or even – from their own perspective – the universe. Unity prevails in the constitutive principles and in the laws of nature.” (Hanover, Niedersächsische Landesbibliothek, LBr F 27, Bl. 198r/v).