

References and further reading

- Barber, W.H. (1955) *Leibniz in France from Arnauld to Voltaire*. Oxford: Clarendon Press. (A French enthusiast; Mme du Châtelet and the general French hostility to Leibniz.)
- (1967) 'Mme du Châtelet and Leibnizianism: The Genesis of the *Institutions de physique*', in W.H. Barber, J.D. Brumfit et al. (eds) *The Age of the Enlightenment, Studies Presented to Theodore Besterman*, Edinburgh: Oliver & Boyd, 200–22.
- Janik, L.G. (1982) 'Searching for the Metaphysics of Science: The Structure and Composition of Madame Du Châtelet's *Institutions de physique, 1737–1740*', *Studies on Voltaire and the Eighteenth Century*, 201: 85–113. (A thorough analysis of the manuscript in the Bibliothèque Nationale de France and the stages that led Mme du Châtelet to present Leibnizian metaphysics as an introduction to science.)
- Taton, R. (1969) 'Madame du Châtelet, traductrice de Newton', *Archives internationales d'histoire des sciences* 22: 185–210.^o
- Valliot, R. (1978) *Madame du Châtelet*. Paris: Michel. (A readable biography, which examines the various aspects of her life.)
- Wade, I.O. (1947) *Studies on Voltaire with some unpublished papers of Mme du Châtelet*. Princeton, NJ: Princeton University Press. (Contains her translation of Mandeville's *Fable of the Bees*, her fragmentary *Essai sur l'optique*, and three chapters of a *Grammaire raisonnée*; analysis of these texts and Voltaire's *Traité de métaphysique*.)
- (1969) *The Intellectual Development of Voltaire*. Princeton, NJ: Princeton University Press. (Part III, pages 253–570, examines the intellectual activity at Cirey.)

ROBERT L. WALTERS

DUALISM

Dualism is the view that mental phenomena are, in some respect, nonphysical. The best-known version is due to Descartes (1641), and holds that the mind is a nonphysical substance. Descartes argued that, because minds have no spatial properties and physical reality is essentially extended in space, minds are wholly nonphysical. Every human being is accordingly a composite of two objects: a physical body, and a nonphysical object that is that human being's mind. On a weaker version of dualism, which contemporary thinkers find more acceptable, human beings are physical substances but have mental properties, and

those properties are not physical. This view is known as property dualism, or the dual-aspect theory.

Several considerations appear to support dualism. Mental phenomena are strikingly different from all others, and the idea that they are nonphysical may explain just how they are distinctive. Moreover, physical reality conforms to laws formulated in strictly mathematical terms. But, because mental phenomena such as thinking, desiring and sensing seem intractable to being described in mathematical terms, it is tempting to conclude that these phenomena are not physical. In addition, many mental states are conscious states – states that we are aware of in a way that seems to be wholly unmediated. And many would argue that, whatever the nature of mental phenomena that are not conscious, consciousness cannot be physical.

There are also, however, reasons to resist dualism. People, and other creatures with mental endowments, presumably exist wholly within the natural order, and it is generally held that all natural phenomena are built up from basic physical constituents. Dualism, however, represents the mind as uniquely standing outside this unified physical picture. There is also a difficulty about causal relations between mind and body. Mental events often cause bodily events, as when a desire causes an action, and bodily events often cause mental events, for example in perceiving. But the causal interactions into which physical events enter are governed by laws that connect physical events. So if the mental is not physical, it would be hard to understand how mental events can interact causally with bodily events. For these reasons and others, dualism is, despite various reasons advanced in its support, a theoretically uncomfortable position.

- 1 Mental and physical
- 2 Dualism and physical science
- 3 Qualitative states
- 4 Objections to dualism
- 5 Dualism and consciousness
- 6 Dualism and the concept of mind

1 Mental and physical

Underlying dualism is the strong intuition that the ordinary functioning of people is of two fundamentally different kinds. Much of what happens to us is thoroughly physical, on a par with the properties and behaviour of things such as stones, houses and planets. But we also engage in thinking, we desire and perceive things, and we feel emotions such as joy and anger. In these ways we seem to be dramatically different from such purely physical objects as stones and planets. It is natural to want to epitomize these observations by positing the idea that all concrete reality is either mental or physical, and nothing is

both. Not only do the mental and the physical exhaust everything; they are also mutually exclusive. This conclusion points to some form of dualism. Either every person consists of a nonphysical substance operating in tandem with a purely physical body, or people at least have certain states or properties that are not physical.

It is worth stressing that dualism requires the mental and the physical to be mutually exclusive. If they were not, mental substances might also be physical, and mental states such as thoughts and sensations might be not just mental, but also physical as well. Moreover, the common-sense contrast between mental and physical does not by itself imply that mental phenomena lie outside the physical realm. We often contrast a special range of phenomena with the physical, even though the phenomena under consideration are strictly speaking physical; consider the contrast in computer talk between physical and logical disk drives. Mental phenomena are unlike any others, but highly distinctive phenomena are not, just on that account, nonphysical.

Still, there are reasons to think that mental and physical are indeed disjoint categories. For one thing, it is held that if they were not disjoint we could not capture what it is that is distinctive about mind. If people were just physical substances, and their mental states just special sorts of physical states, we would not be able to explain the striking difference between people and paradigmatically physical objects such as stones and houses. Some have gone so far as to urge that what is distinctive about being mental is, at bottom, simply that it is nonphysical.

But this argument is open to challenge, since we can explain the contrast between stones and people without supposing that mental and physical are mutually exclusive categories. Consider a parallel case. When we focus on living things, it is natural to contrast biological phenomena with such physical objects as stones and stars. But that does not lead us to conclude that the biological and the physical are mutually exclusive categories, and that living things are not purely physical. Rather, living organisms are physical objects, though of a very special sort, and we need not posit anything nonphysical to characterize what is special about them (see VITALISM).

Dualism implies that things are different in the case of the mind; that is, it implies that to capture what is distinctive about mental functioning we must posit substances or properties that are not physical. If, on the other hand, we can characterize the mind without positing anything nonphysical, dualism is wrong. The hypothesis that this is possible is mind-body materialism, and it has been championed especially force-

fully in a version called the identity theory of mind (see MIND, IDENTITY THEORY OF).

Can such a characterization be given? According to Descartes, it is essential to everything physical that it has spatial extension, and being spatially extended implies having parts. So we can conceive of any physical object as being divided into parts; those parts would themselves be extended, and hence physical objects. But Descartes held that the same is not true about minds. Minds, he claimed, are not mere collections of mental states, as the bundle theory maintains (see MIND, BUNDLE THEORY OF); rather, minds are essentially unified. So we cannot even conceive of a mind's being divided into parts. A satisfactory characterization of the mental, therefore, implies that minds are nonphysical (see DESCARTES, R. §8).

The bundle theory put to one side, however, there is reason to question this argument. Surgically sectioning the neural pathways that connect the two cerebral hemispheres results in striking experimental behaviour, which some researchers believe indicates the presence after surgery of two distinct conscious minds (see SPLIT BRAINS). Also, brain lesions sometimes result in dissociation of mental functions, which also suggests that a normally unified mind may come to be divided. Such results cast doubt on traditional ideas about mental unity, and the very possibility of these interpretations undermines Descartes' claim that we cannot even conceive of a mind's being divided into parts. To sustain dualism, therefore, we would need some other reason to hold that a satisfactory characterization of mind must proceed in nonphysical terms.

According to Descartes' well-known *cogito*, the statement 'I am, I exist' is true whenever I assert it or mentally conceive it, and the 'I' whose existence I thereby establish is my mind, not my body. But Descartes explicitly recognizes that these considerations do not constitute an argument for dualism. Rather, as he saw, they establish at best only a conceptual difference between mind and body, and not the 'Real Distinction' for which he argues independently by appeal to divisibility.

2 Dualism and physical science

To show that the mind is nonphysical, we need to know not only what being mental amounts to, but also what it is to be physical. Descartes relied on the alleged indivisibility of mind, and on a conception of the physical as divisible. That conception of physical reality, in turn, rested on Descartes' conviction that the essential properties of physical reality are all geometrical properties.

But there is another conception of physical reality that seems to support dualism. Scientific developments over the last four centuries present a picture in which the laws governing physical reality are invariably formulated in strict mathematical terms. As Galileo put it, the book of nature is 'written in the language of mathematics' (1623: 238).

This idea captures the mathematical character of the physical in terms that are more general than Descartes' claim that the essential properties of physical reality are all geometrical. So it allows for a less constrained argument for dualism, independently of particular claims about what is essential to the mind. Whatever the nature of thinking, sensing, desiring and feeling, one might well deny that there could be strictly mathematical laws that govern such states. On this conception of the physical, then, mental states would not be physical.

The argument as just formulated supports property dualism, according to which no mental states or properties are physical. But we can adjust the argument to support substance dualism as well. If mental substances exist, their behaviour would presumably not be governed by mathematically formulable laws; so such substances would not be physical. The argument is therefore more flexible than Descartes' appeal to indivisibility, which adapts less readily to the case of property dualism. This is important, since contemporary concern about dualism is almost always about dualism of properties, not substances. Partly that is because of doubts about whether the traditional notion of a substance is useful. But it is also partly because of a tendency to think of people's minds not as any kind of substance at all but rather as the totality of their mental functioning: including their dispositions and abilities to function mentally.

There are various reasons to think that mental states cannot be the subjects of mathematically formulable laws. We describe our thoughts and desires in terms of the objects they are about. The property of being about something, and its related properties, are called intentional properties (see INTENTIONALITY). Mental states can be about things that do not exist; we all sometimes think about and desire nonexistent things. So thinking and desiring are somewhat like relations one can bear to nonexistent objects. But such ostensible relations, which can hold even to nonexistent things, cannot figure in mathematical descriptions of things.

There are other sorts of mental states that aren't strictly speaking about anything: examples are bodily sensations such as pains and tickles, and perceptual states such as visual experiences. The distinguishing properties of these states are not their intentional properties, but rather certain qualitative properties –

for example, the redness of a visual experience or the dull, throbbing character of a pain (see QUALIA). Again, it seems unlikely that these properties could figure in mathematically formulable laws.

These intentional and qualitative properties are, arguably, the distinguishing properties of mental states – the properties in terms of which we identify those states and distinguish them from everything else. We cannot argue that mental states are physical simply by denying that they have these properties.

But our intuitive sense that these properties resist mathematical description may not be reliable. Compare our intuitions about ordinary macroscopic objects. We ordinarily take such objects to have various common-sense properties, such as colour, taste and smell. And we conceive of these common-sense physical properties in qualitative terms that seem resistant to mathematical description. Yet we can understand these properties mathematically: for example, we can construe the colours of bodies in terms of physical reflectance (see COLOUR, THEORIES OF; SECONDARY QUALITIES). Perhaps, then, we can explain the intentional and qualitative properties of mental states in ways that allow for mathematical description of those properties.

The general outline such explanations would have, moreover, is clear enough. Some have argued, for example, that a thought's being about something is a matter of its having a certain content (see PROPOSITIONAL ATTITUDES), and that we can explain content, in turn, in a scientifically satisfactory way. And there is much about qualitative mental states that succumbs to quantitative treatment, as any standard textbook on perception reveals. So a successful theory of mental properties may show how to render those properties scientifically acceptable. The intuition that mental properties resist scientific treatment may therefore reflect only the current state of theorizing, just as many common-sense physical properties seemed recalcitrant to mathematical treatment before suitable scientific advances had occurred.

3 Qualitative states

Nonetheless, many would insist that, whatever science may show, qualitative properties cannot be physical. All physical objects are composed of colourless microparticles; so it is tempting to hold that no physical objects are coloured. We do, however, describe visual sensations in colour terms, for example as red or green sensations. And if nothing physical is coloured but visual sensations are, those sensations cannot be physical. Indeed, if no physical objects are coloured, colour is arguably not a physical property. But when we describe a physical object as red, for

example, this colour is a distinct property from that which we sometimes attribute to visual sensations. Physical colour is a property of a certain kind of object, namely, physical objects. Visual sensations, however, are not objects at all; they are states of people and other sentient creatures. Since the properties objects have are distinct from those of states, the colour of visual sensations is a different property from any property physical objects might have. Denying colour of physical objects does not show, therefore, that to have colour properties visual sensations must be nonphysical.

It is sometimes argued that, unless we construe sensations as objects as opposed to states, we will not be able to distinguish among the various sensations we have at any moment. And sensations are plainly not physical objects; so if they are objects of any sort, they must be nonphysical objects (see Jackson 1977). But it is likely that whatever distinctions we can draw among sensations construed as objects can be preserved if we construe them as states instead (see MENTAL STATES, ADVERBIAL THEORY OF, SENSE-DATA).

Since bodily and perceptual sensations are not objects of any kind, but rather states of sentient creatures, there is indeed a categorial difference between sensations and physical objects. But that categorial difference is only that between objects and their states, and so by itself is irrelevant to dualism.

4 Objections to dualism

Although the character of physics underlies one major argument for dualism, a specific principle of physics is sometimes thought to show that dualism is wrong. That principle states that in a closed physical system (that is, closed to other physical systems) the total energy remains constant. But if mental events are nonphysical, then, when mental events cause bodily events, physical motion occurs uncaused by anything physical. And this, it seems, would result in an increase of the total energy in the relevant closed physical system. Mental causation of bodily events would conflict with the principle of the conservation of energy.

No such problem arises, even if dualism is true, when bodily events cause mental events. When bodily events cause mental events, presumably they cause other physical events as well, which enables energy to be conserved. In part because this problem seems to arise only in one causal direction, some theorists have adopted a version of dualism known as epiphenomenalism, according to which mental events are nonphysical and are caused by bodily events, but are themselves causally inert (see EPIPHENOMENALISM).

Epiphenomenalism thus avoids the difficulty about conservation of energy. An even more extreme variant of dualism, known as parallelism, also avoids this difficulty, by denying that any causal interaction between mental and bodily events occurs at all. To distinguish these variants from the standard view, on which causal interaction occurs in both directions, this view is sometimes called interactionism.

But the dualist need not adopt the unintuitive idea that mental events never cause bodily events. Conservation of energy dictates only that the energy in a closed physical system is constant, not also how that energy is distributed within the system. Since mental events could effect bodily changes by altering that distribution of energy, the conservation principle does not preclude minds' having bodily effects.

A second difficulty sometimes raised also has to do with the causal interaction between the physical and the nonphysical. We seem to understand well enough how physical events cause one another, but it is held that causal interaction between mind and body is simply unintelligible, and so cannot occur. We have, it is objected, no conception whatever of how nonphysical events could cause or be caused by physical events.

But we understand how things happen only relative to a theory that governs the relevant events and tells us how those phenomena fit with various others. Understanding does not require a scientific theory; we often rely on informal, common-sense folk theories. But some theory or other is needed. So physical causation seems intelligible only because we have theories that cover those cases. And because we have no theory that governs mind-body interactions, we have no way to understand how they could occur. The appearance of unintelligibility here shows not that such interactions cannot occur, but only that we have at present no useful theory that would cover them if they do occur. Moreover, even if we cannot develop such a theory, that need not be because mind-body interaction is impossible; it might instead be due only to some limitation on our ability to understand things (see McGinn 1991).

A third objection pertains again to causal interaction. For nonphysical events to cause bodily events, those nonphysical events must intervene in the normal sequence of bodily causes and effects. And it is argued that this would result in a detectable time lag somewhere in that sequence of bodily events. Because there is no such lag, dualism is mistaken. But causal intervention need not result in any relevant time lag. Consider the effects of gravitational force, the propagation of which is undetectable on the time scale relevant for brain and other bodily events. All in all, standard objections to dualism seem to fare no

better than the standard arguments used to establish its truth.

5 Dualism and consciousness

Descartes defined mental states as conscious states, that is as states of which we are immediately conscious. Few today would endorse this definition, since it is generally held that mental states can and do occur without being conscious (see UNCONSCIOUS MENTAL STATES). But Descartes' definition fits well with dualism, because mental states provide intuitive support for dualism only when they are conscious.

Consider Descartes' argument for dualism. He held that minds are such unqualified unities that we cannot even conceive of their being divided into parts. This claim is tempting only when we focus on conscious mental states. We represent our conscious states as all belonging to a single subject, and so as inseparable from one another. But not all mental states are conscious. So this unity of consciousness does not confer a similar unity on the mind generally.

Another example concerns bodily and perceptual sensations. Dualism strikes many as most plausible for these states, because their qualitative properties seem intuitively not to be physical. But this intuition concerns only those qualitative states which are conscious. Sensations do occur of which we are in no way conscious, for example in subliminal perception or peripheral vision. And although not conscious, these sensations belong to the same types as conscious sensations; we subliminally sense various standard colours, for example, and sounds of various types. Since we distinguish types of sensation by their qualitative properties, the non-conscious sensations that occur in subliminal perception must have the same distinguishing properties as conscious sensations have, namely qualitative properties. The only difference is that in these cases we are in no way conscious of being in states that have those properties. But when sensations are not conscious, there is no reason to think they resist being described in terms appropriate for the physical sciences. And the same holds for mental states of whatever sort, when they are not conscious. Dualism is intuitively plausible only for conscious mental states.

Considerations raised in the previous section also help disarm this last argument. Our failure to understand how neural processes could have qualitative properties reflects only our lack of a suitable theory of how neural processes could have such properties; it does not show that they do not have those properties.

Consider a related argument. We have, it seems, no conception of how bodily states could have the

qualitative properties in terms of which we characterize sensations. It seems simply unintelligible that neural occurrences, or any other physical events, could have the qualities exhibited by a conscious sensation of pain, or a conscious experience of seeing red. This has led some to argue that qualitative mental states cannot be physical. But, again, the argument has force only for conscious states. When qualitative states are not conscious, we have no intuitive problem understanding how their distinguishing properties could belong to physical states.

Consciousness is presupposed even in empirical arguments for dualism. Libet (1985), for example, has experimentally isolated certain anomalies about the subjective timing of mental events, which he thinks suggest causal intervention by nonphysical factors. But these anomalies are detectable only when subjects report their mental states, and thus only when those states are conscious. In addition, a mental state's being conscious consists in a subject's being conscious of that state in a way that seems immediate. So anomalies about subjective timing may be due not to intervention by nonphysical causes, but to differences between when mental events occur and when subjects become conscious of them.

Evidently dualism derives no support from mental states that are not conscious. But then it is unclear why cases in which we are conscious of our mental states should make dualism more plausible.

One reason sometimes offered is the subjective differences among conscious experiences, which seem to resist treatment in physicalist terms (see Nagel 1986). But these differences can very likely be explained by appeal to differences in the circumstances and perceptual apparatus of various sentient creatures. Once it is clear that non-conscious mental states lend no plausibility to dualism, it is unlikely that conscious states will either (see CONSCIOUSNESS §4).

6 Dualism and the concept of mind

Because dualism conflicts with the scientific consensus that at bottom everything is physical, it receives little endorsement today. But among those who reject dualism, there are some who nonetheless find compelling certain reasons for holding that mental phenomena are nonphysical. They deny, for example, that the distinguishing properties of thoughts and sensations can be construed so as to conform to the dictates of physicalist description, or they have some other reason to hold that mental phenomena are nonphysical. They combine a dualist conception of what mental states are with a rejection of dualism.

The only option for such theorists is to deny that

anything mental exists. This denial, known as eliminative materialism, adopts a traditional, dualist concept of mind, but insists that this dualist conception does not apply to anything. Though certain nonmental, physical phenomena may enable us to explain and predict things we usually explain and predict by appeal to mental states, on this view nothing mental exists (see ELIMINATIVISM).

Because eliminativism relies on a dualist concept of mind, we can very likely avoid this extravagant result. As argued above, we need not construe mental states and their properties in ways that imply the dualist claim that mental phenomena are nonphysical. Accordingly, we can resist both dualism and the eliminativist alternative.

See also: MENTAL CAUSATION

References and further reading

- Chisholm, R. M. (1957) *Perceiving: A Philosophical Study*, Ithaca, NY: Cornell University Press. (Especially chapter 11; classic argument that the mental and physical are mutually exclusive.)
- * Descartes, R. (1641) *Meditations on First Philosophy*, in *The Philosophical Writings of René Descartes*, trans. by J. Cottingham, R. Stoothoff and D. Murdoch, Cambridge: Cambridge University Press, 1984, vol. 2, 1-62. (Classic statement and defence of dualism; influences all subsequent discussions.)
- * Galilei, G. (1623) *The Assayer*, in *Discoveries and Opinions of Galileo*, trans. S. Drake, Garden City, NY: Anchor Books, 1957. (Classic statement of the conception of physics often used in defending dualism.)
- * Jackson, F. (1977) *Perception: A Representative Theory*, Cambridge: Cambridge University Press. (Important argument that perceiving requires nonphysical, mental objects.)
- Kripke, S.A. (1980) *Naming and Necessity*, Cambridge, MA.: Harvard University Press, 127-32, 144-55 (Contains important argument that mental phenomena are not physical.)
- * Libet, B. (1985) 'Unconscious Cerebral Initiative and the Role of Conscious Will in Voluntary Action', *The Behavioral and Brain Sciences* 8 (4): 529-66. (Argument that experimental situations reveal the operation of nonphysical factors.)
- * McGinn, C. (1991) *The Problem of Consciousness*, Oxford: Blackwell. (Argument that we are constitutionally unable to understand the interaction of mind and body.)
- * Nagel, T. (1986) *The View From Nowhere*, New York: Oxford University Press. (Especially chapters 1-7;

highly influential argument for property dualism, based on the nature of consciousness.)

O'Shaughnessy, B. (1980) *The Will: A Dual Aspect Theory*, Cambridge: Cambridge University Press. (Detailed, extensive development of a property-dualist theory.)

Popper, K.R. and Eccles, J.C. (1977) *The Self and His Brain*, Berlin: Springer. (Dualist arguments, based in part on neuroscientific findings.)

Robinson, H. (ed.) (1993) *Objections to Physicalism*, Oxford: Oxford University Press. (Fine collection of articles defending dualism.)

Rosenthal, D.M. (1986) 'Two Concepts of Consciousness', *Philosophical Studies* 49 (3): 329-59. (Theory of the nature of consciousness; argues that explaining consciousness does not require adopting dualism.)

Shoemaker, S. and Swinburne, R. (1984) *Personal Identity*, Oxford: Blackwell. (Swinburne's essay defends a dualist theory.)

Strawson, P. F. (1959) *Individuals*, London: Methuen. (Especially chapter 3. Statement and defence of a classic version of property dualism.)

DAVID M. ROSENTHAL

DUCASSE, CURT JOHN
(1881-1969)

Ducasse was a highly systematic philosopher and scarcely any field or topic escaped his attention. He criticized Hume's account of causality, advocated 'soft determinism' and developed an 'adverbial' realist account of our knowledge of the external world. He was a dualist on the mind-body relation, a 'progressive hedonist' in ethics, a defender of the 'will to believe', an expressionist in the philosophy of art, a scourge of art critics and a critic of theism. He also wrote on propositions, truth, signs, liberal education, linguistic metaphilosophy and paranormal phenomena. His influence on younger philosophers has been greatest, however, in the areas of causality, adverbial realism, progressive hedonism, the will to believe and aesthetics. Ducasse died in 1969, but his work remains significant, especially through his influence on Roderick Chisholm and Wilfred Sellars.

- 1 Life
- 2 Causality and necessity
- 3 Adverbial realism
- 4 Progressive hedonism
- 5 The will to believe
- 6 Aesthetics

Routledge
Encyclopedia of
PHILOSOPHY

General Editor

EDWARD CRAIG



London and New York