

11 *Mental Events*

Mental events such as perceivings, rememberings, decisions, and actions resist capture in the nomological net of physical theory. How can this fact be reconciled with the causal role of mental events in the physical world? Reconciling freedom with causal determinism is a special case of the problem if we suppose that causal determinism entails capture in, and freedom requires escape from, the nomological net. But the broader issue can remain alive even for someone who believes a correct analysis of free action reveals no conflict with determinism. *Autonomy* (freedom, self-rule) may or may not clash with determinism; *anomaly* (failure to fall under a law) is, it would seem, another matter.

I start from the assumption that both the causal dependence, and the anomalousness, of mental events are undeniable facts. My aim is therefore to explain, in the face of apparent difficulties, how this can be. I am in sympathy with Kant when he says,

it is as impossible for the subtlest philosophy as for the commonest reasoning to argue freedom away. Philosophy must therefore assume that no true contradiction will be found between freedom and natural necessity in the same human actions, for it cannot give up the idea of nature any more than that of freedom. Hence even if we should never be able to conceive how freedom is possible, at least this apparent contradiction must be convincingly eradicated. For if the thought of freedom contradicts itself or nature . . . it would have to be surrendered in competition with natural necessity.¹

Generalize human actions to mental events, substitute anomaly for freedom, and this is a description of my problem. And of course the connection is closer, since Kant believed freedom entails anomaly.

¹ *Fundamental Principles of the Metaphysics of Morals*, 75–6.

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Now let me try to formulate a little more carefully the ‘apparent contradiction’ about mental events that I want to discuss and finally dissipate. It may be seen as stemming from three principles.

The first principle asserts that at least some mental events interact causally with physical events. (We could call this the Principle of Causal Interaction.) Thus for example if someone sank the *Bismarck*, then various mental events such as perceivings, notings, calculations, judgements, decisions, intentional actions, and changes of belief played a causal role in the sinking of the *Bismarck*. In particular, I would urge that the fact that someone sank the *Bismarck* entails that he moved his body in a way that was caused by mental events of certain sorts, and that this bodily movement in turn caused the *Bismarck* to sink.² Perception illustrates how causality may run from the physical to the mental: if a man perceives that a ship is approaching, then a ship approaching must have caused him to come to believe that a ship is approaching. (Nothing depends on accepting these as examples of causal interaction.)

Though perception and action provide the most obvious cases where mental and physical events interact causally, I think reasons could be given for the view that all mental events ultimately, perhaps through causal relations with other mental events, have causal intercourse with physical events. But if there are mental events that have no physical events as causes or effects, the argument will not touch them.

The second principle is that where there is causality, there must be a law: events related as cause and effect fall under strict deterministic laws. (We may term this the Principle of the Nomological Character of Causality.) This principle, like the first, will be treated here as an assumption, though I shall say something by way of interpretation.³

The third principle is that there are no strict deterministic laws on the basis of which mental events can be predicted and explained (the Anomalism of the Mental).

The paradox I wish to discuss arises for someone who is inclined to accept these three assumptions or principles, and who thinks they are inconsistent with one another. The inconsistency is not, of

² These claims are defended in Essays 1 and 3.

³ In Essay 7, I elaborate on the view of causality assumed here. The stipulation that the laws be deterministic is stronger than required by the reasoning, and will be relaxed.

course, formal unless more premises are added. Nevertheless it is natural to reason that the first two principles, that of causal interaction and that of the nomological character of causality, together imply that at least some mental events can be predicted and explained on the basis of laws, while the principle of the anomalism of the mental denies this. Many philosophers have accepted, with or without argument, the view that the three principles do lead to a contradiction. It seems to me, however, that all three principles are true, so that what must be done is to explain away the appearance of contradiction; essentially the Kantian line.

The rest of this paper falls into three parts. The first part describes a version of the identity theory of the mental and the physical that shows how the three principles may be reconciled. The second part argues that there cannot be strict psychophysical laws; this is not quite the principle of the anomalism of the mental, but on reasonable assumptions entails it. The last part tries to show that from the fact that there can be no strict psychophysical laws, and our other two principles, we can infer the truth of a version of the identity theory, that is, a theory that identifies at least some mental events with physical events. It is clear that this 'proof' of the identity theory will be at best conditional, since two of its premises are unsupported, and the argument for the third may be found less than conclusive. But even someone unpersuaded of the truth of the premises may be interested to learn how they can be reconciled and that they serve to establish a version of the identity theory of the mental. Finally, if the argument is a good one, it should lay to rest the view, common to many friends and some foes of identity theories, that support for such theories can come only from the discovery of psychophysical laws.

I

The three principles will be shown consistent with one another by describing a view of the mental and the physical that contains no inner contradiction and that entails the three principles. According to this view, mental events are identical with physical events. Events are taken to be unrepeatable, dated individuals such as the particular eruption of a volcano, the (first) birth or death of a person, the playing of the 1968 World Series, or the historic utterance of the

words, 'You may fire when ready, Gridley.' We can easily frame identity statements about individual events; examples (true or false) might be:

The death of Scott = the death of the author of *Waverley*;
The assassination of the Archduke Ferdinand = the event that started the First World War;
The eruption of Vesuvius in A.D. 79 = the cause of the destruction of Pompeii.

The theory under discussion is silent about processes, states, and attributes if these differ from individual events.

What does it mean to say that an event is mental or physical? One natural answer is that an event is physical if it is describable in a purely physical vocabulary, mental if describable in mental terms. But if this is taken to suggest that an event is physical, say, if some physical predicate is true of it, then there is the following difficulty. Assume that the predicate 'x took place at Noosa Heads' belongs to the physical vocabulary; then so also must the predicate 'x did not take place at Noosa Heads' belong to the physical vocabulary. But the predicate 'x did or did not take place at Noosa Heads' is true of every event, whether mental or physical.⁴ We might rule out predicates that are tautologically true of every event, but this will not help since every event is truly describable either by 'x took place at Noosa Heads' or by 'x did not take place at Noosa Heads.' A different approach is needed.⁵

We may call those verbs mental that express propositional attitudes like believing, intending, desiring, hoping, knowing, perceiving, noticing, remembering, and so on. Such verbs are characterized by the fact that they sometimes feature in sentences with subjects that refer to persons, and are completed by embedded sentences in which the usual rules of substitution appear to break down. This criterion is not precise, since I do not want to include these verbs when they occur in contexts that are fully extensional ('He knows Paris,' 'He perceives the moon' may be cases), nor exclude them whenever they are not followed by embedded sentences. An alternative characterization of the desired class of men-

⁴ The point depends on assuming that mental events may intelligibly be said to have a location; but it is an assumption that must be true if an identity theory is, and here I am not trying to prove the theory but to formulate it.

⁵ I am indebted to Lee Bowie for emphasizing this difficulty.

tal verbs might be that they are psychological verbs as used when they create apparently nonextensional contexts.

Let us call a description of the form 'the event that is *M*' or an open sentence of the form 'event *x* is *M*' a *mental description* or a *mental open sentence* if and only if the expression that replaces '*M*' contains at least one mental verb essentially. (Essentially, so as to rule out cases where the description or open sentence is logically equivalent to one or not containing mental vocabulary.) Now we may say that an event is mental if and only if it has a mental description, or (the description operator not being primitive) if there is a mental open sentence true of that event alone. Physical events are those picked out by descriptions or open sentences that contain only the physical vocabulary essentially. It is less important to characterize a physical vocabulary because relative to the mental it is, so to speak, recessive in determining whether a description is mental or physical. (There will be some comments presently on the nature of a physical vocabulary, but these comments will fall far short of providing a criterion.)

On the proposed test of the mental, the distinguishing feature of the mental is not that it is private, subjective, or immaterial, but that it exhibits what Brentano called intentionality. Thus intentional actions are clearly included in the realm of the mental along with thoughts, hopes, and regrets (or the events tied to these). What may seem doubtful is whether the criterion will include events that have often been considered paradigmatic of the mental. Is it obvious, for example, that feeling a pain or seeing an after-image will count as mental? Sentences that report such events seem free from taint of nonextensionality, and the same should be true of reports of raw feels, sense data, and other uninterpreted sensations, if there are any.

However, the criterion actually covers not only the havings of pains and after-images, but much more besides. Take some event one would intuitively accept as physical, let's say the collision of two stars in distant space. There must be a purely physical predicate '*Px*' true of this collision, and of others, but true of only this one at the time it occurred. This particular time, though, may be pinpointed as the same time that Jones notices that a pencil starts to roll across his desk. The distant stellar collision is thus *the* event *x* such that *Px* and *x* is simultaneous with Jones's noticing that a pencil starts to roll across his desk. The collision has now been picked out by a mental description and must be counted as a mental event.

This strategy will probably work to show every event to be mental; we have obviously failed to capture the intuitive concept of the mental. It would be instructive to try to mend this trouble, but it is not necessary for present purposes. We can afford Spinozistic extravagance with the mental since accidental inclusions can only strengthen the hypothesis that all mental events are identical with physical events. What would matter would be failure to include bona fide mental events, but of this there seems to be no danger.

I want to describe, and presently to argue for, a version of the identity theory that denies that there can be strict laws connecting the mental and the physical. The very possibility of such a theory is easily obscured by the way in which identity theories are commonly defended and attacked. Charles Taylor, for example, agrees with protagonists of identity theories that the sole 'ground' for accepting such theories is the supposition that correlations or laws can be established linking events described as mental with events described as physical. He says, 'It is easy to see why this is so: unless a given mental event is invariably accompanied by a given, say, brain process, there is no ground for even mooted a general identity between the two.'⁶ Taylor goes on (correctly, I think) to allow that there may be identity without correlating laws, but my present interest is in noticing the invitation to confusion in the statement just quoted. What can 'a given mental event' mean here? Not a particular, dated, event, for it would not make sense to speak of an individual event being 'invariably accompanied' by another. Taylor is evidently thinking of events of a given *kind*. But if the only identities are of kinds of events, the identity theory presupposes correlating laws.

One finds the same tendency to build laws into the statements of the identity theory in these typical remarks:

When I say that a sensation is a brain process or that lightning is an electrical discharge, I am using 'is' in the sense of strict identity . . . there are not two things: a flash of lightning and an electrical discharge. There is one thing, a flash of lightning, which is described scientifically as an electrical discharge to the earth from a cloud of ionized water molecules.⁷

⁶ Charles Taylor, 'Mind-Body Identity, a Side Issue?', 202.

⁷ J. J. C. Smart, 'Sensations and Brain Processes'. The quoted passages are on pages 163-5 of the reprinted version in *The Philosophy of Mind*, ed. V. C. Chappell (Englewood Cliffs, N.J., 1962). For another example, see David K. Lewis, 'An Argument for the Identity Theory'. Here the assumption is made explicit when Lewis takes events as universals (p. 17, footnotes 1 and 2). I do not suggest that Smart and

The last sentence of this quotation is perhaps to be understood as saying that for every lightning flash there exists an electrical discharge to the earth from a cloud of ionized water molecules with which it is identical. Here we have an honest ontology of individual events and can make literal sense of identity. We can also see how there could be identities without correlating laws. It is possible, however, to have an ontology of events with the conditions of individuation specified in such a way that any identity implies a correlating law. Kim, for example, suggests that *Fa* and *Gb* 'describe or refer to the same event' if and only if $a = b$ and the property of being *F* = the property of being *G*. The identity of the properties in turn entails that $(x) (Fx \leftrightarrow Gx)$.⁸ No wonder Kim says:

If pain is identical with brain state *B*, there must be a concomitance between occurrences of pain and occurrences of brain state *B*. . . . Thus, a necessary condition of the pain-brain state *B* identity is that the two expressions 'being in pain' and 'being in brain state *B*' have the same extension. . . . There is no conceivable observation that would confirm or refute the identity but not the associated correlation.⁹

It may make the situation clearer to give a fourfold classification of theories of the relation between mental and physical events that emphasizes the independence of claims about laws and claims of identity. On the one hand there are those who assert, and those who deny, the existence of psychophysical laws; on the other hand there are those who say mental events are identical with physical and those who deny this. Theories are thus divided into four sorts: *nomological monism*, which affirms that there are correlating laws and that the events correlated are one (materialists belong in this category); *nomological dualism*, which comprises various forms of parallelism, interactionism, and epiphenomenalism; *anomalous dualism*, which combines ontological dualism with the general failure of laws correlating the mental and the physical (Cartesianism).

Lewis are confused, only that their way of stating the identity theory tends to obscure the distinction between particular events and kinds of events on which the formulations of my theory depends.

⁸ Jaegwon Kim, 'On the Psycho-Physical Identity Theory', 231.

⁹ Ibid., 227–8. Richard Brandt and Jaegwon Kim propose roughly the same criterion in 'The Logic of the Identity Theory'. They remark that on their conception of event identity, the identity theory 'makes a stronger claim than merely that there is a pervasive phenomenal-physical correlation', 518. I do not discuss the stronger claim.

And finally there is *anomalous monism*, which classifies the position I wish to occupy.¹⁰

Anomalous monism resembles materialism in its claim that all events are physical, but rejects the thesis, usually considered essential to materialism, that mental phenomena can be given purely physical explanations. Anomalous monism shows an ontological bias only in that it allows the possibility that not all events are mental, while insisting that all events are physical. Such a bland monism, unbuttressed by correlating laws or conceptual economies, does not seem to merit the term 'reductionism'; in any case it is not apt to inspire the nothing-but reflex ('Conceiving the *Art of the Fugue* was nothing but a complex neural event', and so forth).

Although the position I describe denies there are psychophysical laws, it is consistent with the view that mental characteristics are in some sense dependent, or supervenient, on physical characteristics. Such supervenience might be taken to mean that there cannot be two events alike in all physical respects but differing in some mental respect, or that an object cannot alter in some mental respect without altering in some physical respect. Dependence or supervenience of this kind does not entail reducibility through law or definition: if it did, we could reduce moral properties to descriptive, and this there is good reason to *believe* cannot be done; and we might be able to reduce truth in a formal system to syntactical properties, and this we *know* cannot in general be done.

This last example is in useful analogy with the sort of lawless monism under consideration. Think of the physical vocabulary as the entire vocabulary of some language *L* with resources adequate to express a certain amount of mathematics, and its own syntax. *L'* is *L* augmented with the truth predicate 'true-in-*L*', which is 'mental'. In *L* (and hence *L'*) it is possible to pick out, with a definite description or open sentence, each sentence in the extension of the truth predicate, but if *L* is consistent there exists no predicate of syntax (of the 'physical' vocabulary), no matter how complex, that applies to all and only the true sentence of *L*. There can be no 'psychophysical law' in the form of a biconditional, ' $(x) (x \text{ is true-}$

¹⁰ Anomalous monism is more or less explicitly recognized as a possible position by Herbert Feigl, 'The "Mental" and the "Physical"'; Sydney Shoemaker, 'Ziff's Other Minds'; David Randall Luce, 'Mind-Body Identity and Psycho-Physical Correlation'; Charles Taylor, op. cit., 207. Something like my position is tentatively accepted by Thomas Nagel, 'Physicalism', and endorsed by P. F. Strawson in *Freedom and the Will*, 63–7.

in- L if and only if x is ϕ)' where ' ϕ ' is replaced by a 'physical' predicate (a predicate of L). Similarly, we can pick out each mental event using the physical vocabulary alone, but no purely physical predicate, no matter how complex, has, as a matter of law, the same extension as a mental predicate.

It should now be evident how anomalous monism reconciles the three original principles. Causality and identity are relations between individual events no matter how described. But laws are linguistic; and so events can instantiate laws, and hence be explained or predicted in the light of laws, only as those events are described in one or another way. The principle of causal interaction deals with events in extension and is therefore blind to the mental-physical dichotomy. The principle of the anomalism of the mental concerns events described as mental, for events are mental only as described. The principle of the nomological character of causality must be read carefully: it says that when events are related as cause and effect, they have descriptions that instantiate a law. It does not say that every true singular statement of causality instantiates a law.¹¹

II

The analogy just bruited, between the place of the mental amid the physical, and the place of the semantical in a world of syntax, should not be strained. Tarski proved that a consistent language cannot (under some natural assumptions) contain an open sentence ' Fx ' true of all and only the true sentences of that language. If our analogy were pressed, then we would expect a proof that there can be no physical open sentence ' Px ' true of all and only the events having some mental property. In fact, however, nothing I can say about the irreducibility of the mental deserves to be called a proof; and the kind of irreducibility is different. For if anomalous monism is correct, not only can every mental event be uniquely singled out using only physical concepts, but since the number of events that falls under each mental predicate may, for all we know, be finite, there may well exist a physical open sentence coextensive with each

¹¹ The point that substitutivity of identity fails in the context of explanation is made in connection with the present subject by Norman Malcolm, 'Scientific Materialism and the Identity Theory', 123–4. Also see Essays 1 and 8.

mental predicate, though to construct it might involve the tedium of a lengthy and uninformative alternation. Indeed, even if finitude is not assumed, there seems no compelling reason to deny that there could be coextensive predicates, one mental and one physical.

The thesis is rather that the mental is nomologically irreducible: there may be *true* general statements relating the mental and the physical, statements that have the logical form of a law; but they are not *lawlike* (in a strong sense to be described). If by absurdly remote chance we were to stumble on a nonstochastic true psychophysical generalization, we would have no reason to believe it more than roughly true.

Do we, by declaring that there are no (strict) psychophysical laws, poach on the empirical preserves of science—a form of *hubris* against which philosophers are often warned? Of course, to judge a statement lawlike or illegal is not to decide its truth outright; relative to the acceptance of a general statement on the basis of instances, ruling it lawlike must be *a priori*. But such relative *apriorism* does not in itself justify philosophy, for in general the grounds for deciding to trust a statement on the basis of its instances will in turn be governed by theoretical and empirical concerns not to be distinguished from those of science. If the case of supposed laws linking the mental and the physical is different, it can only be because to allow the possibility of such laws would amount to changing the subject. By changing the subject I mean here: deciding not to accept the criterion of the mental in terms of the vocabulary of the propositional attitudes. This short answer cannot prevent further ramifications of the problem, however, for there is no clear line between changing the subject and changing what one says on an old subject, which is to admit, in the present context at least, that there is no clear line between philosophy and science. Where there are no fixed boundaries only the timid never risk trespass.

It will sharpen our appreciation of the anomalous character of mental-physical generalizations to consider a related matter, the failure of definitional behaviourism. Why are we willing (as I assume we are) to abandon the attempt to give explicit definitions of mental concepts in terms of behavioural ones? Not, surely, just because all actual tries are conspicuously inadequate. Rather it is because we are persuaded, as we are in the case of so many other forms of definitional reductionism (naturalism in ethics, instrumentalism and operationalism in the sciences, the causal theory of

meaning, phenomenalism, and so on—the catalogue of philosophy's defeats), that there is system in the failures. Suppose we try to say, not using any mental concepts, what it is for a man to believe there is life on Mars. One line we could take is this: when a certain sound is produced in the man's presence ('Is there life on Mars?') he produces another ('Yes'). But of course this shows he believes there is life on Mars only if he understands English, his production of the sound was intentional, and was a response to the sounds as meaning something in English; and so on. For each discovered deficiency, we add a new proviso. Yet no matter how we patch and fit the non-mental conditions, we always find the need for an additional condition (provided he *notices*, *understands*, etc.) that is mental in character.¹²

A striking feature of attempts at definitional reduction is how little seems to hinge on the question of synonymy between definiens and definiendum. Of course, by imagining counterexamples we do discredit claims of synonymy. But the pattern of failure prompts a stronger conclusion: if we were to find an open sentence couched in behavioural terms and exactly coextensive with some mental predicate, nothing could reasonably persuade us that we had found it. We know too much about thought and behaviour to trust exact and universal statements linking them. Beliefs and desires issue in behaviour only as modified and mediated by further beliefs and desires, attitudes and attendings, without limit. Clearly this holism of the mental realm is a clue both to the autonomy and to the anomalous character of the mental.

These remarks apropos definitional behaviourism provide at best hints of why we should not expect nomological connections between the mental and the physical. The central case invites further consideration.

Lawlike statements are general statements that support counterfactual and subjunctive claims, and are supported by their instances. There is (in my view) no non-question-begging criterion of the lawlike, which is not to say there are no reasons in particular cases for a judgement. Lawlikeness is a matter of degree, which is not to deny that there may be cases beyond debate. And within limits set by the conditions of communication, there is room for much variation between individuals in the pattern of statements to which

various degrees of nomologicality are assigned. In all these respects nomologicality is much like analyticity, as one might expect since both are linked to meaning.

'All emeralds are green' is lawlike in that its instances confirm it, but 'all emeralds are grue' is not, for 'grue' means 'observed before time *t* and green, otherwise blue', and if our observations were all made before *t* and uniformly revealed green emeralds, this would not be a reason to expect other emeralds to be blue. Nelson Goodman has suggested that this shows that some predicates, 'grue' for example, are unsuited to laws (and thus a criterion of suitable predicates could lead to a criterion of the lawlike). But it seems to me the anomalous character of 'All emeralds are grue' shows only that the predicates 'is an emerald' and 'is grue' are not suited to one another: grueness is not an inductive property of emeralds. Grueness is however an inductive property of entities of other sorts, for instance of emerires. (Something is an emerire if it is examined before *t* and is an emerald, and otherwise is a sapphire.) Not only is 'All emerires are grue' entailed by the conjunction of a lawlike statements 'All emeralds are green' and 'All sapphires are blue,' but there is no reason, as far as I can see, to reject the deliverance of intuition, that it is itself lawlike.¹³ Nomological statements bring together predicates that we know a priori are made for each other—know, that is, independently of knowing whether the evidence supports a connection between them. 'Blue', 'red', and 'green' are made for emeralds, sapphires, and roses; 'grue', 'bleen', and 'gred' are made for sapphals, emerires, and emeroses.

The direction in which the discussion seems headed is this: mental and physical predicates are not made for one another. In point of lawlikeness, psychophysical statements are more like 'All emeralds are grue' than like 'All emeralds are green.'

Before this claim is plausible, it must be seriously modified. The fact that emeralds examined before *t* are grue not only is no reason to believe all emeralds are grue; it is not even a reason (if we know the time) to believe *any* unobserved emeralds are grue. But if an event of a certain mental sort has usually been accompanied by an

¹³ The view is accepted by Richard C. Jeffrey, 'Goodman's Query', John R. Wallace, 'Goodman, Logic, Induction', and John M. Vickers, 'Characteristics of Projectible Predicates'. Goodman, in 'Comments', disputes the lawlikeness of statements like 'All emerires are grue.' I cannot see, however, that he meets the point of my 'Emeroses by Other Names'. This short paper is printed as an appendix to the present essay.

¹² The theme is developed in Roderick Chisholm, *Perceiving*, Ch. 2.

event of a certain physical sort, this often is a good reason to expect other cases to follow suit roughly in proportion. The generalizations that embody such practical wisdom are assumed to be only roughly true, or they are explicitly stated in probabilistic terms, or they are insulated from counterexample by generous escape clauses. Their importance lies mainly in the support they lend singular causal claims and related explanations of particular events. The support derives from the fact that such a generalization, however crude and vague, may provide good reason to believe that underlying the particular case there is a regularity that could be formulated sharply and without caveat.

In our daily traffic with events and actions that must be foreseen or understood, we perforce make use of the sketchy summary generalization, for we do not know a more accurate law, or if we do, we lack a description of the particular events in which we are interested that would show the relevance of the law. But there is an important distinction to be made within the category of the rule of thumb. On the one hand, there are generalizations whose positive instances give us reason to believe the generalization itself could be improved by adding further provisos and conditions stated in the same general vocabulary as the original generalization. Such a generalization points to the form and vocabulary of the finished law: we may say that it is a *homonomic* generalization. On the other hand there are generalizations which when instantiated may give us reason to believe there is a precise law at work, but one that can be stated only by shifting to a different vocabulary. We may call such generalizations *heteronomic*.

I suppose most of our practical lore (and science) is heteronomic. This is because a law can hope to be precise, explicit, and as exceptionless as possible only if it draws its concepts from a comprehensive closed theory. This ideal theory may or may not be deterministic, but it is if any true theory is. Within the physical sciences we do find homonomic generalizations, generalizations such that if the evidence supports them, we then have reason to believe they may be sharpened indefinitely by drawing upon further physical concepts: there is a theoretical asymptote of perfect coherence with all the evidence, perfect predictability (under the terms of the system), total explanation (again under the terms of the system). Or perhaps the ultimate theory is probabilistic, and the asymptote is less than perfection; but in that case there will be no better to be had.

Confidence that a statement is homonomic, correctible within its own conceptual domain, demands that it draw its concepts from a theory with strong constitutive elements. Here is the simplest possible illustration; if the lesson carries, it will be obvious that the simplification could be mended.

The measurement of length, weight, temperature, or time depends (among many other things, of course) on the existence in each case of a two-place relation that is transitive and asymmetric: warmer than, later than, heavier than, and so forth. Let us take the relation *longer than* as our example. The law or postulate of transitivity is this:

$$(L) \quad L(x, y) \text{ and } L(y, z) \rightarrow L(x, z)$$

Unless this law (or some sophisticated variant) holds, we cannot easily make sense of the concept of length. There will be no way of assigning numbers to register even so much as ranking in length, let alone the more powerful demands of measurement on a ratio scale. And this remark goes not only for any three items directly involved in an intransitivity: it is easy to show (given a few more assumptions essential to measurement of length) that there is no consistent assignment of a ranking to any item unless (L) holds in full generality.

Clearly (L) alone cannot exhaust the import of 'longer than'—otherwise it would not differ from 'warmer than' or 'later than'. We must suppose there is some empirical content, however difficult to formulate in the available vocabulary, that distinguishes 'longer than' from the other two-place transitive predicates of measurement and on the basis of which we may assert that one thing is longer than another. Imagine this empirical content to be partly given by the predicate ' $O(x, y)$ '. So we have this 'meaning postulate':

$$(M) \quad O(x, y) \rightarrow L(x, y)$$

that partly interprets (L). But now (L) and (M) together yield an empirical theory of great strength, for together they entail that there do not exist three objects a , b , and c such that $O(a, b)$, $O(b, c)$, and $O(c, a)$. Yet what is to prevent this happening if ' $O(x, y)$ ' is a predicate we can ever, with confidence, apply? Suppose we *think* we observe an intransitive triad; what do we say? We could count (L) false, but then we would have no application for the concept of length. We could say (M) gives a wrong test for length; but then it is

unclear what we thought was the *content* of the idea of one thing being longer than another. Or we could say that the objects under observation are not, as the theory requires, *rigid* objects. It is a mistake to think we are forced to accept some one of these answers. Concepts such as that of length are sustained in equilibrium by a number of conceptual pressures, and theories of fundamental measurement are distorted if we force the decision, among such principles as (L) and (M): analytic or synthetic. It is better to say the whole set of axioms, laws, or postulates for the measurement of length is partly constitutive of the idea of a system of macroscopic, rigid, physical objects. I suggest that the existence of lawlike statements in physical science depends upon the existence of constitutive (or synthetic a priori) laws like those of the measurement of length within the same conceptual domain.

Just as we cannot intelligibly assign a length to any object unless a comprehensive theory holds of objects of that sort, we cannot intelligibly attribute any propositional attitude to an agent except within the framework of a viable theory of his beliefs, desires, intentions, and decisions.

There is no assigning beliefs to a person one by one on the basis of his verbal behaviour, his choices, or other local signs no matter how plain and evident, for we make sense of particular beliefs only as they cohere with other beliefs, with preferences, with intentions, hopes, fears, expectations, and the rest. It is not merely, as with the measurement of length, that each case tests a theory and depends upon it, but that the content of a propositional attitude derives from its place in the pattern.

Crediting people with a large degree of consistency cannot be counted mere charity: it is unavoidable if we are to be in a position to accuse them meaningfully of error and some degree of irrationality. Global confusion, like universal mistake, is unthinkable, not because imagination boggles, but because too much confusion leaves nothing to be confused about and massive error erodes the background of true belief against which alone failure can be construed. To appreciate the limits to the kind and amount of blunder and bad thinking we can intelligibly pin on others is to see once more the inseparability of the question what concepts a person commands and the question what he does with those concepts in the way of belief, desire, and intention. To the extent that we fail to discover a coherent and plausible pattern in the attitudes and

actions of others we simply forego the chance of treating them as persons.

The problem is not bypassed but given centre stage by appeal to explicit speech behaviour. For we could not begin to decode a man's sayings if we could not make out his attitudes towards his sentences, such as holding, wishing, or wanting them to be true. Beginning from these attitudes, we must work out a theory of what he means, thus simultaneously giving content to his attitudes and to his words. In our need to make him make sense, we will try for a theory that finds him consistent, a believer of truths, and a lover of the good (all by our own lights, it goes without saying). Life being what it is, there will be no simple theory that fully meets these demands. Many theories will effect a more or less acceptable compromise, and between these theories there may be no objective grounds for choice.

The heteronomic character of general statements linking the mental and the physical traces back to this central role of translation in the description of all propositional attitudes, and to the indeterminacy of translation.¹⁴ There are no strict psychophysical laws because of the disparate commitments of the mental and physical schemes. It is a feature of physical reality that physical change can be explained by laws that connect it with other changes and conditions physically described. It is a feature of the mental that the attribution of mental phenomena must be responsible to the background of reasons, beliefs, and intentions of the individual. There cannot be tight connections between the realms if each is to retain allegiance to its proper source of evidence. The nomological irreducibility of the mental does not derive merely from the seamless nature of the world of thought, preference, and intention, for such interdependence is common to physical theory, and is compatible with there being a single right way of interpreting a man's attitudes without relativization to a scheme of translation. Nor is the irreducibility due simply to the possibility of many equally eligible schemes, for this is compatible with an arbitrary choice of one scheme relative to which assignments of mental traits are made. The

¹⁴ The influence of W. V. Quine's doctrine of the indeterminacy of translation, as in Ch. 2 of *Word and Object*, is, I hope, obvious. In sect. 45 Quine develops the connection between translation and the propositional attitudes, and remarks that 'Brentano's thesis of the irreducibility of intentional idioms is of a piece with the thesis of indeterminacy of translation', 221.

point is rather that when we use the concepts of belief, desire, and the rest, we must stand prepared, as the evidence accumulates, to adjust our theory in the light of considerations of overall cogency: the constitutive ideal of rationality partly controls each phase in the evolution of what must be an evolving theory. An arbitrary choice of translation scheme would preclude such opportunistic tempering of theory; put differently, a right arbitrary choice of a translation manual would be of a manual acceptable in the light of all possible evidence, and this is a choice we cannot make. We must conclude, I think, that nomological slack between the mental and the physical is essential as long as we conceive of man as a rational animal.

III

The gist of the foregoing discussion, as well as its conclusion, will be familiar. That there is a categorial difference between the mental and the physical is a commonplace. It may seem odd that I say nothing of the supposed privacy of the mental, or the special authority an agent has with respect to his own propositional attitudes, but this appearance of novelty would fade if we were to investigate in more detail the grounds for accepting a scheme of translation. The step from the categorial difference between the mental and the physical to the impossibility of strict laws relating them is less common, but certainly not new. If there is a surprise, then, it will be to find the lawlessness of the mental serving to help establish the identity of the mental with that paradigm of the lawlike, the physical.

The reasoning is this. We are assuming, under the Principle of the Causal Dependence of the Mental, that some mental events at least are causes or effects of physical events; the argument applies only to these. A second Principle (of the Nomological Character of Causality) says that each true singular causal statement is backed by a strict law connecting events of kinds to which events mentioned as cause and effect belong. Where there are rough, but homonomic, laws, there are laws drawing on concepts from the same conceptual domain and upon which there is no improving in point of precision and comprehensiveness. We urged in the last section that such laws occur in the physical sciences. Physical theory promises to provide a comprehensive closed system guaranteed to yield a standardized,

unique description of every physical event couched in a vocabulary amenable to law.

It is not plausible that mental concepts alone can provide such a framework, simply because the mental does not, by our first principle, constitute a closed system. Too much happens to affect the mental that is not itself a systematic part of the mental. But if we combine this observation with the conclusion that no psychophysical statement is, or can be built into, a strict law, we have the Principle of the Anomalism of the Mental: there are no strict laws at all on the basis of which we can predict and explain mental phenomena.

The demonstration of identity follows easily. Suppose *m*, a mental event, caused *p*, a physical event; then, under some description *m* and *p* instantiate a strict law. This law can only be physical, according to the previous paragraph. But if *m* falls under a physical law, it has a physical description; which is to say it is a physical event. An analogous argument works when a physical event causes a mental event. So every mental event that is causally related to a physical event is a physical event. In order to establish anomalous monism in full generality it would be sufficient to show that every mental event is cause or effect of some physical event; I shall not attempt this.

If one event causes another, there is a strict law which those events instantiate when properly described. But it is possible (and typical) to know of the singular causal relation without knowing the law or the relevant descriptions. Knowledge requires reasons, but these are available in the form of rough heteronomic generalizations, which are lawlike in that instances make it reasonable to expect other instances to follow suit without being lawlike in the sense of being indefinitely refinable. Applying these facts to knowledge of identities, we see that it is possible to know that a mental event is identical with some physical event without knowing which one (in the sense of being able to give it a unique physical description that brings it under a relevant law). Even if someone knew the entire physical history of the world, and every mental event were identical with a physical, it would not follow that he could predict or explain a single mental event (so described, of course).

Two features of mental events in their relation to the physical—causal dependence and nomological independence—combine, then, to dissolve what has often seemed a paradox, the efficacy of

thought and purpose in the material world, and their freedom from law. When we portray events as perceivings, rememberings, decisions and actions, we necessarily locate them amid physical happenings through the relation of cause and effect; but as long as we do not change the idiom that same mode of portrayal insulates mental events from the strict laws that can in principle be called upon to explain and predict physical phenomena.

Mental events as a class cannot be explained by physical science; particular mental events can when we know particular identities. But the explanations of mental events in which we are typically interested relate them to other mental events and conditions. We explain a man's free actions, for example, by appeal to his desires, habits, knowledge and perceptions. Such accounts of intentional behaviour operate in a conceptual framework removed from the direct reach of physical law by describing both cause and effect, reason and action, as aspects of a portrait of a human agent. The anomalism of the mental is thus a necessary condition for viewing action as autonomous. I conclude with a second passage from Kant:

It is an indispensable problem of speculative philosophy to show that its illusion respecting the contradiction rests on this, that we think of man in a different sense and relation when we call him free, and when we regard him as subject to the laws of nature. . . . It must therefore show that not only can both of these very well co-exist, but that both must be thought *as necessarily united* in the same subject. . . .¹⁵

APPENDIX: EMEROSSES BY OTHER NAMES

Consider a hypothesis saying that everything that is examined before t and is an emerald (or else is a rose) is green if examined before t (or else is red); briefly:

H_1 All emeroses are gred

If H_1 is lawlike, it is a counterexample to Goodman's analysis in *Fact, Fiction and Forecast*, and one that would seem to cut pretty deep. Goodman's tests for deciding whether a statement is lawlike depend primarily on how well behaved its predicates are, taken one

¹⁵ Op. cit., 76.