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Abelard, Peter (1079–1142) French philosopher, logician and theologian. Born near Nantes in France in 1079 Abelard studied logic in his youth under Roscelin, notorious for his antirealist interpretation of logic, and went on to become the most sought-after teacher of logic in Europe. Beyond logic Abelard involved himself in theological debates, and his interpretation of the Holy Trinity, a topic which called forth his best work on the concept of sameness, was condemned twice by the church. Abelard's life was a stormy one including the much celebrated romance with and marriage to Héloïse, his subsequent castration by thugs hired by her uncle, and a bitter series of disputes with William of Champeaux over universals.

It was the topics of universals and identity that elicited Abelard's main efforts in metaphysics. While arguing that no universal, i.e., nothing common to many, is any "real" thing, that is has an existence independent of the mental and linguistic activities that involve signification of things in the world, Abelard proposed that nevertheless there are *status* which serve as objective significates of predicates that are true of many distinct things. He gave the *status* much the same treatment as he proposed for *dicta*, which are the significates of sentences and the primary bearers of truth and falsity. They are not things in the world, not even psychological or linguistic things, but they can exist and be known objectively.

Taking off from remarks by Aristotle in the *Topics* Abelard distinguished different sorts of identity and distinctness. Most important is the contrast between sameness in "essence" and sameness in property. The former means that the items in question have all their parts in common; the latter requires that

the items be defined in the same way. He claimed that objects and the matter of which they were composed were the same in the former sense but not in the latter.

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MARTIN M. TWEEDALE

abstract see CONCRETE/ABSTRACT

accident see ESSENCE/ACCIDENT

acquaintance Acquaintance is a central notion in Russellian metaphysics, as well as Russellian epistemology and philosophy of language. RUSSELL distinguishes knowledge by acquaintance from knowledge by description, and characterizes the former as follows.

- (1) "We shall say we have *acquaintance* with anything of which we are directly aware, without the intermediary of any process of inference or any knowledge of truths" (Russell, 1959, p. 46, italics in original).
- (2) "it is possible, without absurdity, to doubt whether there is a table at all, whereas it is not possible to doubt the sense-data" (Russell, 1959, p. 47). The table is not an object of acquaintance, but the sense-data are, and this condition is supposed to provide a general contrast between objects of acquaintance and other things.
- (3) "All our knowledge, both knowledge of things and knowledge of truths, rests upon acquaintance as its foundation" (Russell, 1959, p. 48).
- (4) Russell also specifies objects of acquaintance by extension.

"We have acquaintance in sensation with the data of the outer senses, and in introspection with the data of what may be called the inner sense – thoughts, feeling, desires, etc.; we have acquaintance in memory with things which have been data either of the outer senses or of the inner sense. Further, it is probable, though not certain, that we have acquaintance with Self, as that which is aware of things or has desires towards things.

In addition to our acquaintance with particular existing things, we also have acquaintance with ... *universals*' (Russell, 1959, pp. 51–2, italics in original).

These four specifications cannot be assumed to coincide. What, if anything, is the foundation of our knowledge and what, if anything, is known "directly" are, of course, themselves matters of philosophical controversy. And the second specification has its own special problem, since *UNIVERSALS* and sense data, far from being indubitable, are just the sorts of entities whose existence many philosophers doubt. Russell recognizes that many people doubt or deny the existence of universals, but he does not seem to recognize the problem this fact raises for

the conjunction of his view that objects of acquaintance include universals and his view that objects of acquaintance, are such that their existence cannot be doubted (*see* Russell, 1959, chs. 9 and 10). James Van Cleve has mentioned that any philosopher holding an indubitability thesis will need to formulate it so as to avoid the conclusion that we have indubitable knowledge of anything that is in fact philosophically controversial. But the way to do this in the present case seems to be, for example, to replace such claims as Russell's that "it is not possible to doubt the sense-data" (Russell, 1959, p. 47) with claims to the effect that it is not possible to doubt that one seems to see something blue, or that one is in pain, etc. This no longer involves reference to any *object* of acquaintance whose existence cannot be doubted.

For Russell, only an object of acquaintance can be the referent of a logically proper name, i.e., a name that refers directly, without describing, and whose sole semantic function is to stand for its referent. By his principle of acquaintance, "*Every proposition which we can understand must be composed wholly of constituents with which we are acquainted*" (Russell, 1959, p. 58, italics in original). Donnellan offers a useful formalization of this notion of a constituent, when he says that if, and only if, Socrates is a constituent of the proposition expressed by the sentence "Socrates is snub-nosed", this proposition "might be represented as an ordered pair consisting of Socrates – the actual man, of course, not his name – and the predicate (or property, perhaps), being snub-nosed" (Donnellan, 1974, p. 225).

Russell grants that his principle of acquaintance entails that much of a person's language is private (in the sense that it is logically impossible for anyone else to apprehend the propositions expressed by the speaker) as well as ephemeral (in the sense that it is logically impossible for anyone to apprehend at time t_2 the proposition he expressed at t_1 , (For Russell on ephemerality, *see* Russell, 1956, pp. 201–4.) But Russell overstates the extent of privacy his principle of acquaintance requires. He says

When one person uses a word, he does not mean by it the same thing as another person means by it . . . It would be absolutely fatal if people meant the same things by their words . . . the meaning you attach to your words must depend on the nature of the objects you are acquainted with, and since different people are acquainted with different objects, they would not be able to talk to each other unless they attached quite different meanings to their words. We should have to talk only about logic. (Russell, 1956, p. 195)

By Russell's own lights, this claim is overstated, since he does not limit objects of acquaintance to sense data, oneself, and entities of logic, such as sets. He also includes universals. Thus, on the principle of acquaintance, we would not "have to talk only about logic" in order to attach the same meanings to our words. We could also talk about blueness, roundness, etc., and we could discuss such propositions as the proposition that blue is more like purple than either is like orange. But this qualification is unlikely to assuage the doubt of opponents of the principle of acquaintance, especially since the argument Russell offers for the principle is drastically inadequate. He says

it is scarcely conceivable that we can make a judgment or enter a supposition without knowing what it is that we are judging or supposing about. We must attach *some* meaning to the words we use, if we are to speak significantly and not utter mere noise; and the meaning we attach to our words must be something with which we are acquainted. (Russell, 1958, p. 58, italics in original)

Of course this is not really an argument. It begs the question (see Ackerman, 1987).

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FELICIA ACKERMAN

action theory Action theory deals with that concept of action that applies only to beings who have wills. The questions it addresses include: (1) what is the mark of action? (2) How should actions be individuated? (3) What makes an action intentional? (4) Is freedom of action compatible with determinism? (5) What makes true the sort of explanation peculiar to action, namely, that the agent did the action for certain reasons?

THE MARK OF ACTION

What distinguishes an action from other sorts of events of which a person may be the subject, such as sensations, perceptions, feelings, unbidden thoughts, tremblings, reflex actions? Two main sorts of answer have been offered. According to one, what marks an event (say, a movement of one's body) as an action is something extrinsic to the event, namely its having been caused in the right sort of way by the subject's desires (or intentions) and beliefs (see Goldman, 1970, ch. 3, and DAVIDSON, 1980, essay 1). The right sort of causal connection is important, because, for example, the fact that a desire to have another drink results in the subject's falling down does not make that event an action. This sort of view seems, however, not to cover spontaneous actions whose occurrence is not explained by any antecedent motives of the agent.

The other kind of account finds the mark of an action in the intrinsic nature of the event, rather than in something external to it. The idea is that an event is an action

because it is, or begins with, a special sort of event. Some hold that the special event is an occurrence of a quite special sort of causation, where an event is caused, not by another event, but by the agent herself; an agent is the only sort of enduring thing that can be the subject of this special kind of causation (see Taylor, 1966; CHISHOLM, 1976). Others hold that the special event is mental; for some, what makes it special is its functional role (Davis, 1979, chs. 1–2), and for others, it is its phenomenal character (Ginet, 1990, ch. 2). In actions that go on to become voluntary bodily exertions this event is a willing (or volition) to act. Some (for example, Hornsby, 1980) think that the content of this volition may be anything that the agent was trying to do in the action. Reflection on our experience of voluntary bodily exertion suggests, however, that there is in it something to be called volition that is quite distinct from intention and the content of which is limited to the immediately present exertion of the body (see Ginet, 1990, ch. 2).

THE INDIVIDUATION OF ACTION

Suppose that just now I moved my right index finger and thereby pressed a key and thereby put a character on the computer screen. Each of the following is a description of an action I performed: (1) "I moved a finger"; (2) "I moved my right index finger"; (3) "I pressed a key"; and (4) "I put a character on the screen." How many different actions do these four descriptions pick out? One view holds that they pick out four different actions; because an action is an exemplifying of an action property by an agent at a time, and our four descriptions express four different action properties (see Goldman, 1970). Another view holds that they all describe the same action in terms of different properties; my action was just the minimal thing *by* (or *in*) doing which I did the things attributed to me by all the descriptions (see Davidson, 1980, essay 3; Hornsby, 1980). (On some views this BASIC ACTION is the bodily movement, on others it is a volition.) Between these extreme views, one may take the position that, although an

action is normally thought of as a more concrete entity than an exemplifying of a property (so that (1) and (2) describe the same concrete action in terms of different intrinsic properties), one action can be a proper part of a distinct action in which something that is not an action, namely, a consequence of the first action, is an additional part (so that (3) picks out a larger action of which (1)–(2) is merely the initial part, and (4) picks out a still larger action of which (4) is merely the initial part) (see THOMSON, 1977; Ginet, 1990, ch. 3).

THE INTENTIONALITY OF ACTION

Smith swung the racket intentionally and in so doing inadvertently hit his opponent with it. Smith's hitting his opponent with the racket was not intentional, but it could have been. Whether an action is intentional or not often makes a big difference for the sort of evaluation it deserves. What determines whether an action is intentional or not (under a given description)? This can be divided into two questions, depending on whether or not the action description in question is basic. An action description, of the form "S's A-ing", is basic just in case there is no other, non-equivalent action description, "S's B-ing", such that it is true that S A-ed by B-ing. With respect to a basic description, it is plausible to hold that whatever makes an event fit an action also makes it intentional under that description. (This is especially plausible if the basic descriptions attribute mental acts of volition.)

The question with respect to non-basic descriptions is more difficult. One might think that it would have been sufficient for Smith's hitting his opponent with the racket intentionally that he intended of his voluntary bodily movement that by it he would cause the racket to hit his opponent. But suppose he was too far from the opponent for the swing to hit as he intended; however, his grip loosened as he swung and the racket flew out of his hand and hit the opponent. We cannot then say that his hitting his opponent with the racket was intentional. Perhaps it is *sufficient* for his action's being intentional if he caused the

racket to hit his opponent *in the way he intended*. But this appears not to be *necessary*. Suppose Smith stumbled slightly as he swung, causing him to hit the opponent slightly below the spot he intended to hit; in this case, though he did not hit him in just the way he intended, it seems that he still hit him intentionally. In light of such difficulties (there are others), it is clear that it will not be a simple matter to devise a satisfactory necessary and sufficient condition for an action's being intentional under a description. (For one complex proposal, see Ginet, 1990, ch. 4.)

FREE ACTION AND DETERMINISM

I have freedom of action at a given time just in case more than one alternative action is then *open to me* (see the extended essay on FREE WILL). We continually have the impression of having more than one alternative action open to us (indeed, a great many alternative actions normally seem open to us: consider all the different ways that, as it seems to me, I could next move my right hand). DETERMINISM is the thesis that, given the state of the world at any particular time, the laws of nature (see LAW OF NATURE) determine everything that happens thereafter down to the last detail. Some philosophers have argued that our impression of freedom is always an illusion if determinism is true or if, though false, it fails to be false in the right places (see VAN INWAGEN, 1983, ch. 3; and Ginet, 1990, ch. 5). (This last disjunct is important because, although contemporary physics may give us good reason to think that determinism is false, it does not give us good reason to think it is false in the right places: as yet we do not even know precisely what the right places are.)

The essential premises of the argument that determinism is incompatible with freedom of action are two: (1) No one ever has it open to him or her to make true a proposition that contradicts the laws of nature. (2) No one ever has it open to him or her to determine how the past was, i.e., to make true one rather than another of contrary propositions that are entirely about the past.

From (2) it follows that (3) one can have it open to one at a given time to perform a certain action *a*, only if, for any truth entirely about the past, *p*, one has it open to one to make it the case that: *p* and one does *a*. From (1), (3), and determinism it follows that one never has it open to one to do anything other than what one actually does. Suppose that at 2 o'clock it seemed to me to be open to me to raise my hand then, but I did not do so. If determinism is true then there is a true proposition, *p*, which is entirely about the past relative to 2 o'clock and such that it follows from the laws of nature that: if *p* then I did not raise my hand at 2 o'clock. From (3) it follows that it was open to me to make it the case that I did raise my hand at 2 o'clock only if it was open to me to make it the case that: *p* and I raised my hand at 2 o'clock. But, given (1), it could not have been open to me to make that proposition true, for it contradicts the laws of nature. Therefore, if determinism is true (and so also are (1) and (3)), then (contrary to my impression) it was not open to me to do *a* at *t*.

This argument is obviously valid and so philosophers who resist the conclusion that determinism is incompatible with freedom of action (and many do) must reject either (1) or (2). Arguments against (2) are possible, but the more popular, and perhaps more promising, line is to attack (1) (see Fischer, 1988; LEWIS, 1981). (1) could be put this way: if it follows from the laws of nature that if *p* then *q*, then it is never in anyone's power to make it the case that: *p* and not-*q*. This principle seems appealing because it seems that we ordinarily feel compelled to make inferences in accordance with it. For example, if I know that X's brain state at *t* is such as to nomically necessitate X's being unconscious for at least one minute after *t*, then that seems good enough to infer that it is not open to X at *t* to voluntarily raise his or her arm during the minute after *t*. To account for the apparent cogency of such an inference, while rejecting (1), one might suggest that what really underlies its validity is not (1) but a more complex principle, something like the following: if *p* nomically necessitates that X does not act in a certain

way at *t*, and the necessitation does not run through *X*'s internal processes in the way that it does in normal seemingly free action, then it is not open to *X* to act in that way at *t*. This more complex principle, says the critic of (1), will account for all the acceptable inferences that *seem* to invoke (1). But will it? Imagine a possible world where determinism is true and Martians control all of *X*'s actions over a long period through controlling *X*'s normal psychological processes of motivation and deliberation. If you are inclined to think this would mean that *X* has no more freedom of action than a puppet, then, it seems, you are inclined to operate with (1) and not just the more complex principle (for the latter would not justify that inference).

THE NATURE OF ACTION EXPLAINED BY REASONS

Typically when one acts one has motives or reasons for acting in the way one does *and* one acts in that way *for* those reasons. For example, my reason for opening the window was that I wanted to let out the smoke. I opened the window *in order* to let out the smoke, that is, *because I intended* thereby to let out the smoke.

The main metaphysical issue concerning explanations of this sort is whether they are essentially *nomic*, that is, whether the truth of one of them entails that the case be subsumable under causal laws which dictate that whenever motives of the same sort as those the explanation cites occur in sufficiently similar circumstances they (the motives and the relevant circumstances) causally necessitate an action of the same sort (see AYER, 1946; and Davidson, 1980, essays 1, 11, for expressions of this view). The nomic view of reasons explanations would tend to be confirmed if we knew (or had good evidence for) the relevant laws in most cases of true reasons explanations. But we do not. Indeed, it may be that, as yet, there is no true reasons explanation of any action for which anyone knows causal laws that govern the explanation. Of course, this ignorance does not show that the nomic view is wrong or that, on it, we are not justified

in believing any reasons explanations. Perhaps we need not know what the relevant causal laws are in order to be justified in giving a reasons explanation in a particular case. We must, however, be justified in believing that there are laws that govern the case (whether or not their contents are known to us); and it might well be doubted whether there is any case for which we are justified in believing even this.

The nomic view nevertheless has a strong appeal for many philosophers. This may be because they find it hard to see what else, if not a nomic connection, could make a genuine *explanatory* connection between motives and action. This is a fair question, which one must answer if one wants to make a good case against the nomic view. One must specify a condition that is clearly sufficient for the explanatory connection, does not imply a nomic connection, and is easy to know is present (especially for the subject). Here is a sketch of how one might try to do that (see Ginet, 1990, ch. 6 for a fuller exposition).

Suppose that concurrently with my action of opening the window I remembered my antecedent desire to rid the room of smoke and I intended of that action I was engaging in that I would thereby satisfy that desire. These conditions seem clearly sufficient to make the explanatory connection between the desire and the action, to make it true that I opened the window because I wanted to rid the room of smoke; and just as clearly they seem to be compatible with there being no true causal laws which dictate that always a desire of that same sort in sufficiently similar circumstances must produce the same sort of action. That is, they give a non-nomic sufficient condition for a reasons explanation of an action. (Of course the obtaining of a non-nomic sufficient condition does not rule out the possibility of a nomic sufficient condition, perhaps even for the same explanation of the same action.)

That reasons explanations need not be nomic is important for the view that freedom of action is incompatible with determinism. Otherwise, that view would be committed to the counterintuitive proposition that no free action (one for which there were

alternatives open to the agent) could have a reasons explanation.

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actuality *see* POTENTIALITY/ACTUALITY

adverbial theory The adverbial theory is, at root, the view that to have a perceptual experience is to sense in a certain manner. Traditionally, the most popular analysis of perceptual experience has been the opposing sense-datum theory (*see* SENSATION). According to this theory, having a perceptual experience amounts to standing in a relation of direct perceptual awareness to a special immaterial entity. In particular cases this entity is called an after-image or a mirage or an appearance, and, in the general case, a sense-impression or a sense-datum. The sense-datum is required, so it is normally argued, in order to explain the facts of hallucination and illusion: since a person can have a visual sensation of a red square, say, even when there is no *real* red, square object in his general vicinity, it is typically

inferred that he is related, through his experience, to a red, square sense-datum.

The sense-datum theory leads to a number of perplexing questions. For example, can sense-data exist unsensed? Can two persons experience numerically identical sense-data? Do sense-data have surfaces which are not sensed? What are sense-data made of? Are they located? Historically, the desire to avoid questions like these was one reason for the development of the adverbial theory.

This position – that having a perceptual experience is a matter of sensing in a certain manner rather than sensing a peculiar immaterial object – is arrived at by reflecting on the fact that, on *standard* views, appearance, after-images, and so on, cannot exist when not sensed by some person. The explanation the adverbial theorist offers for this fact is that statements which purport to be about appearances, after-images, and so on, are in reality statements about the way or mode in which some person is sensing. Hence, a statement of the general form, "Person, *P*, has an *F* sense-impression", or "*P* has an *F* sensation", is reconstructed adverbially as, "*P* senses *F*-ly", or as it is sometimes put, "*P* senses in an *F* manner." This transformation has a number of grammatical parallels. "Patrick has a noticeable stutter", for example, is equivalent to "Patrick stutters noticeably", and "Patrick stutters in a noticeable manner." Similarly "Jane does a charming waltz", may be transcribed as, "Jane waltzes charmingly." It should be obvious that the adverbial view can account for the facts of hallucination and illusion. If, for example, I am correctly described as having a visual sensation of something blue then "blue" in this description is taken upon analysis to function as an adverb which expresses a mode of my sensing. Hence, my having the sensation does not require that there be a blue physical object (or anything else for that matter) in my general vicinity – it suffices that I sense bluely.

Although the adverbial theory began as, and is still most strongly associated with, the analysis of perceptual experience, it has also been applied elsewhere. For example, it is often held by adverbialists that our ordinary

talk of bodily sensations is misleading, and that in reality there are no such items as pains and itches to which persons are related when they have a pain or feel an itch. Rather statements about bodily sensations have an underlying adverbial structure. "Jones has an intense pain", for example, is analyzed as "Jones is pained intensely"; hence it is about the *way* in which Jones is pained. The motivation for this approach runs parallel to the one for perceptual experience: countenancing pains and other sensory objects in our ontology generates a host of philosophical puzzles. For example, are pains really located about the body as our ordinary pain talk suggests? If so, then presumably they are material objects. Why, then, are they never revealed by surgical examination of the appropriate limbs? Can pains exist in parts of the body without their being felt? Can two persons ever feel one and the same pain? All these puzzles dissolve once the adverbial view is adopted.

Some philosophers have argued that the adverbial theory can even be extended to the analysis of belief and desire discourse. Thus, having the belief that snow is white, say, is not a matter of bearing the "having" relation to a particular belief, but rather a matter of believing in a certain way. Whether this extension is defensible, and indeed whether the adverbial theory is viable anywhere, depends ultimately on how the theory is further spelled out. Recent work (see Tye, 1989) has supplied a clear semantics and metaphysics for the theory with the result that the adverbial approach is no longer open to the charge that it is just a rather trivial grammatical transformation without any real constraints. Indeed, once fully elucidated, the adverbial theory is seen to be a very powerful and well-founded approach which has the resources to answer all the more obvious objections.

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MICHAEL TYE

Alfarabi [al-Fārābī] (c.870–950) Islamic logician, metaphysician, political philosopher, also wrote commentaries on ARISTOTLE'S logical treatises and expositions of PLATO'S and Aristotle's philosophies.

Alfarabi was the first to raise the question of how the philosopher writing in Arabic which has no copula, can do logic and supply precise vocabulary for the Greek concept of being. He proposes to use derivatives of *wjd* (to find) for all the functions of "to be", in a stipulative fashion, including the most general sense of "being" (Shehadi, 1982, pp. 45–51).

Existents are divided by Alfarabi into the possible and the necessary. In the case of possible beings, existence is not a property and cannot be part of their essence (see ESSENCE/ACCIDENT; ESSENCE AND ESSENTIALISM). Asked whether "Man exists" has a predicate, Alfarabi replied that for the logician, "exists" is a predicate in the proposition. But it is not a predicate to the investigator into the nature of things. However, in the case of the First, existence is Its essence, for It is the being necessary through itself.

In Islamic philosophy Neoplatonic (see NEOPLATONISM) emanationism gets its first full statement by Alfarabi. Islamic Neo-platonists were influenced by an Arabic translation of a pseudo *Theology of Aristotle* which was in fact a summary of sections of PLOTINUS' *Enneads*, as well as by a translation of the *Liber de causis*.

The First is one, uncomposed, and beyond human knowledge. From its activity of thinking itself emerges the First Intellect which thinks itself as well as its source. The emanations proceed until the Tenth

Intellect, each intellect with its corresponding cosmic sphere.

Of special interest is Alfarabi's transformation of Aristotle's active intellect into a separate entity between humankind and the First, one of the separate substances above the terrestrial sphere. While it still makes the knowable known, its cosmological status prepares the way for the eschatological and mystical roles that it plays in Islamic philosophy.

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Alston, William P. (1921–) is an American philosopher who has made significant contributions to epistemology, philosophy of religion, and the realism–antirealism debate among other areas. Alston's work in epistemology has focused primarily on Foundationalism, the nature of epistemic justification, the internalism–externalism controversy, sense perception, and religious epistemology. In philosophy of religion, Alston has argued that putative perceptual experience of GOD is epistemically on a par with putative perceptual experience of ordinary material objects. Alston uses this argument along with a detailed account of mystical experience, to defend the importance of experiential grounds for the justification of religious belief.

Recently, Alston has defended a realist conception of truth according to which (1) a statement is true if and only if what the statement says to be the case actually is the case, and (2) truth is an important or significant feature of reality. It often matters, and we do care, whether our beliefs are true. Alston has also defended a form of metaphysical realism against a number of objections including the idea that there is a unique description of the world, a commitment to the causal theory of reference, and physicalism. *See also* EXPERIENCE; REALISM; THEORIES OF TRUTH.

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analysis Consider the following proposition.

- (1) To be an instance of knowledge is to be an instance of justified true belief not essentially grounded in any falsehood.

(1) exemplifies a central sort of philosophical analysis. Analyses of this sort can be characterized as follows:

- (a) The *analysans* and *analysandum* are necessarily coextensive, i.e., every instance of one is an instance of the other.
- (b) The *analysans* and *analysandum* are knowable a priori to be coextensive.
- (c) The *analysandum* is simpler than the *analysans* (a condition whose necessity is recognized in classical writings on analysis, such as Langford, 1942).
- (d) The *analysans* does not have the *analysandum* as a constituent.
- (e) A proposition that gives a correct analysis can be justified by the philosophical example-and-counter-example method, i.e., by generalizing from intuitions about

the correct answers to questions about a varied and wide-ranging series of simple described hypothetical test cases, such as "If such-and-such were the case, would you call this a case of knowledge?" Thus, such an analysis is a philosophical *discovery*, rather than something that must be obvious to ordinary users of the terms in question.

Condition (d) rules out circularity. But since many valuable quasi-analyses are partly circular (e.g., knowledge is justified true belief supported by *known* reasons not essentially involving any falsehood), it seems best to distinguish between full analysis, for which (d) is a necessary condition, and partial analysis, for which it is not.

This core notion of analysis fits the intuitive idea the term "analysis" suggests, which is that something is analyzed by breaking it down into its parts (see MOORE, 1903, sects. 8 and 10). But Moore also holds that analysis is a relation solely between concepts, rather than one involving entities of other sorts, such as linguistic expressions, and that in a true analysis, *analysans* and *analysandum* will be the same concept (see Moore, 1942). These views give rise to what is nowadays generally called "the" paradox of analysis: how can analyses such as (1) be informative? Philosophers have proposed various solutions, such as relaxing the requirement that *analysans* and *analysandum* are the same concept (Langford, 1942), and denying that (1) is genuinely informative to someone who *fully* grasps the concepts involved (Sosa, 1983).

Regardless of how this paradox is to be handled, there are types of analysis other than that exemplified by (1). One such type of analysis involves an *analysans* and *analysandum* that are clearly epistemically equivalent and that hence do not raise the paradox discussed here, although they do raise a different paradox (see Ackerman, 1990). Other types of analyses include new-level analysis, which aims at providing metaphysical insight through metaphysical reduction (for example, the analysis of sentences about physical objects into sentences about sense data (see Urmson, 1956, ch. 3),

and reformatory analysis, which seeks to reduce sloppiness and imprecision by replacing a concept considered in some way defective with one considered in the relevant way improved. Reformatory analysis makes no claim of conceptual identity between *analysans* and *analysandum* and hence gives rise to no paradox of analysis.

Aside from the possibility of paradox, philosophers have raised various objections to analysis as a philosophical method. It is a commonplace to object that analysis is not all of philosophy. But, of course, the claim that analysis is a viable method does not amount to saying that it is the only one. WITTGENSTEIN (see Wittgenstein, 1968, especially sects. 39–67) has raised objections to the atomist metaphysics and epistemology underlying Russellian new-level analysis (see LOGICAL ATOMISM; RUSSELL). But most of these objections do not apply to other types of analysis. It can also be objected that it is virtually impossible to produce an example of an analysis that is both philosophically interesting and generally accepted as true. But virtually all propositions philosophers put forth suffer from this problem. (See Reschler, 1978; Ackerman, 1992a.) The hypothetical example-and-counterexample method the sort of analysis (1) exemplifies is fundamental in philosophical inquiry, even if philosophers cannot reach agreement on analyses and often even individually cannot give full analyses and have to settle for less, such as one-way conditionals, partially circular accounts, and accounts (like that of being a game) that are justified in the same general way as analyses but that are too open-ended even to purport to yield necessary and sufficient conditions.

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Anscombe, G.E.M. (1919–2001) G.E.M. Anscombe is a philosopher of great range, many of whose important contributions to philosophy lie in metaphysics and in fields which substantially overlap metaphysics, especially philosophy of logic and philosophy of mind.

In “Causality and Determination” (1971) she questioned a central assumption made in virtually all philosophical writing about CAUSATION (see the extended essay), namely, “If an effect occurs in one case and a similar effect does not occur in an apparently similar case, there must be a further relevant difference.” The most disparate views of causation, from ARISTOTLE’S and SPINOZA’S to HOBBS’S, HUME’S, and RUSSELL’S, all accept that causation involves universality or necessity or both; but Anscombe argues that such views cannot stand up. She shows the core idea in

causation to be that of *derivativeness*, exemplified by making a noise, pushing, wetting. Her view that these causal notions do not involve universality or necessity might be questioned, so she examines different sorts of examples, like Feynman’s case of a bomb which may be caused to explode by some radioactive emission. The absence of necessitation is irrelevant to the causing of the subsequent explosion. Anscombe also examines the relevance of non-necessitating causes to freedom of the will (see the extended essay on FREE WILL).

She has discussed the subject of causation in several other essays. An important theme is the different *kinds* of causal relation (see, for example, 1974a). In “Times, Beginnings and Causes” (1974b), she examines Hume’s claim that it is logically possible for something to begin to exist without a cause. She develops an argument of Hobbes’s to show how judgments about beginnings of existence depend on the application of causal knowledge.

Among the other topics in metaphysics which she has discussed is that of the self. In “The First Person” (1975), she argues that DESCARTES’S view of the self would be correct if “I” were genuinely a referring expression, but that it is not a referring expression. Metaphysical problems concerning time and SUBSTANCE are the focus of some of her other essays.

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CORA DIAMOND

Anselm of Canterbury, St. (1033–1109) Scholastic philosopher and Archbishop of Canterbury, born at Aosta, Italy. Like AUGUSTINE before him, Anselm is a Christian Platonist in metaphysics (see PLATONISM). In the *Monologion*, he deploys a cosmological argument for the existence of the source of all goods, which is Good *per se* and thus supremely good, identical with what exists *per se* and is the Supreme Being. In *Proslogion* c.ii, Anselm advances his famous ontological proof: namely, that a being a greater than which cannot be conceived exists in the understanding, since even a fool understands the phrase when he hears it; but if it existed in the intellect alone, a greater could be conceived which existed in reality. A parallel *reductio* in c.iii concludes that a being a greater than which cannot be conceived exists necessarily. And in his *Reply to Gaunilo*, he offers a modal argument for God’s necessary existence, based on the premise that whatever does not exist is such that if it did exist, its non-existence would be possible. God is essentially whatever it is – other things being equal – better to be than not to be, and hence living, wise, powerful, true, just, blessed, immaterial, immutable and eternal *per se*; even the paradigm of sensory goods – Beauty, Harmony,

Sweetness and Pleasant Texture, in its own ineffable manner. Nevertheless, God is supremely simple, *omne et unum, totum et solum bonum*, a being a more delectable than which cannot be conceived.

God is both the efficient cause of everything else and the paradigm of all created natures, the latter ranking as better in so far as they are less imperfect ways of resembling God. Such natures have a teleological structure, which is at once internal to them (a created *f* is a true (defective) *f* to the extent that it exemplifies (falls short of) that for which *f*’s were made) and established by God. From TELEOLOGY, Anselm infers a general obligation on all created natures (non-rational as well as personal): since they owe their being and well-being to God as their cause, so they owe their being and well-being to God in the sense of having an obligation to praise Him by fulfilling their *teloi*.

Anselm’s distinctive ACTION THEORY reasons that if the *telos* of rational natures is unending beatific intimacy with God, their powers of reason and will have been given to promote that end. Thus, the will’s freedom must be *telos*-promoting, and – since sin is deviation from the *telos* – should not be defined as a power for opposites (the power to sin and the power not to sin), but rather as the power to preserve justice for its own sake (see the extended essay on FREE WILL). Choices are imputable only if spontaneous (from the agent itself). Since creatures have their natures from God and not from themselves, they cannot act spontaneously by the necessity of their natures. To enable creatures to be just of themselves, God endowed them with two motivational drives toward the good – the *affectio commodi*, or tendency to will things for the sake of their benefit to the agent itself; and the *affectio iustitiae*, or tendency to will things because of their own intrinsic value. It is up to the creature whether or not to align them (by letting the latter temper the former). Anselm’s motivational theory contrasts sharply with AQUINAS’s Aristotelian account, but was taken up and developed by DUNS SCOTUS.

See also GOD.

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antinomies An antinomy is a pair of apparently impeccable arguments for opposite conclusions. Obviously, the arguments cannot both be sound because a proposition and its contradictory must have opposite truth values. Thus the two appearances of cogency are not "all things considered" judgments because conflicting appearances cancel out. The challenge posed by an antinomy is at the level of adjudication and diagnosis. We know that at least one arm of the antinomy is fallacious. But which? And exactly where does it go wrong?

"Antinomy" is most closely associated with Immanuel KANT's attack on metaphysics. In the *Critique of Pure Reason*, he lays out parallel arguments literally side by side to emphasize their utter deadlock. As long as we assume that things-in-themselves are objects of knowledge, we can mount a knock-down argument for the thesis that the world has beginning in time and a knock-down argument for the antithesis that the world has no beginning. Metaphysicians can prove that we are free by exposing the absurdity of an actual infinity of past events and metaphysicians can disprove our freedom by demonstrating the incoherency of a break in the causal order.

This embarrassment of riches constitutes the data for Kant's meta-argument in favor of the critical point of view: instead of aiming at knowledge of a mind-independent reality, we should abandon the classical metaphysical enterprise and restrict the objects of knowledge to appearances. We can then see that the antinomies are a product of transcendental illusion which arises from the temptation to apply the principles that constitute the framework for knowledge of phenomenal reality to noumenal reality (see NOUMENAL/PHENOMENAL).

Contemporary philosophers do not share Kant's awe at the cogency of the clashing arguments. Indeed, cosmologists and infinitistic mathematicians dismiss the pros and cons about the extent of SPACE AND TIME as amateurish fallacies. However, Kant's unconvincing choice of examples does not undermine the philosophical interest of the concept of an antinomy. After all, "apparent" needs to be relativized to epistemic agents. An antinomy for an eighteenth-century figure need not be an antinomy for a twentieth-century thinker.

In any case, there certainly are argumentative deadlocks. Recently, a Japanese group of topologists announced a result that contradicted the result of an American group of topologists. Since both proofs involved complex calculations, they exchanged proofs to check for mistakes. Despite their high motivation and logical acumen, neither team has been able to find an error in the other's reasoning. The Japanese–American deadlock is not an antinomy if it is caused by a slight but subtle slip. The appearance of cogency must be due to a "deep error" – not a mistake due to bad luck or ignorance surmountable by merely mechanical methods.

Metaphysicians have a particular interest in antinomies that turn on false existential presuppositions. The Barber paradox features a village in which a barber shaves all and only those people who do not shave themselves. Does the barber shave himself? First argument: if the barber shaves himself, then he is a self-shaver. But he only shaves those who do not shave themselves. Therefore, the barber does not shave himself. Second argument: if the barber does not

shave himself, then he is among the non-self-shavers. But he shaves all those who do not shave themselves. Therefore, the barber does shave himself! The lesson to be learned from this modest antinomy is that the barber cannot exist.

More ambitious resolutions of antinomies aim at a more dramatic impact on our ontology or cosmology. The paradox of the stone (can God make a stone so large that He Himself could not lift it?) is used to disprove God's existence. The Buddhists use antinomies to disprove the existence of the self. The Eleatics (*see* PRESOCRATICS) and nineteenth-century idealists (*see* IDEALISM) deployed antinomies against the assumption that material things exist and that they are spatially related.

Other antinomies turn on false dichotomies. For example, the old arguments for and against infinite space tended to assume that "finite" and "unbounded" were mutually exclusive terms. Albert Einstein's application of Riemannian geometry makes sense of a "spherical" universe that is finite but unbounded. So besides subtracting entities and relationships from metaphysical systems, antinomies enrich these systems by stimulating the discovery of new entities and possibilities.

An antinomy cannot prove anything on its own. Indeed, its internal conflict makes it a paradigm of dialectic impotence. However, the meta-arguments that grapple with antinomies are powerful tools of metaphysical inquiry.

See also APORIA; SORITES ARGUMENTS; TRANSCENDENTAL ARGUMENTS; ZENO.

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antirealism By "antirealism" we mean here *semantic* antirealism, of the kind advanced by DUMMETT in numerous writings. The main thesis of semantic antirealism is that we do not have to regard every declarative statement of our language as determinately true or false independently of our means of coming to know what its truth value is. That is, the semantic antirealist refuses to accept the principle of bivalence.

ANTIREALISM IS NOT A FORM OF IDEALISM OR NOMINALISM

Semantic antirealism is to be distinguished from *ontological* antirealism. Ontological antirealism casts doubt on the existence of objects. It comes in varying degrees. The ontological antirealist may doubt the existence of *any* objects in the external world (IDEALISM); or, more modestly, doubt the existence of the unobservable entities posited by science (VAN FRAASSEN's constructive empiricism (1980)); or, more traditionally, doubt the existence of abstract objects, such as numbers (*see* NUMBER), or of UNIVERSALS (NOMINALISM). Semantic antirealism is compatible with both Platonistic (*see* PLATONISM) and nominalistic views about numbers. In the case of mathematics, G. Kreisel's dictum is often stressed: what one is concerned with is not so much the existence of mathematical objects, as the OBJECTIVITY of mathematical statements.

ANTIREALISM IS COMPATIBLE WITH NATURALISM

Indeed, one might even maintain that it is a *consequence* of NATURALISM. By naturalism we mean the metaphysical view that all things, events, states and processes are material or physical. Naturalism asserts SUPERVENIENCE, but does not claim reductionism (*see* REDUCTION, REDUCTIONISM). It asserts that all mental, moral, semantic and social facts supervene on material or

physical facts. The physical facts, that is, fix the mental, moral, semantic and social facts. But naturalism does not claim that psychology, moral theory, semantics or the social sciences can be reduced to physics. On the contrary, each of these special sciences is autonomous. Each presents important aspects of reality in its own terminology. Indeed, antirealism itself is a theory whose content would be lost were it not formulated in its own special terms, terms which defy reduction to physics.

ANTIREALISM STRESSES OBSERVABLE BEHAVIOR AS THE SOURCE OF MEANING

The antirealist is centrally concerned with grasp of meanings, or contents (*see* CONTENT); and with the conditions under which speakers and thinkers can acquire such grasp and display it. It lays great stress on what have become known as the *acquisition* and *manifestation* arguments. These arguments are used to cast doubt on the claim, concerning sentences in any given area of discourse, that their meanings consist in verification-transcendent truth conditions. For, if they did, so these arguments conclude, speakers of the language would never be able fully to acquire or display grasp of meaning. The observable conditions surrounding their discourse, and their own observable behavior, prevent such overly enriched contents from being grasped and assigned to sentences. The acquisition and manifestation arguments, as developed by Dummett, show most clearly the influence of the later WITTGENSTEIN on Dummett's thinking.

ANTIREALISM CONTRASTED WITH QUINEANISM

One way to understand antirealism is to consider how QUINE and the antirealist react to an argument on which they both agree. The argument has three premises and a conclusion that they both reject:

- (1) Meaning is given by truth conditions.
- (2) Meaning is determinate.

- (3) Truth is bivalent.

-
- (4) Grasp of meaning cannot be manifested fully in observable behavior.

Both Quine and the antirealist agree on the first premise. Quine holds that meaning (via translation) is indeterminate, but that truth is bivalent. The antirealist, by contrast, holds that meaning is determinate, but that truth is *not* bivalent.

ANTIREALISM ENJOINS A MOLECULAR, AS OPPOSED TO AN HOLISTIC, THEORY OF MEANING

The antirealist believes in determinate sentential contents. He or she adopts a compositional approach. One familiar ground for this comes from theoretical linguistics, which rightly stresses our recursive, generative or creative capacity to understand new sentences as we encounter them. Another ground is that the opposing holistic view (*see* HOLISM) simply cannot account for language learning. We do, it would appear, master language fragments progressively as learners, and are able to isolate or excise them for theoretical study later on. Meanings of words remain relatively stable under increase of vocabulary and during developments in our ability to produce and understand more complicated utterances. These considerations point to a compositional approach.

ANTIREALISM IS CONCERNED WITH NORMATIVITY

As we have just seen, the antirealist maintains determinacy of meaning. Precision about contents brings with it commitment to normative connections among them: their justification conditions and their entailments. One of the main aims of antirealism is to give an accurate picture of such contents as the speaker or thinker can genuinely grasp or entertain in thought, and convey in language. This means that antirealism has to have some answer to skeptical problems about the objectivity of rule following. For it is only by conforming to, or keeping faith

with, rules for the use of expressions that the speaker can claim to have mastered their meanings.

ANTIREALISM FAVORS REFORMISM RATHER THAN QUIETISM

In particular, the antirealist critique of genuinely graspable meanings can be brought to bear on the meanings of the *logical* expressions of our language: the connectives and the quantifiers. The observable conditions of their use (especially in mathematics) concern the discovery, construction, presentation and appraisal of *proofs*. Central features of the use of logical expressions – in particular, their introduction rules – serve to fix their meanings. Other features need to be justified as flowing from the central features. We can justify the elimination rules, because these are in a certain sense in balance or harmony with the introduction rules. But on this model of meanings and how one comes to grasp them, there does not appear to be any justification for the strictly classical rules of reasoning, especially as they concern negation. There does not appear to be any justification for the Law of Excluded Middle (either *a* or not-*a*) or for the Law of Double Negation Elimination (from not-not-*a* infer *a*) or any of their equivalents. Thus the antirealist response has been to favor logical reform: crucially, to drop the strictly classical negation rules and opt for *intuitionistic* logic. Thus intuitionism is the main form of mathematical antirealism (see INTUITIONISM IN LOGIC AND MATHEMATICS). When the antirealist generalizes from the mathematical case, with its conditions of constructive proof, he or she looks for appropriate *conditions of warranted assertability*.

THE CHALLENGE OF AN ANTIREALIST ACCOUNT OF EMPIRICAL DISCOURSE

In moving to empirical discourse, and especially statements about other minds, one has to attend closely to the *criteria* in accordance with which one ventures any

informative claim. Here the situation is very different from mathematics. For in mathematics, once a statement is proved it remains proved. In empirical discourse, however, statements are *defeasible*. That is, they can be justified on a certain amount of evidence; but may have to be retracted *or even denied* on the basis of new evidence accreting upon the old. (A modern way of putting this is to say that they are governed by a *non-monotonic* logic.) There is also the familiar problem from the philosophy of science, that no general claim about natural kinds (see NATURAL KIND) can ever conclusively be proved. At best, such claims can be conclusively *refuted*; but no amount of humanly accessible evidence can entail them. The combination of *defeasibility* with this familiar asymmetry between proof and refutation makes particularly problematic the provision of a satisfactory antirealist account of meaning for empirical discourse.

ANTIREALISM TENDS TO BE PIECEMEAL, RATHER THAN GLOBAL

Most writers on antirealism try to explore its strengths and weaknesses on particular *areas of discourse*: mathematics, statements about other minds, statements about the past, counterfactual statements (see COUNTERFACTUALS), and so on. In each area one looks critically at the observational basis on which one can acquire grasp of meaning. One examines the criterial structure governing how speakers venture, and are taken at, their words. One tries (if necessary) to deflate any overly realistic classical conception of how, in response to each such area of discourse, a mind-independent region of reality might inaccessibly yet determinately be. The realist sometimes complains that the antirealist is guilty of *epistemic* hubris in taking the human mind to be the measure of reality. The antirealist responds by charging the realist with *semantic* hubris in claiming to grasp such propositional contents as could be determinately truth-valued independently of our means of coming to know what those truth values are.

ANTIREALISM IS NOT A CRUDE
FORM OF VERIFICATIONISM

There was an old principle of the logical positivists (see LOGICAL POSITIVISM) which, over the years, fell into deserved disrepute. This was the verificationist principle that every meaningful declarative sentence was, in principle, decidable. That is, in grasping its meaning a speaker would have recourse to a method which, if applied correctly, would within a finite time yield the correct verdict as to the truth or falsity of the sentence. Despite its emphasis on assertibility conditions, antirealism lays claim to no such principle.

 ANTIREALISM STRESSES
COMPOSITIONALLY

Antirealism stresses, instead of the positivists' naive decidability principle, various *canonical* ways of establishing statements with prominent occurrences of expressions whose antirealistically licit meaning is at issue. (An example of this would be dominant occurrences of logical operators, in the context of their introduction rules.) Various such expressions could then be combined into a sentence which is meaningful but which the antirealistic need not claim is decidable. The sentence will be meaningful by virtue of the way those expressions are combined within it, and by virtue of their central meanings *as conferred by those special contexts*. It is at this point that modern antirealism is crucially influenced by the contribution of FREGE to logical semantics.

 SUMMARY OF MAIN FEATURES OF
THE ANTIREALIST POSITION

- (1) refusal to accept the principle of bivalence;
- (2) behaviorist emphasis on the epistemology of linguistic understanding; acquisition and manifestation arguments;
- (3) confidence in the determinacy of sentence meaning, leading to a molecular as opposed to an holistic theory of meaning;

- (4) stress on the compositionality of meaning, thereby allowing meaningful though undecidable sentences;
- (5) advocacy of some kind of logical reform, making one's logic more intuitionistic or constructive;
- (6) a generally naturalistic metaphysical outlook, and a quietist demurrer from extreme skeptical misgivings or theses in epistemology.

 MAIN ALLEGED WEAKNESSES IN
THE ANTIREALIST POSITION

- (1) Alleged failure to do justice to the intuition that the world is robustly independent of human cognitive faculties;
- (2) alleged failure to appreciate the strength of independent arguments to the effect that translation is indeterminate, that there can be no firm analytic/synthetic distinction, that meaning (such as it is) is graspable at best only holistically;
- (3) alleged failure to appreciate that, in so far as meaning is determined (by the antirealist's own lights) by the *use* we make of our expressions, we should accordingly accept classical rules of inference (such as Double Negation Elimination) as justified by the very use we make of them;
- (4) alleged instability in the antirealist's own argumentative strategy: why stop at intuitionism, for example? Why not go all the way to strict finitism? Why treat of decidability *in principle* rather than *feasible* decidability?
- (5) alleged failure to understand the semantic contribution of the negation operator in embedded contexts;
- (6) alleged failure to appreciate that there are, even within the constraints set by the antirealist, resources enough to secure the realist's grasp of verification-transcendent propositional contents;
- (7) alleged failure to appreciate that the semantic issue of logical reform is independent of the metaphysical and epistemological issues at the heart of antirealism.

WRITINGS IN THE MODERN REALISM
VS. ANTIREALISM DEBATE

Michael Dummett put forward his classic challenge to the principle of bivalence in his essay "Truth". His defense of intuitionistic logic as the correct logic on an antirealist construal of mathematics was given in his essay "The philosophical basis of intuitionistic logic". This treatment was amplified in the chapter on philosophical reflections in his book *The Elements of Intuitionism* (1977). He explored the implications of antirealism for statements about the past in his essay "The Reality of the Past". Dummett's essays are collected in his book *Truth and Other Enigmas* (1978).

Dag Prawitz has provided an excellent exposition and amplification of Dummett's line of argument in his paper "Meaning and Proofs: On the Conflict Between Classical and Intuitionistic Logic" (1977). Crispin Wright has written widely on antirealism in mathematics, on statements about the past and on statements about other minds. He has also treated the problems of criteria, defeasibility and the objectivity of rule following. See his book *Wittgenstein on the Foundations of Mathematics* (1980), and his collection of essays *Realism, Meaning and Truth* (1986). Neil Tennant, in his book *Anti-Realism and Logic* (1987), has extended the antirealist critique and the logical reform it arguably entails in favor of the system of intuitionistic relevant logic. He also explores antirealism as a consequence of naturalized epistemology. John McDowell has pursued subtle variations on realistic and antirealistic themes in his essays "Anti-Realism and the Epistemology of Understanding" (1981), and "Truth Conditions, Verificationism and Bivalence" (1970).

Opposition by the realists has been led most notably by Peter Strawson (1976), Christopher Peacocke (1986) and J.J.C. Smart (1986). Saul Kripke gave great impetus to the debate about the objectivity of rule following with the publication of his provocative monograph *Wittgenstein on Rules and Private Language* (1982). Kripke adopts an antirealistic construal of content-attribution statements in his "sceptical solution".

See also REALISM; the extended essay on REALISM AND ANTIREALISM ABOUT ABSTRACT ENTITIES.

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NEIL TENNANT

antirealism about abstract entities

see the extended essay on REALISM AND ANTIREALISM ABOUT ABSTRACT ENTITIES

aporia An apory is a small set of individually plausible but jointly inconsistent propositions. Aporia gained initial popularity

from CHISHOLM's demonstration of how they help to motivate and structure philosophical issues. For instance, he regiments the problem of ethical knowledge with a set containing the following three members:

- (1) We have knowledge of certain ethical facts.
- (2) Experience and reason do not yield such knowledge.
- (3) There is no source of knowledge other than experience and reason.

To avoid inconsistency, thinkers need to reject at least one member of the set. Thus the skeptic denies (1), the naturalist rejects (2), while the intuitionist argues against (3). The aporetic cluster provides each position with a ready-made argument. For the negation of any member of the set is the conclusion of an argument containing the remaining members as premises. Since members of the original set are jointly inconsistent, the argument will be valid. And since the members are individually plausible, the audience will also find each premise of the argument persuasive.

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appearance/reality Nothing is more commonplace than the remark that things are not always what they seem. We all know that a thing can appear to be some way and yet be really quite otherwise. Unlike some other distinctions philosophers are enamored of, the distinction between appearance and reality is firmly rooted in everyday experience and discourse. It is not surprising, then, that it has, since the dawn of philosophy, served to structure debates about what there is to know and how, if at all, it can be known.

When Socrates objected to the relativism of the Sophists, with its ugly moral consequences, it was their refusal to allow that there could be a gap between "*x* appears

to be *F*" and "*x* is *F*" that he had to show to be untenable. When DESCARTES, and after him, most thinkers of the modern era, struggled with the skeptic's challenge, the threat posed by that challenge was the possibility that that same gap was too great, that no reliable evidence about reality was ever furnished by what appeared in experience. In part inspired by that challenge, one empiricist strain (see EMPIRICISM), strangely echoed in a late flowering of RATIONALISM, concludes that what appears to the well-functioning mind (in perception or in reasoning) is, and must be, the real, and it must be just as it appears. Found in both BERKELEY'S and HEGEL'S form of IDEALISM, this maneuver closes the gap the Sophists had ruled out, but does so from the opposite side. Where the Sophist insists that whatever appears must be real the idealist argues that only what is real can appear. For both, the real must be just as it appears to be; either way, the commonsense distinction is rendered philosophically moot (and needs to be explained, or explained away, in complicated and, to some, implausible, ways).

In both its everyday and its philosophical versions, the appearance/reality distinction must be seen as a completely general one. While its most obvious illustrations involve sense perception, it extends naturally to all dimensions of thought and experience. It may seem to someone that two and two add up to five. Arguably, it may just seem to one that one desires or fears something. Hence it is a mistake to draw the distinction by identifying one side with one metaphysical category and the other with another, for example, the real with the material and appearances with the mental.

What, then, is at the heart of the commonsense distinction, and what, if anything, is philosophically interesting about it?

I mentioned the perennial skeptical worry about whether appearances can tell us whether there are things other than appearances and, if so, what they are like. Skepticism is an epistemological position. But the very idea that there *is* a way things are, whether or not one can know what that way is, expresses a metaphysical belief, usually labeled REALISM. Thus skepticism

itself involves a metaphysical component. What account can we give of the appearance/reality distinction that does justice to both these components? Here is where the notion of evidence can provide the needed general framework.

An appearance is always an appearance to someone, just as a piece of evidence is always evidence for someone. The former notion, in fact, represents a special case of the latter. But the concept of evidence also involves the thought of something for which the evidence is evidence. Thought of in this way, so does the idea of an appearance, as the appearance of something. Even KANT, who insists on the "empirical" reality of what he calls "appearances", arguably sometimes treats them as representing, albeit in a special and highly problematical sense, a "transcendent" reality (see NOUMENAL/PHENOMENAL). It is a conceptual truth that even the best evidence must fall short of certainty (else it would not be evidence for something other than itself). In the same way, the very concept of an appearance requires it to be distinct from that of which it is an appearance. This is why the idealist attempt to identify reality with appearances, no matter how the latter are idealized, is a mistake. It involves a non-evidential, hence a non-epistemic, conception of appearances; in doing so, it loses contact with the point of the commonsense distinction out of which the philosophical one grows.

What makes the appearance/reality distinction both important and slippery is that it straddles the division between epistemology and metaphysics. Other well-worn philosophical distinctions are either internal to one or another of the traditional divisions of the subject (particular/universal, necessary/contingent, a priori/a posteriori, or CONCRETE/ABSTRACT) or indifferent to them (EXTRINSIC/INTRINSIC, specific/general, objective/subjective). Thinking of the appearance/reality distinction in the evidential way as suggested here can save us from mistaking it for a metaphysical one, one between two different kinds of entity. There may be good reasons for thinking that there are appearances, as opposed to just the various ways the things there are appear. But

there are dangers in this reification of them (see HYPOSTASIS, REIFICATION). First, it can lead to intractable metaphysical problems that are in fact avoidable. Second, it misleads us as to the true nature of the distinction between appearance and reality. Only when understood as involving the relation between epistemological and ontological concepts can it both retain the intuitive content of the commonsense distinction and yield a general philosophical problem that is not the artefact of some special metaphysical doctrine.

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Aquinas, St. Thomas (1224/5–74) The philosophy of St. Thomas Aquinas was strongly influenced by ARISTOTLE and by the Islamic philosophers AVICENNA and AVERROES, whose works became available in Latin translations at the beginning of the thirteenth century. But Aquinas's metaphysical thought contains a number of elements that are not to be found in his leading sources.

THE SUBJECT MATTER OF METAPHYSICS

Aristotle's divergent statements on the nature of first philosophy led to an intensive discussion of the subject matter of metaphysics among medieval thinkers. In *Metaphysics* iv c.1 (1003a21–32), Aristotle speaks of a science which studies being as being and opposes it to other sciences which investigate beings from a particular point of view, for instance, in so far as they are mobile. The science of being as being, by contrast, is universal. But in Book vi c.1 (1026a23–32),

Aristotle distinguishes three theoretical sciences – physics, mathematics and the “divine science” – and calls theology the first science, because it is concerned with immobile and immaterial beings. The medieval discussion is focused on the question how Aristotle’s theological conception of first philosophy is related to the conception of metaphysics as the universal science of being (see Zimmermann, 1965).

In the prologue to his *Commentary on the Metaphysics*, Aquinas argues that metaphysics is concerned with both being as being and the immaterial substances, although not in the same way. He develops his synthesis with the help of the logician Aristotle, for Aquinas’s argument is based on the theory of science in the *Posterior Analytics*. The unity of a science consists in the unity of its subject (*subjectum*). What is sought in every science are the proper causes of its subject. Now the immaterial substances are the universal causes of being. Therefore, being in general (*ens commune*) and the properties belonging to it are the subject of metaphysics. God is studied in this science only in so far as he is the cause of the subject of metaphysics, that is, in so far as he is the cause of being as such. God is not the subject, but rather the end of metaphysical investigation. By this feature metaphysics is distinguished from Christian theology (“the theology of sacred scripture”), for the subject matter of this science is God himself (cf. *Summa theologiae* 1.1.7).

From this account it appears that Aquinas does not adopt the theological conception of metaphysics that was prevalent among the Greek commentators on Aristotle. According to them first philosophy is the science of the most eminent being, the divine being. Aquinas’s view is ontological: metaphysics is the *scientia communis*, for its subject matter is being in general.

THE DOCTRINE OF THE TRANSCENDENTALS

Against the background of Aquinas’s ontological conception of metaphysics, the significance of a doctrine that was developed in the thirteenth century, the doctrine of

the transcendentals, becomes understandable, for *transcendentia* are the universal properties of being as such (see Aertsen, 1988). The term “transcendental” suggests a kind of surpassing or going beyond. What is transcended is the special modes of being which Aristotle called “the CATEGORIES”. While for the latter the categories are the most general genera of being, Aquinas considers them as special modes of being, as contractions of that which is: not every being is a SUBSTANCE, or a quantity, or a quality, or a relation, etc. By contrast, the transcendentals express general modes of being. They transcend the categories, not because they refer to a reality beyond the categories but because they are not limited to one determinate category. Unlike the categories, the transcendentals do not exclude each other, but are interchangeable or convertible (*convertibilis*) with being and each other.

In *De veritate* 1.1, Aquinas presents his most complete account of the transcendentals, of which the most important are being, one, true and good. Being is the first transcendental. The other transcendentals, although convertible with being, add conceptually something to being, in the sense that they express a mode of it which is not yet made explicit by the term “being” itself. The general mode of being expressed by “one” pertains to every being in itself (*in se*); “one” adds to being a negation, for it signifies that being is undivided. “True” and “good” are relational transcendentals: they express the conformity (*convenientia*) of every being to something else. The condition for this relation is something whose nature it is to accord with every being. Such is, Aquinas argues, the human SOUL, which according to Aristotle (*De anima* iii c.8, 431b21) “is in a sense all things”. In the soul there is both a cognitive power and an appetitive power. The conformity to the appetite or will is expressed by the term “good”, the conformity to the intellect by the term “true”. Truth as transcendental signifies the intelligibility of things.

Aquinas’s innovation in the doctrine of the transcendentals is the correlation he introduces between the human soul and being. He understands the transcendentals true and

good in relation to the faculties of a spiritual substance. This understanding means an acknowledgment of the special place human being has among other beings in the world. A human being is marked by a transcendental openness; its object is being in general. This openness is the condition of the possibility of metaphysics.

The doctrine of the transcendentals plays a central role in Aquinas's metaphysics. It integrates the theory of knowledge ("truth") into an ontology and it provides the foundation for the first principle of morality: "good is to be done and pursued, and evil avoided" (*Summa theologiae* I-II.94.2). The doctrine is also fundamental for philosophical theology. Within the framework of a reflection on the divine names "Being", "Unity", "Truth" and "Good" Aquinas discusses the relation between the transcendentals and God. Because the transcendentals are self-evidently knowable, and because they do not express a limited, categorical mode of being, they are seen as providing the basis for the possibility of rational knowledge of God.

THE HISTORY OF THE QUESTION OF BEING

In *Summa theologiae* 1.44.2, Aquinas sketches the history of philosophical reflection about the origin of being. This text can be regarded as the medieval origin of the question "Why is there something and not rather nothing?" Three main phases can be distinguished in the progression of philosophy as Aquinas sees it.

The first step was taken by the PRESOCRATICS. They held that MATTER is the "substance" of things and that all forms are accidents. They posited one or more substrata (water, fire, etc.) which they regarded as the ungenerated and indestructible principle of all things. To the extent to which they acknowledged CHANCE in the SUBSTRATUM, it consisted only in "alteration", a change of its accidental forms (see MATTER/FORM).

The second stage in the progress of philosophy was reached when philosophers made a distinction between "matter" and "substantial form". They posited a prime matter

that is purely potential and is brought into actuality through a form. Aquinas regards it as one of Aristotle's great merits that with his doctrine of the potentiality of matter he made it possible to acknowledge a substantial change, or "generation".

Aquinas emphasizes, however, that the final step had not yet been taken, for the generation, too, presupposes something, in keeping with a common supposition of Greek thought: "nothing comes from nothing" (*ex nihilo nihil fit*). The philosophers of the first and second phases considered the origin of being under some particular aspect, namely, either as "this" being or as "such" being. As a result, the causes to which they attributed the becoming of things were particular. Their causality is restricted to one category of being: accident (as in the first place), or substance (as in the second).

The third phase began when "some thinkers raised themselves to the consideration of being as being". In this metaphysical analysis they assigned a cause to things not only in so far as they are "such" (by accidental forms) and "these" (by substantial forms), but also as considered according to all that belongs to their *being*. The origin considered by the metaphysician is transcendental, it concerns being as such, not merely being as analyzed into natural categories. The procession of all being from the universal cause is not a generation, because it no longer presupposes anything in that which is caused. It is creation *ex nihilo*.

A striking feature of Aquinas's view of the progress of philosophy is that the idea of creation appears as the result of the internal development of human thought, independent of revelation. In the context of the idea of creation Aquinas elaborates two central ideas of his metaphysics: the composition of essence and existence in created things, and the doctrine of participation.

THE COMPOSITION OF ESSENCE AND EXISTENCE – PARTICIPATION

The distinction between essence and existence (*esse*) was introduced by Islamic thinkers in order to explain the contingent character of caused beings (see ESSENCE/ACCIDENT).

Existence does not belong to the essence of what is caused, for it has received its being from something else. The relation between essence and existence was interpreted by Avicenna according to the model of substance and accident: *esse* is an accident superadded to essence.

Aquinas teaches the real composition of essence and existence in all creatures already in one of his earliest works, *De ente et essentia*. In chapter 4 he discusses the essence of the “separated substances” or spiritual creatures. This issue engaged Aquinas a great deal – he even devoted a particular treatise to it. *De substantiis separatis* – for it concerns the ontological structure of finite substances. This structure cannot consist in the composition of form and matter, since spiritual substances are “separated” from matter. Yet although such substances are pure forms, they do not have complete simplicity. All creatures are composed of essence and existence, because they have their *esse* not of themselves, but from God.

According to Aquinas, however, existence is not an accident superadded to essence. Existence and essence are related to each other as act to potency. He extends the notions of act and potency, which were correlative with the notions of form and matter in Aristotle, to being as such. In a famous text in his *De potentia* (7.2 ad. 9), Aquinas states: “That which I call *esse* is the actuality (*actualitas*) of all acts, and for this reason it is the perfection of all perfections.” For Aquinas to be is not a bare fact, but the ultimate act through which a thing achieves its perfection. “Every excellence of any thing belongs to it according to its *esse*. For man would have no excellence as a result of his wisdom unless through it he *were* wise” (*Summa contra Gentiles* 1.28). It was Gilson (1949) in particular, who has emphasized the existential character of Aquinas’s metaphysics against the dominant “essentialist” tradition in modern philosophy.

Closely connected with the distinction of essence and existence in created things is Aquinas’s doctrine of participation. No finite being is its *esse*, but has it. Only in God are essence and existence identical: he is essentially Being. All other things participate in

being. One of the most significant innovations in Thomistic scholarship since the Second World War has been the discovery of the “Platonist” Thomas (see PLATO, PLATONISM). Pioneering studies were the works of Fabro (1961) and Geiger (1942), which showed the central role of the Platonic notion of participation in Aquinas’s metaphysics, a notion that was sharply criticized by Aristotle. Aquinas interprets the idea of creation philosophically in terms of participation. The relation of creatures to the first cause is the relation of participation in being.

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archetype From the Greek *ἀρχέτυπον*, a pattern or model. The word is applied to the reality – whether in the mind of God in nature itself, or in a third, abstract realm – to which a conception is referred. Archetypes sometimes play a causal role in originating those conceptions; their reference or truth is then assured (or at the very least argued for) by their causal ancestry. The Greek word was applied by Platonists (though not by PLATO himself, who spoke instead of *παραδείγματα*) to the forms (see PLATONISM). Later Platonists placed these forms or archetypes in the mind of God. Philosophers of the seventeenth and eighteenth centuries conceived of them more broadly. DESCARTES described the external cause of an idea as “like an archetype”. LOCKE applied the word to the things the mind “intends [its ideas] to stand for, and to which it refers them”. BERKELEY applied the word, with some reluctance, to ideas in the mind of God, which were, he argued, no less serviceable as archetypes than the corporeal substances of the materialists.

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Aristotle (384–322 BC) Greek philosopher born in Stagira. Aristotle’s writings can be said to have set the agenda for the western tradition in metaphysics. Indeed, “metaphysics” is a term derived from a first century BC edition of Aristotle’s work, in which a collection of his writings was put together under the title *Ta Meta ta Phusika*, which means simply “What comes after the writings on nature” (*ta phusika*). Since the writings thus put together concerned topics that seemed in certain ways related – substance and being, change and explanation, unity and plurality, potentiality and actuality, non-contradiction, the nature of the eternal and unchanging – these topics were subsequently taken to be the subject matter of “metaphysics”, which increasingly became a separate department of philosophy. But Aristotle himself did not group these topics together. He does have a conception of “the study of being *qua* being” – the study of what is true of all things that are, as such – that links some of the contents of the *Metaphysics*. But there is dispute about what that study is, and how much of the work it includes. Nor are Aristotle’s inquiries into the topics we now call metaphysical confined to the work called *Metaphysics*. There is an especially close link between that work and his inquiries into natural change and explanation.

SUBSTANCE, CHANGE AND IDENTITY

Aristotle once remarked that the central concern of previous philosophers, when they asked questions about what “being” is, was really, at bottom, a question about what substance is. (The term we translate “substance” is *ousia*, a verbal noun formed from the participle of the verb “to be”.) “For it is this,” he continues, “that some claim to be one in number, some more than one, and some limited, others unlimited.” He himself devotes much effort to the task of finding an adequate account of “substance”, and on defending the priority of substance to other items such as qualities and materials. It is not, however, intuitively obvious what Aristotle means by the question, “What is substance?”, all the more since the term

ousia is primarily an Aristotelian term, with no clear history. We must search in his arguments and examples for an understanding of his motivation and goal: to what real puzzles does such a search respond?

As Aristotle characterizes earlier inquiries into substance, they focus on two questions, rather closely related: (1) a question about the explanation of change; and (2) a question about identity. We observe many changes in the world around us, such as the cycle of the seasons, the birth, growth and death of living creatures. Early Greek mythology explained these changes by invoking the capricious will of anthropomorphic beings; early philosophers, instead, looked for law-like explanations. In the process, they had to ask themselves, first, what sorts of entities are relatively stable and persisting, the things to which changes happen and in terms of whose underlying stability change could be coherently explained. (Plato had cogently argued that coherent talk about change presupposes at least some stability: for a change has to be the change of something, and that thing cannot at the same time be ceasing to be the thing it is, or we will not be able to say anything about it.) The search for substance is, in part, a search for these most basic persisting entities (*see* the extended essay on PERSISTENCE), which Aristotle calls “substrata” or “subjects” (two different translations of his Greek term *hupokeimenon*, literally “that which underlies”).

The second question is what Aristotle calls the “What is it?” question. It may be illustrated by countless common examples. Suppose I am considering some particular thing in my experience, say, Socrates. I have a sense that, in order to pursue my curiosity about this thing further, I must have some answer to the question, “What is this?” I want to know what it is about this thing that makes it the thing it is, what enables me to single it out as a distinct particular and mark it off from its surroundings, to reidentify it later as the same thing I encountered earlier. But to know this I need, it seems, to separate the attributes of the thing into two groups: properties (such as a sun-tan, or knowledge of history) that may come to be present, or depart, without affecting

Socrates’ persistence as the same entity, and properties (such as, perhaps, the ability to metabolize food, or the ability to think and choose) whose presence is constitutive of the individual’s identity, whose departure would mean the end of an individual. The identity question has a special urgency where living creatures are concerned, since it is connected with complicated ethical and political issues, for example, the determination of death and the moral status of the foetus. Thus Aristotle holds that a creature dies whenever it loses one of the properties in the second group (the “essential” properties); and he holds that the foetus at an early stage of life is not a human being, and does not exhibit identity with the human being that may in due course come to be, since it does not yet have all the essential properties of the human being.

In one way, these two questions seem to point in opposite directions, identifying different things as “the substance” of a thing. For the question about persistence through change might lead us to hold that material stuffs are the basic substances of the things they compose, seeing that these stuffs (for example, the materials that make up the body of Socrates) pre-exist the birth of Socrates and post-date his death. On the other hand, for this very reason they do not give the answer to questions about necessary and sufficient conditions for Socrates’ identity. We are inclined, there, to look in the direction of the structure characteristic of Socrates’ species, his human make-up and functioning. For it seems that it is the disruption of those modes of organization that spells the end of his existence.

On the other hand, looked at in another way the two questions seem to be closely intertwined. An adequate theory of change must single out, as its substrates, things that are not only relatively enduring, but also definite and distinct. Unless we can individuate an item from its surroundings and say something about what it is, it will be difficult to make it the cornerstone of an explanatory enterprise. And a good answer to the “What is it?” question, asked about a particular such as Socrates, must tell us, among other things, what changes Socrates

can endure (as a substrate) and still remain one and the same.

As Aristotle sees it, his predecessors went wrong because they pursued one prong of the substance inquiry to the neglect or distortion of the other. Early natural scientists, seeing that material stuffs were the most persisting things around, surviving the deaths of humans and animals, held that these were the real substance of things and the best answer to the “What is it?” question, when asked about particular substances. What Socrates really is, is the materials that compose him. This leads to paradoxical conclusions: no substance ever perishes, and substances continue to exist although their parts are widely dispersed in space and time. Above all, this view fails to capture a distinction that is fundamental in our discourse and practices, namely the distinction between property change (*alloiosis*) and real coming-into-being and going-out-of-being (*genesis* and *phthora*), between Socrates getting a sun-tan and the death of Socrates.

Platonists (see PLATONISM), on the other hand, focus on the identity question, and on the UNIVERSALS that are, as they see it, the best answer to that question. Each aspect of Socrates is explained by his “participation” in some universal “form”, such as the form of Justice, which is imagined as existing apart from particulars and as explaining the possession of that property in all the particulars that have it. Aristotle finds fault with this emphasis on the universal, because it fails to come to grips with the material changing character of the individual substance. Nor, in its Platonic form at least, does this approach even succeed in separating universals such as the Human, which must be true of Socrates as long as he exists, from universals such as the White, which he might lose (getting a suntan) while still remaining the same individual.

In his early work, the *Categories*, Aristotle focuses on two tasks: demarcating the role of particulars and universals in answering “What is it?” questions about things, and defending the central role of natural-kind concepts in answering both change and identity questions. The famous enumeration

of ten “categories” or (literally) “predications” is an attempt to enumerate different ways we might characterize a particular in our experience: we might speak about its substantial nature, its quantity, its qualit(ies), its relation(s), its place, time, position, state, activity, passivity. At the same time, Aristotle also introduces a four-fold distinction of “things that are”, separating (1) universals in the substance category, called Secondary Substance – e.g., human being, horse; (2) particulars in non-substance categories, such as this item of knowledge, this instance of pink color; (3) universals in non-substance categories, such as knowledge, color; (4) particulars in substance categories, called Primary Substance, e.g., this human being, this horse. The motivation for these distinctions emerges when Aristotle explains the fundamental classifying role of natural-kind universals. His point is that we do not pick things out and trace them through time as bare unclassified matter; fundamental to our practices of identifying and explaining is the ability to say to what kind the thing belongs. (His later writings give natural kinds a special place here, since artefacts have comparably unclear criteria of identity.) When we point at Socrates and say, “What is it?” we are asking about a particular, and it is that particular thing that exists; classifying universals have no existence apart from particulars. But the universal is of fundamental importance in coming to grips with the particular’s identity – and not just any universal, but the one, “human being”, that gives the kind to which he belongs from birth to death. To answer, “Socrates is a sitting thing”, or “Socrates is a white thing”, is a less revealing answer, parasitic on our ability already to pick out Socrates as a human being. In short: the category of substance, which includes the natural-kind universals and the particulars that fall under them, has priority over the other categories in both explaining and identifying. Within this category, particulars in a sense take priority, as the most basic substrates of change; but they get their identity from the universal under which they fall.

FORM AND MATTER

So far, Aristotle has said nothing about the coming-to-be and passing-away of substances. Nor has he spoken about the matter that composes them. To these tasks he turns in *Physics* i 7–9 and in *Metaphysics* vii. He acknowledges that living substances are essentially enmattered structures: they cannot continue as the things they are without suitable matter to make them up and perform their life-activities. On the other hand, he insists that matter all by itself cannot give us the identity of a particular: for it is a mere “lump” or “heap” without the form or structure that it constitutes. Nor, indeed, despite matter’s purported claim to be the substrate *par excellence*, does matter even turn out to be as continuous as form, with respect to the individual species member: for the matter that composes Socrates is changing continually, as he eats and excretes, while he himself remains one and the same.

Looking more closely into the question of what does provide Socrates with his identity over time, Aristotle’s answer is that this is his “essence”, and that this essence is a particular instance of characteristic species organization or “form” (see HYLOMORPHISM), not different in kind from that of other species members, but a countably different instance, tracing a distinct career through time and space. (There are many different interpretations of Aristotle’s final position on the contribution of the universal and the particular in identity, but this one has broad support.)

In later books of the *Metaphysics* Aristotle investigates the role of form in making a thing a unity, providing still further arguments against thinking of material stuffs as what a thing is. Introducing the important ideas of capability or potentiality (*dunamis*) and activity or actuality (*energeia*), he argues for the explanatory priority of a thing’s actual nature to its potentialities. Aristotle here begins to think about matter as a set of potentialities for functioning, which can be explicated only when we have grasped the actual functional structure of the entity that matter composes.

The famous twelfth book of the *Metaphysics* then gives an account of god as an immortal immaterial substance whose entire form is thinking, and whose entire being is actuality rather than potentiality. God imparts movement to the universe by being an object of passionate love to the heavenly bodies, who are themselves imagined to be living thinking beings.

BEING QUA BEING
AND THE BASIC
PRINCIPLES OF THOUGHT

In Book iv of the *Metaphysics*, Aristotle defends the idea of a general study of the attributes of things that are as such, or of “being *qua* being” – an idea that he seemed to attack in some earlier writings as insufficiently attentive to the multiplicity of types of being. Here, by contrast, he argues that the many ways in which we speak of “being” have more than a verbal unity: for all are understood through an inquiry into substance, which is in some sense the basic type of being in our explanation and understanding of the world. Aristotle’s project here has been understood in two very different ways. Some interpreters understand him to be calling for a general study of substances, focusing in particular on living creatures, and for an illumination of properties, of activity and passivity, and so forth, that would be based upon that understanding. Others have understood him to be referring to god as the primary and central substance, a study of which is the focal point for all study of substance. The fact that the relevant texts of the *Metaphysics* derive from different periods in Aristotle’s life and are not edited into their present order by him makes resolution of this question very difficult. One can at least say, however, that in the central books in which Aristotle does in fact investigate the nature of substance (Books vii–ix), there is no discussion of god, and no sign that we need to understand the nature of god before answering questions about form’s relation to matter. The same is true of the *De anima*, where bodiless substance is an anomaly, briefly mentioned, in the work’s systematic

study of the necessary interrelatedness of form and matter (see *HYLOMORPHISM*).

Aristotle then goes on to argue that in any inquiry whatever, a basic role is played by two logical principles: the principle of non-contradiction and the principle of the excluded middle. Formulating Non-Contradiction as the principle that contradictory predicates cannot apply to a single subject at the same time in the same respect, Aristotle argues that this is “the most secure starting point of all”, concerning which “it is impossible to be in error”. Confronting an opponent who claims to doubt the principle (apparently a relativist who holds that if x seems F to observer O , x simply is F , and if x to observer P not to be F , x simply is not F), Aristotle argues that this opponent himself refutes himself, if he utters any coherent sentence, or even any definite word. For any meaningful utterance must, in putting something definite forward, at the same time implicitly rule out something – at the very least, the contradictory of what is put forward. He adds that if the opponent is silent and refuses to say anything definite, he loses this way too: for he is “pretty much like a vegetable”, and it is “ridiculous to look for words to address to someone who doesn’t use words”. Moreover, even definite action without words reveals a commitment to Non-Contradiction: for when one acts one must have some definite belief about what one is aiming to do, and such beliefs, propositional in form, presuppose a commitment to Non-Contradiction.

METHODOLOGY: APPEARANCES AND UNDERSTANDING

In passages such as the one from *Metaphysics* iv just discussed, Aristotle appears to derive support for what he calls “the most basic principle of all” simply by showing its depth and ubiquity in our discourse and practices. And elsewhere he states that in all inquiries the aim should in fact be, first to “set down the appearances” – by which he seems to mean the record of human experience on the issue – and then, working through the puzzles this record presents, to go on to

“save” as true “the greatest number and the most basic” of those “appearances”. This procedure can be seen at work in many of his inquiries, both in natural science and in ethics.

On the other hand, in the *Posterior Analytics* Aristotle presents an account of the structure of scientific understanding, and the goal of inquiry, that seem, at first, distinctly different. He argues that an inquirer can claim *episteme*, or scientific understanding, only when he has been able to arrange the results of inquiry into a deductive explanatory system, internally consistent and hierarchically ordered, depending on first principles that are true, necessary, basic and explanatory of the other truths of the science in question. By itself this need not conflict with Aristotle’s emphasis elsewhere on sorting out the record of experience: for he is simply adding the point that this sorting-out must be one that yields a systematic grasp and the ability to give explanations. But in *Posterior Analytics* ii 19, Aristotle makes some remarks about the nature of his first principles that seem to go in a different direction: for he holds that, after experience provides us with the material of a science, its first principles must be grasped by a faculty which he calls *nous*. In traditional mediaeval interpretations of Aristotle, this has been understood to be a faculty of intellectual intuition that seizes on first principles a priori, and thus sets the science on an extra-experiential foundation.

Recent interpretations of the passage, however, have pointed out that this is not a plausible way of understanding what is meant by *nous* in Aristotle (or, indeed, in the ordinary vocabulary of cognition from which he derives the term). *Nous* is insight based upon experience; and what Aristotle is saying is that true understanding is not achieved until, in addition to the grasp and use of principles, we gain understanding of the fundamental explanatory role. This is exactly what the person who follows Aristotle’s arguments about Non-Contradiction does derive: so there is no need to see the *Posterior Analytics* as in tension with that passage or others in which the method of philosophy is

understood to involve a systematization of experience.

NATURE AND EXPLANATION

Aristotle's account of explanation, in the second book of his *Physics*, is closely linked to his arguments about substance. He identifies four different types of explanation that are standardly given when we ask the question "Why?" about some entity or event in our experience. (These are often called the "four causes", but it would be better to think of them as the "four because".) First, we often enumerate the material constituents of a thing; but this, Aristotle argues, explains nothing about a thing unless we have already said what sort of thing it is. The second sort of explanation, which cites the thing's form or structure, is in that sense prior to the first. The third sort, which Aristotle calls "the origin of change", and which is often called "efficient cause", corresponds rather closely to our notion of causal explanation: asked why something happened, or why a thing is as it is, we cite some other event or agency that acted in such a way as to produce it.

Finally, Aristotle introduces the explanation "that for the sake of which", often called "teleological explanation" (see TELEOLOGY). Here we say that the reason x happened was for the sake of y , where y is in the future. It is not difficult to understand the relevance of this sort of explanation in the context of intentional human action ("He did this in order to get that"). What is harder to understand is the role Aristotle gives it in explaining the growth and development of living creatures of all sorts, including many (such as plants) that are not, in his view, capable of intentional action. He recommends that we should give accounts of the development of a seed, for example, or of various life processes in a mature plant, by saying that they happen "for the sake of" the form or structure of the plant. Aristotle is at pains to insist that he is not invoking any causal factors external to the nature of the organism in each case. It seems wrong to see any implications of a grand teleology of nature or an argument

from design such as was developed later by the Stoics. Instead, Aristotle's interest is in the plastic and self-maintaining, self-nourishing character of living systems: in a variety of circumstances, they will behave in the way best suited to realize and then maintain their forms and structures. And understanding this will enable us to grasp their doings in a unified way – predicting, for example, that a plant's roots will grow in the direction of the water supply, wherever that happens to be. Teleological explanations do not invoke mysterious notions; they grow from a biologist's observation that organic systems function in integrated and form-preserving ways.

Aristotle's passionate interest in biology animates much of his metaphysical writing. He spent about twenty years of his career doing first-hand biological research, much of it very fine. And his biological writings provide rich insight into metaphysical issues such as the relation of form and matter and the nature of functional explanation. To students who evidently preferred theology to the study of worms and shellfish, he makes a reply that might perhaps serve as an excellent introduction to Aristotle's temperament as metaphysician and philosopher of nature:

We must not enter upon the study of the lesser animals with childish disgust. For in every natural thing there is something wonderful. There is a story which tells how some foreigners once wanted to meet Heraclitus. When they entered, they saw him warming himself in front of the stove. They hesitated; but he told them, "Come in; don't be afraid; there are gods here too."

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Categories, On Interpretation, Physics, De anima (On the Soul), Parts of Animals, Generation of Animals, Metaphysics.

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MARTHA C. NUSSBAUM

Armstrong, David Malet (1926–) Australian philosopher, born in Melbourne and educated at the University of Sydney and Exeter College, Oxford. After Oxford, he spent a brief period teaching at Birkbeck College in the University of London, then seven years at the University of Melbourne. He held John Anderson's chair as Challis Professor of Philosophy in Sydney from 1964 until his retirement at the end of 1991.

Armstrong's work in philosophy ranges over many of the main issues in epistemology and metaphysics, where he has helped to shape philosophy's agenda and terms of debate. Several themes run through it all: it is always concerned to elaborate and defend a philosophy which is ontically economical, synoptic, and compatibly continuous with established results in the natural sciences. Accordingly, he has argued for a NATURALISM which holds all reality to be spatio-temporal, for a materialism (see PHYSICALISM, MATERIALISM) which aims to account for all mental phenomena without appeal beyond the categories of physical being, and for an EMPIRICISM which both vindicates and draws strength from the methods and successes of the natural sciences.

In *Perception and the Physical World* (1961), he confronted then-fashionable phenomenalist tendencies (see PHENOMENALISM) with a direct realism which had no place for sense data or other mentalistic items (see SENSATION). He urged the objections to sense data from their indeterminacy, their hidden features, and the identification problems they face. He began also to develop a realist account of secondary qualities (see QUALITY, PRIMARY/SECONDARY).

A Materialist Theory of the Mind (1968) was the first full-dress presentation of central-state

materialism, which identifies states of mind with states of the central nervous system (see THE MIND/BODY PROBLEM). The theory is as naturalistic as the behaviorism it aspired to supplant, yet much more plausible and scientifically fruitful as a philosophy of mind. Armstrong presents an analysis of mental phenomena in terms of what they are apt to cause, or be caused by, then proceeds to claim that the most likely items to fit those places in the causal networks of human perception, feeling, memory and action are structures, states and processes in the central nervous system. The view is refined in further essays. With hindsight, Armstrong's philosophy of mind counts as a type-type identity theory, a precursor of contemporary FUNCTIONALISM.

During the 1970s, Armstrong turned his attention to the problem of universals. In *Universals and Scientific Realism* (1978) he built a case for an immanent REALISM in which UNIVERSALS, and particulars (see UNIVERSALS AND PARTICULARS) are equally abstractions from states of affairs. The work has three principal themes: first, all the widely accepted varieties of NOMINALISM are deeply implausible. Second, an empiricist naturalism need not, and should not, bear the nominalist burden. Third, to establish the actual existence of any universal calls for a substantive enquiry for which the fundamental sciences alone are equipped.

This scientific realism about universals was promptly put to work in developing a philosophy of the laws which apparently govern the cosmos. *What Is a Law of Nature?* (1983) argues that the regularity theories of law, deriving from HUME, are all fatally flawed (see LAW OF NATURE). It goes on to urge that laws relating particular states of affairs rest on a relation of necessitation holding between the universals involved.

Armstrong's next major project was *A Combinatorial Theory of Possibility* (1989). Here he attempts to build, from a foundation in the thought of WITTGENSTEIN's *Tractatus*, an account of modality in which a spatio-temporal naturalism is upheld. Non-actual possibilities do not exist, nor are they given ersatz treatment. The attempt makes use of the idea of fictive reorderings of strictly

actual cosmic constituents. Here again, Armstrong's doctrine about universals, as abstractions from states of affairs on an equal footing with particulars, stands him in good stead.

See also LOGICAL ATOMISM; the extended essay ON MODALITIES AND POSSIBLE WORLDS.

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KEITH CAMPBELL

Arnauld, Antoine (1612–94) A French Roman Catholic theologian and philosopher. Arnauld was born in Paris into a family associated with Jansenism. Angelique Arnauld, his sister, was abbess of PORT-ROYAL, which became, under her direction, a center of Jansenism. One aspect of Jansenism is adherence to whatever view of the relation of divine grace to human freedom is expressed in *Augustinus*, a work written by Cornelius Jansen and published posthumously in 1640. Numerous Roman Catholics, including various popes, believed that the Jansenist account of grace is incompatible with the Roman Catholic dogma that divine grace can always be resisted by a free agent. Much of Arnauld's theological

writings is devoted to a defense of the Jansenist account of divine grace and the claim that it is consistent with Roman Catholic dogma. Another important segment of Arnauld's theological writings concerns the role of the sacraments in the process of absolution, where Arnauld emphasized the attitude that the penitent must bring to the process if the sacrament is to absolve.

In connection with a school associated with Port-Royal Arnauld wrote or co-wrote three important textbooks that influenced seventeenth-century thought: *Grammaire générale et raisonnée* (1660), *La Logique, ou l'art de penser* (1662) and *Nouveaux éléments de géométrie* (1667).

In his Jansenist phase Arnauld offered and argued in favor of an historical approach to theology on the ground that the essential theological truths could be extracted from the work of the Fathers of the Church and, in particular, at least with respect to matters of divine grace and freedom, from the work of AUGUSTINE. He, therefore, strongly opposed what he took to be the innovative, speculative philosophical theology of LEIBNIZ and MALEBRANCHE. Criticism of Malebranche generated the majority of Arnauld's positive contributions to philosophy.

While Arnauld was a conservative in theology, he believed that scholastic philosophy had been exposed as inadequate by the seventeenth-century scientific revolution and Cartesian mechanics (see DESCARTES). In philosophy, Arnauld regarded himself as a Cartesian, specifically associating himself with Descartes's theses concerning the nature and origin of ideas, the idea of God, the distinction between the soul and the body, and the nature of MATTER. This may seem odd, given Arnauld's famous criticisms of Descartes's *Meditations on First Philosophy*, including a brilliant critique of Descartes's arguments intended to prove that the SOUL and body are distinct substances (see the extended essay on THE MIND/BODY PROBLEM), a critique of one of Descartes's arguments for the existence of God, a query concerning the possibility of avoiding circularity, given Descartes's way of establishing the principle of clear and distinct perception, and a criticism of

Descartes's thesis that nothing occurs in the soul of which it is not conscious. Except for this last thesis, which Arnauld regarded as inessential to Descartes's program, his criticisms were aimed at Descartes's arguments, not the conclusions of those arguments.

Arnauld criticized some of Descartes's doctrines because of their theological implications. The majority of Arnauld's criticisms of Malebranche center on what he viewed as Malebranche's speculative and innovative contributions to theology. But in the process, Arnauld formulated a theory of perception, which he presented as a mere recasting of Descartes's theory, but which, in fact, involves many ideas original to Arnauld. Arnauld's theory of perception is contained in two works aimed at Malebranche: *Des vraies et des fausses idées* (1683) and *Défense de M. Arnauld, contre la réponse au livre des vraies et des fausses idées* (1684). In these works, Arnauld articulated and defended a subtle form of a direct realist position, based on an act theory of ideas, in which ideas are identified with representative acts of the mind rather than objects of the mind that serve as intermediaries between an act of the mind and the external reality thereby represented.

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ROBERT C. SLEIGH, JR.

artefact Any object produced to design by skilled action. Artefacts are continuants, that is, objects persisting in time: an event such as a pianist's performance is itself an action and not the persisting product of one. Artefacts are not exclusively human: consider a beaver's dam, or the cosmos viewed by creationists. But the most elaborate artefacts we know, requiring conscious planning, training and sophisticated forms of representation, are human: levels of culture are even measured by the kinds of artefacts people produce, from stone axes to moon rockets. Artefacts contrast with natural objects: ARISTOTLE considered artefacts, defined by function rather than an autonomous principle of unity and persistence, not to be substances. Mechanistic world views tend to blur this distinction. The identity conditions (see INDIVIDUATION) of artefacts are, however, vaguer and more convention-bound than those of natural objects: the puzzle of the Ship of Theseus notably concerns an artefact.

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PETER SIMONS

associationism Associationism is the attempt to explain mental phenomena through relations among mental contents and representations – particularly relations such as contiguity or simultaneity, resemblance and constant conjunction – that cause them to become associated with one another. Although ARISTOTLE, HOBBS, and SPINOZA, among others, described phenomena

of association, associationism as a psychological program achieved its greatest influence in eighteenth- and nineteenth-century Britain. LOCKE was the first to use the term “association of ideas”, but he used it only to describe a cause of error, in which accidental or logically irrelevant relations among ideas usurp the role of logical relations. BERKELEY put association to more positive and extensive use in *An Essay towards a New Theory of Vision* (1709), arguing that visual perception of distance is the result of an association between certain kinds of visual ideas and certain kinds of non-resembling tactile ideas, an association resulting from their repeated conjunction in past experience. David HUME's cognitive psychology gives a fundamental role to three “principles of association”: contiguity, resemblance and causation, the latter based on “constant conjunction”. Hume uses these relations to explain both the formation of complex ideas from simpler ideas, and the succession of ideas in thought. For Berkeley and Hume, in particular, the association of ideas provided a way of explaining mental phenomena without presupposing intellectual insight into the metaphysical structure of the world. David Hartley (1705–57), a physician and Hume's contemporary, also sought to explain a variety of mental phenomena associationistically, proposing to explain the influence of associative relations through their relation to “vibrations” in the brain. Later associationists included Thomas Brown (1778–1820), James Mill (1773–1836), John Stuart MILL, and Alexander Bain (1818–1903).

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DON GARRETT

atomism Atomism takes the world to be made up of indivisible and imperceptibly small material units. (*Atomos* in Greek means indivisible.) The diverse qualities of perceptible bodies are to be explained by the simple quantitative properties of the atoms composing them. Perceptible changes are to be understood as rearrangements of the underlying atoms. In its origins, atomism was primarily a metaphysical doctrine; it was not, indeed, until the early nineteenth century that the atomic hypothesis was linked tightly enough to the explanation of specific empirical data to count as physical theory in the familiar modern sense.

EARLY ATOMISM

The first atomist doctrines are best understood as a response to the challenge of Parmenides' analysis of change. Parmenides argued that, despite the evidence of our senses, our reason compels us to conclude that change is illusory. Being obviously cannot just come

to be from Non-Being or abruptly cease to be. And where one sort of Being appears to become another sort, the difference must itself count as Being, so that there is no real change. Being is thus ultimately immutable and one. For a "physics", that is, an account of the regularities of perceived change, to be possible, this paradoxical conclusion had to be overcome.

The atomism of Leucippus and Democritus retained something of Parmenides' sharp dichotomy being Being and Non-Being, while modifying it in two fundamental respects. Instead of one Being, there is an infinite multitude of indistinguishable beings, each (like the Parmenidean original) one and immutable. And instead of Non-Being, there is the Void in which atoms can move. The Void is almost Non-Being; indeed, Democritus calls it Nothing. But it is just sufficient to make change possible, though only one kind of change, local motion. Thus all change must (despite appearances) reduce to local motion of entities that themselves must be imperceptibly small since no local motion is actually perceived when, for example, a leaf changes color. Likewise, the manifold qualitative differences between perceptible things must reduce to differences of atomic configuration, size and shape. And since the analysis is a perfectly general one, it must extend to *all* things, to soul, for example, whose atomic constituents presumably are small and round so that they can direct the vital functions of the living body. Atomism in this "pure" form thus entails a strongly reductionist form of materialism. Its appeal is to the coherence of its very general account of change, though there are hints of a more specific sort of warrant also; evaporation and condensation are said to be explained by different degrees of "packing" of atoms, for example.

Though atomism itself was not immediately influential, the atomic metaphor can be found everywhere in the philosophic thinking of Parmenides' successors. One finds hints of it in Empedocles' four elements, in Anaxagoras' seeds, and in PLATO's elemental geometrical shapes. ARISTOTLE proposed an alternative analysis of change in terms of matter, form and privation that countered

Parmenides' doctrine without yielding to the reductionism and lack of teleology that he found so objectionable in the atomist proposal. Yet Aristotle also objected to Anaxagoras' assumption that physical things can be divided without limits. There are, he said, least natural parts. The limits of divisibility depend on the kind of thing being divided.

This suggestion was the occasion for a vast and ingenious elaboration among later Aristotelian commentators of the doctrine of the *minima naturalia*, that is, of the conceptual limits of physical divisibility. AVERROES and his later followers seem to have been the first to present these "least parts" as separately existent, indeed as potentially capable by their intermixing of explaining the qualitative changes we today call chemical. Such Renaissance Aristotelians as Julius Caesar Scaliger (1484–1558) and Agostino Nifo (1473–1538) propounded a doctrine of *minima* which was close to atomism in significant ways, since the *minima* were regarded as real constituents whose manner of union explains the properties of sensible bodies. What separated these philosophers from Democritean atomism was their commitment to matter-form composition, and especially to the role of substantial form in making the product of the union of *minima* into a qualitatively new kind of thing.

TRANSITION

With the seventeenth century the transformation of a philosophic doctrine into a physical theory began. Most of the natural philosophers of the century subscribed to the "corpuscular philosophy". Though it had roots in classical atomism (here the role of GASSENDI in modifying and popularizing the ancient doctrine was important) and in *minima* theory (the main spokesman here being Daniel Sennert (1572–1657)), the more important motivation came from the "new science" of mechanics. If mechanics were to be as all-explanatory as its exponents expected it to be, the primary properties of things had to be those which made things subject to mechanical law: size, shape, mobility, solidity and, perhaps

eventually, mass. Other properties (the "secondary" ones) would then have to be explicable in terms of the primary ones (see QUALITY, PRIMARY/SECONDARY).

This requires explanation in terms of something like atoms. Since, however, the atoms do not have to be strictly indivisible, the term "corpuscle" was preferred. But how were these invisible corpuscles to be known? How, in practice, could their sizes, shapes, and motions explain such a property as yellowness? LOCKE was pessimistic about the prospects of linking the two sorts of properties in a demonstrative science, though he suggested that plausible analogies might yield at least a weak kind of probability.

Meanwhile, chemists were trying to understand chemical combination in corpuscular and quantitative terms. Robert Boyle (1627–91) proposed that the corpuscles constituting the chemical elements could combine to form complex corpuscles that yielded chemical compounds. He conceded that the former might themselves be "primary concretions", composites made up of Democritean atoms. But in practice, these primary concretions could be regarded as basic from the point of view of the chemist because they remained unaltered through chemical change. The problem was how to decide which concretions were primary, how to distinguish element from compound. Boyle could not discover a consistent way to carry this all-important distinction through.

By the end of the century the separation between philosophers and scientists (as the latter would come to be called) was widening. Scientists were convinced of the underlying corpuscular character of the world, but they had no real evidence (as evidence in natural science was coming to be understood) in support of their hypothesis. There was as yet no satisfactory atomic theory.

ATOMIC THEORY

Atomic theory took shape only very gradually, and in two different parts of natural science, in chemistry first and later in the physics of gases. The Newtonian project of organizing chemical research around

short-range laws of force operating between corpuscles proved fruitless (*see* NEWTON). Careful weighing of the products of chemical combination ultimately, in the hands of Antoine Lavoisier (1743–94), yielded the first victory. Aided by the assumption that weight is conserved through chemical change, Lavoisier provided for the first time a reliable way of distinguishing element from compound, enabling him to identify many of the commonest elements. Joseph Louis Proust (1754–1826) proposed that each compound is made up of elements combined in a constant way. But it was John Dalton (1766–1844) in *A New System of Chemical Philosophy* (1808) who drew from the ancient notion of atom the crucial clue. He proposed that the simplest underlying structure that would explain the empirically established laws of definite proportions (a compound contains fixed proportions by weight of its constituents) and of equivalent proportions (the ratio of the weights of *a* and *b* that react with a given amount of *c* is independent of *c*), was an atomic one. Each atom of an element is like any other atom of that element; each element is constituted by a different kind of atom. Compounds are formed by a simple and uniform juxtaposition of elemental atoms in compound particles (molecules). The key to chemical analysis is thus the determination of relative atomic weights.

This turned out to be a more difficult matter than Dalton had anticipated, and the contributions of many other researchers (notable among them Joseph Louis Gay-Lussac (1788–1850), Amedeo Avogadro (1776–1856) and Stanislao Cannizzaro (1826–1910)) were needed before the atomic model of chemical change was established to the satisfaction of chemists generally. The kinetic theory of gases followed in physics; many of the physical properties of gases were shown to be derivable from the hypothesis that gases are made up of vast numbers of molecules in rapid motion. Despite this convergence of chemistry and physics, empiricists like MACH argued that the notable successes of the atomic hypothesis did not warrant belief in the actual existence of atoms and molecules. Atomic theory was

acceptable as a calculational device but no more. The debate was once more philosophical, though numerous scientific issues were also involved. Only after Einstein made use of the molecular hypothesis in 1905–6 to derive in a strikingly detailed way the main parameters of Brownian motion did the critics concede. Not that scientific realism would from henceforward be immune to challenge!

From Democritus to Einstein is a long road, and the atom of modern quantum theory bears little resemblance to the immutable qualityless particle of the first atomists. But the claim that the world around us consists of a swarm of imperceptible entities whose properties can causally explain the properties of that larger world evokes echoes all along that road. The transition from metaphysical doctrine to physical theory has no clearer illustrative example.

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ERNAN MCMULLIN

Augustine of Hippo, St. (354–430) Theologian, born in North Africa. Augustine drew his metaphysics from “the Platonic philosophers, who said that the true God is at once the author of things, the illuminator of truth, and the giver of happiness” (*City of God* 8.5). He knew Latin

versions of PLOTINUS and of his disciple and editor Porphyry (AD c.232–c.303). These pagan Platonists – “Neoplatonists” (see NEOPLATONISM) to us – were the chief instrument of his rescue from Manichean dualism and from Ciceronian skepticism at the time when, as a 31-year-old teacher in Milan, he resumed the Christianity of his childhood and planned the little African philosophical community whose life was to be cut short by his ordination (AD 391) four years later. His philosophical education was Latin, and narrow, enriched during his career as a Christian controversialist only by the Bible.

According to Augustine there are three “natures”, i.e., kinds of SUBSTANCE: corporeal, which are mutable in time and place; spiritual, mutable in time only; and God, immutable (*De Genesi ad litteram* 8.20.39). Souls are not corporeal since they see and judge “similitudes” which are not corporeal; therefore God is not corporeal either (*City of God* 8.5). Among non-corporeal beings are angels and demons, but at most one God since only what is supreme is divine (*De vera religione* 25.46). Everything is from God, since all good things are from God and everything is good (*De natura boni* 3); miracles differ from natural events only in not proceeding “by an ordinary route” (*De Trinitate* 3.6.11). The “perfectly ordinary course of nature” is the regular (and planned) unfolding of causal or seminal reasons (*De Genesi ad litteram* 9.17.32), which date from the creation when God “completed” his work (*ibid.* 6.11.18–19). These reasons do not all necessitate (*ibid.* 6.15.26). At some places Augustine’s conception of God seems to combine the two roles, cause of truth and cause of knowledge, assigned by PLATO to the form of the good: the latter role makes God the only teacher (*De magistro*), illuminator of truths as the sun illuminates visible things (*De libero arbitrio* 2.13.36); the former makes him “truth itself” (*ibid.*).

Following Varro (116–27 BC), Augustine proposed that “the question what a man is is the question whether he is both [a body and a soul], or only a body, or only a soul” (*De moribus ecclesiae catholicae* 4.6). He chose the first answer, but felt forced to conclude that “the way in which spirits adhere to

bodies and become animals is altogether mysterious” (*City of God* 21.10.1).

His celebrated investigation of time in *Confessions* 11 and *City of God* 11–12 meets the pagan challenge against creationism. “Why then?”, with a response developed from Philo Judaeus (c.20 BC–AD c.50) that God made time too; follows Plotinus and anticipates BOETHIUS in a perplexing account of eternity; and wrestles with ARISTOTLE’s puzzle how times can exist, since they are all past, future or durationless (Augustine’s speculative solution, arising from his insight that we measure times by memorizing their length, is that they are affections of the mind).

His various writings on FREE WILL (see the extended essay) provided materials for both parties in the Reformation debates, for example between Erasmus and Luther, which set the scene for modern treatments of the subject. He failed to find a consistent response to the contrary pressures on him, arguing (e.g., in *De correptione et gratia* against the Pelagians) that God’s prevenient grace cannot be resisted, but refusing to repudiate his earlier argument (e.g., in *De libero arbitrio* against the Manichees) that some evils are, and others punish, sins freely committed.

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CHRISTOPHER KIRWAN

Averroes, [Ibn Rushd] (1126–98) Spanish-Islamic philosopher who lived in Cordoba and Seville, a thoroughgoing Aristotelian, wrote commentaries on most of ARISTOTLE's works, but is better known in Islam as the defender of philosophy against the attacks by al-Ghazali (1058–1111), in *The Incoherence of the Philosophers* and as a reconciler of philosophy and religion.

The Aristotelian commentaries were based on excellent translations that gave reliable access to Aristotle without Neoplatonic eyes (see ALFARABI; NEOPLATONISM), and thus played an important role in the Latin and Jewish Aristotelian tradition.

In his *Incoherence of the Incoherence* Averroes takes up Ghazali's attacks on Alfarabi and AVICENNA. To safeguard God's omnipotence Ghazali had rejected their claim of a necessary connection between cause and effect. According to Ghazali, such necessity is not given in observation. All we see is a temporal sequence between, say, fire and cotton burning. God, the only agent, causes the occurrence of fire, the burning of cotton and the coincidence which it becomes our habit to expect.

Against this Averroes argued that to deny cause is to deny knowledge. It is also to deny human agency and the distinction between the voluntary and the involuntary. Further, it violates the view that things have a real nature. Finally, if there is no regularity nor design in creation, we cannot infer a wise Agent.

Resting on Aristotelian grounds, Averroes criticized Avicenna for confusing the logical and metaphysical features of being by making the definitional separation of essence and existence characteristic also of existing things, thus espousing an un-Aristotelian essentialism (see ESSENCE AND ESSENTIALISM). A similar confusion is said to occur with respect of the numerical and the metaphysical

one. (See Shehadi, 1982, pp. 93–111 for a fairer view of Avicenna.)

On the doctrine of creation Averroes argues that creation *ex nihilo* of both world and time does not have Qur'anic support. On the contrary, some verses (11:6, 41:10) suggest that matter and time pre-existed with God, making Aristotle's God consistent with Scripture.

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FADLOU SHEHADI

Avicenna [Ibn Sina] (980–1037) Islamic philosopher. Avicenna was the most systematic and sophisticated, as well as the most influential of Islamic philosophers, although much of his thought is already in ALFARABI.

Being is a primary intuition of the soul. It can be known without the mediation of any other concept, and it cannot be defined without circularity. Even "thing", its coequal in extension, presupposes being and cannot be used in explaining it without circularity. Being is the most general concept; its opposite is the absolute nothing.

On the relation between essence and existence in Avicenna one must distinguish three contexts in which these could be related (see ESSENCE/ACCIDENT; ESSENCE AND ESSENTIALISM). First, the logical, where in any definition, say, of a horse, existence must be excluded from the essence of a horse. Excluded also is any property that is not part of what a horse is, even "universal". For although a horse *qua* essence is universal, i.e., applies to many, being universal is not part of what makes a horse a *horse*.

Second, the metaphysical context: essence and existence are inseparable in individual things. While "existence" and "one" are distinct from the *meaning* of "horse", they are metaphysically part of what makes a horse *this* horse, and are not accidental to it *qua* substance.

Third is the theological context. Following Alfarabi, Avicenna divides beings into the possible in itself, though necessary through another, and the necessary in itself. The existence of the former is contingent and its non-existence possible, while the non-existence of the Necessary Being is impossible. God gives existence to all contingent beings. And while existence is a necessary feature of a thing *qua* substance, it is accidental to it *qua* contingent.

Avicenna reproduces the emanationist scheme of Alfarabi. The soul being an emanation of the Active Intellect turns to this intermediary between humans and God for knowledge and mystical illumination.

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FADLOU SHEHADI

avowals The verb “to avow” has been adopted by many philosophers of mind as the translation of the German verb *äussern*. The usual alternative translations are “to express” or “to utter”.

In WITTGENSTEIN’s later work avowals are the keystone of a new philosophy of mind, founded on the rejection of the Cartesian idea that a person discloses the contents of his mind by identifying inner objects and describing them (see DESCARTES). According to Wittgenstein, an avowal of an intention is not based on a self-examination which parallels the investigation of the world around us: it is only marginally liable to error, and in certain cases is an artificial expression of the intention replacing a natural one (e.g., a raised fist). Each of these three points makes its contribution to the new philosophy of mind, which some of Wittgenstein’s followers have accepted in its entirety and which, perhaps, nobody can totally reject. But the third point may be the most important one, because it shows how language can develop directly out of behavior which antedates it. This makes it possible to explain how we can learn, and communicate with, mentalistic language, which were things that remained mysterious when intentions, feelings, and so on, were treated as private objects. So it prepares the way for a naturalistic, rather than an intellectualist answer to skepticism about other minds.

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DAVID PEARS

Ayer, Alfred Jules (1910–89) British philosopher. Ayer was famous for the attack on metaphysics in his *Language, Truth and Logic* (1936). According to the verification criterion of meaning (see LOGICAL POSITIVISM; PRINCIPLE OF VERIFIABILITY), only analytic or synthetic statements were

meaningful, and synthetic statements were understood to be ultimately verifiable in sense experience. One intention of the verification criterion was to rule out as meaningless the wordy, but empirically uncheckable claims of metaphysicians in the Hegelian tradition. But while the criterion did allow those who held it to dismiss much of HEGEL’s *Science of Logic* (1812–16), say, without the trouble of reading it, it had the not so welcome effect of rendering meaningless such unverifiable statements as “Every event has a cause” or even “For every action, there is an equal and opposite reaction.” Even the proposal Ayer made to treat these statements as heuristic aids to living and to scientific enquiry implicitly admitted their meaningfulness. For reasons outlined in later editions of *Language, Truth and Logic* the verification criterion was dropped by Ayer, and metaphysics, at least in a certain sense, re-admitted to the canon of meaningful discourse.

Ayer remained skeptical to the end of his life concerning the pretensions of some metaphysicians to inform us of any suprasensible reality, or to delineate the most general characteristics of being as such. Nevertheless, in another sense, in much of his philosophy subsequent to *Language, Truth and Logic* he was engaged in metaphysical enquiry. Although the motivation of his philosophy was largely epistemological, concerning the status of our claims to knowledge, many of its conclusions were metaphysical, concerning what there actually is. Indeed, throughout the whole of his philosophical career, Ayer was concerned about the nature of PHYSICAL OBJECTS in particular. There is, in fact, an interesting transition in Ayer’s work from the phenomenalist stance (see PHENOMENALISM) of *Language, Truth and Logic* to the sophisticated REALISM of *The Central Questions of Philosophy* (1976).

Ayer always rejected what he called naive realism. That is to say, he denied that objects are just as they appear. He was further convinced that there was an inference involved in any transition from appearance to object, on the grounds that there is always more involved in assertions about objects

than is available to us in our perceptions. What, then, is the relation between the objects and the perceptions?

Ayer came to reject phenomenalism on the grounds that the percepts that are presented even to the totality of observers are too scanty to answer to our conception of the physical world. He also rejected the causal theory of perception, largely because that theory would render the causes of our perceptions unobservable occupants of an unobservable space. Instead he proposed what he called a construction, in which the subject of experience is initially presented with a mass of sensory data; he then begins to perceive patterns within this data, which tend to cluster in predictable ways. At a certain stage in the process, the clusters or "visuo-tactual continuants" as Ayer calls them are "cut loose from their moorings" and regarded as having an existence quite independent of their being perceived.

Our common-sense view of the world is thus seen as a theory relative to our perceptions; but it is a theory, which once accepted, ontologically downgrades the perceptions on which it was originally based.

It cannot be said that everything about this construction is clear. Ayer denies that he is telling a psychological story about how children actually learn about the physical world, but he insists that "an exercise of the imagination" is required in the passage

from percepts to objects. He also insists that under the dominion of the theory our imagination has led us to, the existence of physical objects becomes a matter of objective fact, and he denies the possibility of any straightforward phenomenalist reduction. At the same time, the suspicion remains that there is a sense in Ayer's story in which sense qualia (*see* SENSE), rather than objects, are the basic stuff of the world. On this point Ayer himself would probably have said – as he did on related issues – that the matter is ultimately undecidable. It is just a matter of decision, based on experiential coherence of any story we tell. If this was indeed his attitude, it would certainly be in a direct line of descent from his earlier repudiation of metaphysics as meaningless.

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