

Relation

INTRODUCTION

LIKE quantity and quality, relation is generally recognized as a basic term or category. But its meaning, like theirs, cannot be defined. Relation is, perhaps, the prototype of an indefinable notion. As Russell points out, it seems to be impossible to make any statement of what relation is without using the notion of relation in doing so.

Any term which is essentially relative seems also to be incapable of definition. Its meaning cannot be stated without referring to its correlative; and since the meaning of the latter reciprocally involves the former as *its* correlative, each member of a pair of correlative terms draws upon the other for its meaning. A part is a part of a whole; a whole, a whole of parts. Similarly, the meaning of parent involves the notion of child, and the meaning of child the notion of parent.

Plato applies this maddening fact about correlative terms to all comparatives that presuppose the correlation of more and less. "Comparatives such as the hotter and the colder," he writes, "are to be ranked in the class of the infinite." They cannot be measured or defined. Terms like 'much' and 'little,' 'great' and 'small' look like quantities, but, according to Aristotle, they are "not quantities, but relatives, for things are not great or small absolutely; they are so called rather as the result of an act of comparison."

Concerning quantities and qualities, the ancients ask how they exist. The alternatives seem to be either that they exist in and of themselves, or that they exist as the attributes of substances such as stones and trees. But with regard to relations, the question seems to be whether they exist rather than how they exist.

The supposition that a relation cannot exist

apart from the terms it relates may be thought to imply that the relation does exist when the terms it relates exist. The ancients, however, do not appear to regard the relation as something having a reality distinguishable from the reality of the correlative terms. It seems to be significant that both Plato and Aristotle discuss relative terms, rather than relations as such. For the most part, they signify relations by using a pair of words which name things standing in a certain relation to one another.

Thus in the *Categories*, Aristotle refers to 'double' and 'half,' 'master' and 'slave,' 'greater' and 'less,' or 'knowledge' and 'object known' as examples of correlative terms. "All relatives," he says, "have a correlative." Sometimes it is necessary to find the precise word, or even to invent the right word, for in order to indicate that a given term is relative, its correlative must be appropriately named. "Concubine," says Locke, "is, no doubt, a relative name, as well as wife; but in languages where this, and like words, have not a correlative term, there people are not so apt to take them to be so, as wanting that evident mark of relations which is between correlatives, which seem to explain one another, and not to be able to exist but together."

When "reciprocity of correlation does not appear to exist," Aristotle suggests that it may be the result of our failure to use words carefully. If we wish to use the term 'rudder' as relative, we cannot call its correlative a 'boat,' for "there are boats which have no rudders." Since there is no existing word, it would be "more accurate," Aristotle thinks, "if we coined some word like 'ruddered' to name the correlative of 'rudder.'" Similarly, in the case of 'slave' as a relative term, its correlative is

not 'man' understood in any sense, but only man understood as 'master.'

The things which are designated by a pair of reciprocally relative terms must, according to Aristotle, coexist. One man cannot be called a master unless another man exists who can be called his slave; something cannot be called larger unless something coexistent with it can be called smaller. Aristotle considers possible exceptions to this principle of the simultaneity or coexistence of correlatives; as, for example, in the case of knowledge and the knowable. It seems possible, he thinks, for the knowable to exist before anyone has actual knowledge of it. But the exception may be due to an improper naming of the correlatives. If the correlative of knowledge is the known rather than the knowable, then knowledge and its object may be said to be necessarily coexistent, for nothing comes to be an object actually known, except simultaneously with someone's coming actually to know it.

THE COEXISTENCE OF things which are correlative to one another still leaves a question concerning the existence of the relation between them. When conceived as an attribute, a quality or a quantity can be said to exist in the thing it somehow modifies. In the language of Aristotle, such accidents *inhere in* substances, and accordingly have reality as long as the substances in which they inhere exist. But a relation does not seem to inhere in a substance. It cannot be the attribute of a single thing. It somehow lies between two things, inhering in neither, for if it belonged to either one alone it could have some reality if that one existed and the other did not. The question, therefore, is whether relations really exist at all, or are only in the mind of him who compares things or considers them relative to one another.

"A sign that the relative is least of all a substance and a real thing," writes Aristotle, "is the fact that it alone has no proper generation or destruction or movement; as in respect of quantity there is increase and diminution, in respect of quality alteration, in respect of place locomotion, in respect of substance simple generation and destruction. In respect to relation there is no proper change; for, without

changing, a thing will be now greater and now less or equal, if that with which it is compared has changed in quantity."

Plotinus also questions the reality of relations. "Has relation—for example, that of right and left, double and half—any actuality? . . . What can be the meaning of correlatives apart from our conception of their juxtaposition? 'Greater' may refer to very different magnitudes; 'different' to all sorts of objects. The comparison is ours; it does not lie in the things themselves." In the case of certain space and time relations he maintains that "right and left are in our conception, nothing of them in the things themselves. Before and after are merely two things; the relation is again of our making."

Yet Plotinus seems unwilling to say that "we do not mean anything by relation, but are victims of words," or that "none of the relations mentioned can exist." Recognizing what he calls "the elusive character of relation," he is willing to affirm the reality of relations "when the actuality of the relationships is derived from no other source than relation itself." He thinks that one quantity may be the double of another, "quite apart from our speech or thought." The fact that one quantity is the double of another is an additional fact about the two quantities over and above all their other properties. "In all the conditions in which we assert relation," Plotinus declares, "the mutual relation exists over and above the objects; we perceive it as already existent; our knowledge is directed upon a thing, there to be known—a clear testimony to the reality of relation."

The problem thus seems to become one of distinguishing between relations which have independent reality and those which exist only in the mind. "Some have said that relation is not a reality but only an idea. But this," Aquinas declares, "is plainly seen to be false from the very fact that things themselves have a mutual order and relation." Not all relations are real, however. "Relations which result in the things understood from the operation of the intellect alone are logical relations only, inasmuch as reason observes them as existing between two understood things." For exam-

ple, "the relation of a thing to itself is not a real relation," for "reason, by apprehending one thing twice, regards it as two; and thus it apprehends a certain relation of a thing to itself . . . The same is true of those relations that follow upon an act of reason, as genus and species, and the like."

Aquinas offers, in contrast, "other relations which are realities with regard to both extremes; as when a relation exists between two things according to some reality that belongs to both. This is clear of all relations consequent upon quantity, great and small, double and half, and the like; for there is quantity in both extremes."

This distinction between real and logical relations seems to be qualified by the intermediate case of a relation which is partly logical and partly real; for, according to Aquinas, "sometimes a relation in one extreme may be a reality, while in the other extreme, it is only an idea. This happens whenever the two extremes are not of one order . . . Since God is outside the whole order of creation and all creatures are ordered to Him, and not conversely, it is manifest that creatures are really related to God Himself; whereas in God there is no real relation to creatures, but a relation only in idea, inasmuch as creatures are related to Him."

In the *Charmides*, Socrates raises some doubts about the admissibility of reflexive relations, or the relations of things to themselves. Others have questioned the partly real and partly logical relation, according to which one thing is related to another but the second is not related to the first. But the more important issues, in the tradition of western thought, seem to be whether there are both real and logical relations, *i.e.*, relations both in nature and in the mind, and whether, in either case, relations enter into the very nature of the things related or are merely external, so that the character of a thing is unaffected by the relations in which it stands.

AS INDICATED IN THE chapters ON JUDGMENT, REASONING, and LOGIC, relation tends to displace predication in certain typically modern theories of the proposition and of inference.

What is currently called "relational logic" is set against "subject-predicate logic." Relations themselves, without regard to the character of the terms related, become the primary object of logical analysis. It is said, for example, that the proposition 'John hit James' has the form 'aRb' or 'R(a,b),' and that the proposition 'John went to school with James' has the form 'R(a,b,c,).' The first is a dyadic relation, the second a triadic relation. As Russell points out, relations do not always involve only two terms, as is commonly supposed. "Some relations demand three terms, some four, and so on."

Relations are classified not only with respect to the number of the terms they relate, but also with respect to such formal properties as symmetry, transitivity, reflexivity. The relation of parent and child, for example, is asymmetrical. It cannot be said, if A is the parent of B, that B is also the parent of A; whereas the relation of brotherhood is symmetrical. Statements of symmetrical relationship are convertible. If we say that A is the brother of B, we can also say that B is the brother of A.

The type of relationship remains the same regardless of the character of the terms. Unequal quantities are asymmetrically related, equal quantities symmetrically; 'to-the-right-of' is an asymmetrical spatial relation, 'next-to' is symmetrical; in time, 'simultaneous-with' is symmetrical and 'prior-to' asymmetrical. The distinction between transitive and intransitive relations similarly holds for all kinds of terms. The relation of father to son or of 'standing-next-to' in space is intransitive, for if A is the father of B, and B the father of C, A is not the father of C; whereas the spatial relation of 'standing-to-the-right-of' is transitive, for if A is to the right of B, and B to the right of C, then A is to the right of C.

The modern analysis of propositions as relational structures which differ in type according to the character of the relations, not the character of the terms, has an antecedent in Locke's analysis of judgments as acts of comparison which look to the relation between ideas rather than to the ideas themselves. Both analyses lead to a theory of inference which is based on the *convertibility* of symmetrical

relations and on the *transitivity* of certain relationships and the *intransitivity* of others. As indicated in the chapter on REASONING, the factor of transitivity appears in William James's discussion of the "principle of mediate comparison." He states this in the formula "*more than the more is more than the less.*" Then he explains that "such a formula would cover all possible cases; as, earlier than early is earlier than late, worse than bad is worse than good, east of east is east of west; etc., etc., *ad libitum*. Symbolically, we might write it as $a < b < c < d \dots$ and say that any number of intermediaries may be expunged without obliging us to alter anything in what remains written."

James thus formulates what he regards as the most fundamental law of thought. For series of "homogeneously related terms," the law is that "*skipping intermediary terms leaves the relations the same.*" The factor of transitivity enters the picture when James distinguishes between relations which are and relations which are not *transferable*. "All skipping of intermediaries and transfer of relations occurs within homogeneous series," he writes. "But not all homogeneous series allow of intermediaries being skipped. It depends on which series they are, on what relations they contain. Let it not be said that it is a mere matter of verbal association, due to the fact that language sometimes permits us to transfer the *name* of a relation over skipped intermediaries, and sometimes does not; as where we call men 'progenitors' of their remote as well as of their immediate posterity, but refuse to call them 'fathers' thereof. There are relations which are *intrinsically* transferable, whilst others are not. The relation of *condition*, e.g., is intrinsically transferable. What conditions a condition conditions what it conditions—'cause of cause is cause of effect.' The relations of negation and *frustration*, on the other hand, are not transferable: what frustrates a frustration does not frustrate what it frustrates. No changes in terminology would annul the intimate difference between these two cases."

THE FOREGOING PASSAGES from James reflect the general tenor of the theory of the cal-

culus of relations. He himself does not systematically expound it. Its elaboration is to be found in the writings of George Boole, Louis Couturat, and Augustus De Morgan, of William Stanley Jevons, Charles Sanders Peirce, F. H. Bradley, Josiah Royce (whose works are cited in the Additional Readings), Russell, and Whitehead. Is this relational logic more general than the subject-predicate logic that is traditionally called "Aristotelian," or is the reverse the case?

The modern answer insists upon the greater generality of relational logic. Royce, for example, defining "subsumption" as a non-symmetrical, transitive relation which obtains between two classes when one includes the other, declares that "the entire traditional 'theory of the syllogism' can be expressed as a sort of comment upon, and relatively simple application of, the transitivity of the subsumption relation." According to Royce, James's axiom of skipped intermediaries represents a step in the right direction, but it fails to achieve complete generality.

Russell disposes of the traditional theory of the proposition in the same fashion that Royce disposes of the traditional theory of the syllogism. Traditional logic, he writes, "believed that there was only one form of simple proposition (*i.e.*, of proposition not stating a relation between two or more other propositions), namely, the form which ascribes a predicate to a subject." It is, therefore, "unable to admit the reality of relations; all relations, it maintains, must be reduced to properties of the apparently related terms." Russell insists, on the contrary, that "propositions stating that two things have a certain relation have a different form from subject-predicate propositions." This can be most easily seen, he thinks, in the case of asymmetrical relations. The proposition which states that A and B are related by the symmetrical relation of equality, can be interpreted to mean that A and B both possess a common property. "But when we come to asymmetrical relations, such as before and after, greater and less, etc., the attempt to reduce them to properties becomes," in Russell's opinion, "obviously impossible." The relational theory of the proposition, therefore,

includes the subject-predicate theory as a special case.

A defense of the subject-predicate logic would not make the counterclaim that relational logic can be treated as a special case. Rather it would insist that the two logics are radically different in principle—that the one belongs to a philosophy of nature and a metaphysics, in which substance is the primary concept; whereas the other belongs to the empirical sciences and to modern mathematics, in which the concept of relation supplants substance. Whichever side of the controversy is taken, the undeniable difference between a relational and a subject-predicate logic represents one of the great differences between modern and ancient thought.

It is not only in logic that the modern emphasis seems to be upon relations rather than upon things related—on relations denuded of their terms rather than on terms treated as correlatives. The same tendency appears in modern mathematics, in algebra, in the calculus, and especially in the theory of equations and functions, of sets and series. It also appears in modern physics where, according to Ernst Cassirer, the great conceptual revolution consists in displacing substance by function, and the casual interaction of substances by functional relationships and systems of order. Such substitutions obviously parallel the shift in logic—from the consideration of terms related as subjects and predicates, to the consideration of relations without regard to differences in the terms related.

In the tradition of the great books, this conceptual revolution seems to be announced by the treatment which Hume and Kant accord to the notion of substance. Hume appears to conceive of experience as a series of events related, as he says, by “only three principles of connexion . . . namely, *Resemblance, Contiguity* in time or place, and *Cause or Effect*.” These relations make up the fabric of experience. So long as it consisted in such connections, our experience would be the same whether or not there were enduring things or substances.

“Nature has established connexions among particular ideas,” Hume writes, so that “no

sooner does one idea occur to our thoughts than it introduces its correlative.” All our knowledge of matters of fact depends upon the association of ideas, or the relations of resemblance, contiguity, and causation among the elements of experience. All other knowledge has for its object those relations between ideas which do not connect them causally or place them in a spatial or temporal order. In either case, relations of all sorts, rather than things and their properties (or substances and their attributes), seem to be the prime constituents of nature and of knowledge.

Kant presents a fourfold classification of judgments according to their quantity, quality, relation, and modality. Under the head of relation, he distinguishes the categorical, the hypothetical, and the disjunctive according to the following criteria: “*a*. Relation of the predicate to the subject. *b*. Relation of the cause to its effect. *c*. Relation of subdivided knowledge, and of the collected members of the subdivision to each other.” These are, he writes, “all the relations of thought in judgements.”

Pointing out that he borrows the term from Aristotle, Kant calls the pure concepts of the understanding “categories” and constructs a table of categories which runs parallel to his table of judgments; because, as he explains, “the same function which imparts unity to various representations in one judgement imparts unity likewise to the mere synthesis of various representations in one intuition, which in a general way may be called the pure concept of understanding.” Kant’s categories, in contrast to Aristotle’s, afford a striking example of the shift from substance to relation.

Where for Aristotle substance is the primary category and all other categories signify the accidents of substance, among which relation seems to have least reality in the nature of things, Kant makes relation one of the four major groups of categories, and under relation places subsistence and inherence (or substance and accident) along with causality and dependence (or cause and effect) and community (or reciprocity between the active and the passive). It is not substance, but, the relation of substance and accident, which is for Kant a transcendental category.

THE ISSUE CONCERNING substance and relation takes another form in the problem whether relations exist *in* the very nature of things, as belonging to their essence, or only exist as connections *between* things. In the latter alternative, there is still the question whether relations between things are externally affixed to them or are internally inherent in them and affect the natures of the things related.

According to the Christian doctrine of the Trinity, there are real relations *in* God, each really distinct from the others, yet each identical with the divine essence. These relations are the persons of the Trinity—the relations Aquinas calls “paternity, filiation, spiration and procession,” the relation of the Father and the Son, and of the Holy Spirit to them both. “Relation in God,” he writes, “is not as an accident in a subject, but is the divine essence itself; and so it is subsistent, for the divine essence is subsistent. Therefore, as the Godhead is God, so the divine paternity is God the Father, Who is a divine person. Therefore, a divine person signifies a relation as subsisting.”

Since the three persons of the Trinity are of the same essence, the principle of their real distinction must be found elsewhere. Denying that “there can be discerned between them a real distinction in respect of the divine essence,” Descartes does not reject the possibility of a distinction “in respect of their relation to one another.” Aquinas considers “two principles of difference among the divine persons . . . *origin* and *relation*,” but thinks it is “better to say that the persons or hypostases are distinguished by relations rather than by origin”; for, among other reasons, “when a relation is an accident, it presupposes the distinction of subjects; but when the relation is subsistent, it does not presuppose, but brings about, distinction.”

It would seem to follow that, except in God, relations are not subsistent. In Aristotle’s theory of corporeal substances, for example, the matter and the form which constitute a physical thing are united, not related. Though matter and form are conceived as really distinct principles in the composition of a composite substance—as essence and existence are also sometimes said to be really distinct prin-

ciples in the being of all things except God—their real distinction does not imply that they are subsistent, as are the persons of the Trinity, nor that they are relations, or in relation to one another. If real as opposed to logical relations occur only between things which somehow really subsist, then those principles which must be united in order for a thing to subsist cannot be really related to one another.

WITH A SOMEWHAT different analysis, Locke seems to exclude relations from the constitution of what he calls “the complex idea of substance.” All complex ideas, according to Locke, “are either modes, substances, or relations.” The complex idea of substance is a “collection of those several simple ideas of sensible qualities, which we . . . find united in the thing called horse or stone; yet because we cannot conceive how they should subsist alone, nor one in another, we suppose them existing in, and supported by some common subject; which support we denote by the name substance, though it be certain we have no clear or distinct idea of that thing we suppose a support.”

The various simple ideas of qualities which, together with the indistinct notion of a supporting substratum, constitute the complex idea of a particular substance, are, in Locke’s theory, compounded, not related. Relation is itself a complex idea, consisting in “the consideration and comparing of one idea with another.” The ideas related may be either simple or complex, but the relations are *between* ideas, not *in* them—certainly not in simple ideas, nor in complex ideas of modes and substances, which are combinations, not relations, of simple ideas.

The exception is, of course, a complex idea of relation, which involves several distinct ideas and, in addition, the idea of a relation between them which, Locke says, “it gets from their comparison one with another . . . Since any idea, whether simple or complex, may be the occasion why the mind thus brings two things together . . . any of our ideas may be the foundation of relation”; but, Locke adds, “there must always be in relation two ideas, or things, either in themselves really separate,

or considered as distinct, and then ground or occasion for their comparison."

Locke's theory of relations not only seems to exclude them from the interior constitution of substances, but also seems to make them entirely extrinsic to the natures of the things related. "Ideas of relation," Locke says, "may be the same in men who have far different ideas of the things that are related or that are thus compared." The relation is unaffected by the things it relates, as they in turn are unaffected by it, for they are "not contained in the real existence of things, but [are] something extraneous and super-induced."

Berkeley and Hume also seem to agree that relations are entirely external. "Relations are distinct from the ideas or things related," writes Berkeley, "inasmuch as the latter may be perceived by us without our perceiving the former." To Hume, "all events seem entirely loose and separate. One event follows another; but we can never observe any tie between them. They seem *conjoined*, but never *connected*." So far as our understanding goes, nothing in the nature of one event necessarily leads the mind to the consideration of another, as it would if the event could not be understood by us except as intrinsically related or connected with that other.

In the tradition of western thought, the issue concerning internality or externality of relations has profound implications for man's conception of the order of nature or the structure of the world. The difference, discussed in the chapter on CHANCE, between what James calls the "block" and the "concatenated" universe presupposes not only different views of causality, but also different positions with respect to the internality or externality of relations, as is indicated by James's criticism of Hegel and Bradley.

The relation of part and whole, and of one part to another in the structure of an organic whole, seems to be the prime example of internal relationship. Each part is thought to be constituted, both in its being and nature, by the being and nature of the whole to which it belongs and by the other parts which comprise that whole. This may be seen in Spinoza's theory of God or Nature as the one and only sub-

stance, in and through which everything else both is and is conceived. All things are locked together in a system of internal relationships—the finite parts with one another through the infinite whole which determines each to be what it is, in itself and in relation to all others.

RELATION SEEMS TO BE the principle of order. At least it can be said that the various conceptions of order which appear in the great books involve the idea of relation and of different kinds of relationship.

The order of the universe or of nature, for example, seems to be differently conceived according as things are causally related to one another, related as lower and higher species in a hierarchy of grades of being, or as the parts of one all-embracing whole. In each case, it makes a difference, as we have already observed, whether the relations involved are thought to be real or logical, and internal or external to the things related.

Relation similarly enters into conceptions of psychological, political, and moral order—the order of the parts of the soul, the order of classes or functions in the state, the order of goods, of means and ends, of duties, of loves. Just as the status of each thing in nature is affected by whether the universe is conceived as a whole of internally related parts or as a set of externally related wholes, so the status of the individual in society is affected by whether the state is conceived as an organic whole or merely as a political order formed by the free association of individuals.

The consideration of the various types of order occurs in other chapters, such as NATURE, WORLD, SOUL, STATE, GOOD AND EVIL, and BEAUTY. Particular types of relationship are also discussed in chapters concerned with the terms between which such relationships hold—the relation of cause and effect in the chapter on CAUSE; spatial and temporal relationships in the chapters on SPACE and TIME; the relation of species and genus in the chapters on EVOLUTION and IDEA; relations of equality and inequality in the chapter on QUANTITY; and relations of similarity and dissimilarity in the chapter on QUALITY.

This last type of relationship, more broadly

conceived as including not merely likeness in quality, but the sameness or similitude of things in every sort of respect, is the main consideration of the chapter on SAME AND OTHER. The theory of analogy is discussed there also, for though it is concerned with relation—a proportion being a ratio of ratios—the specific relationship by which relations are themselves related in analogies or proportions seems to be one of similitude (either identity or similarity).

Finally, the idea of relation seems to be involved in the contrast between the absolute and the relative. In Planck's view, "everything that is relative presupposes the existence of something that is absolute . . . The often-heard phrase, 'Everything is relative,' is both misleading and thoughtless. The Theory of Relativity, too, is based on something absolute, namely, the determination of the matrix of the space-time continuum; and it is an especially stimulating undertaking to discover the abso-

lute which alone makes meaningful something given as relative."

Any value is absolute if it is immutable and does not vary with time, place, and circumstance; it is relative when it varies in relation to differences in time, place, and circumstances. Things are said to be considered absolutely when they are considered in themselves, and relatively when they are considered with reference to something else.

By extension of these meanings, relativism tends to assert that with regard to most things, if not all, what they are depends on the point of view, *i.e.*, their relation to man, to *this* group of men, or even to *this* man. Absolutism goes to the opposite extreme of saying that things are what they are independently of man's view of them. The opposition of these two tendencies creates familiar issues concerning the true, the good, and the beautiful, which are discussed in the chapters devoted to those subjects.