

## An Abridged Argument from Jordan's *Metaphysics*<sup>1</sup> Chapters 2-7

Introductory Note: In *Forms of Individuality* Jordan writes "The artist, who faces the real in its immediacy, whether he be religionist or moralist or artist in the specialized sense, paints the whole as meaning and then later delineates the detail of fact. It is so with the logician." (*Forms* pages 201-202) Jordan's *Metaphysics*, published posthumously in 1956, presents a unique opportunity for students to glimpse the broadest stroke of philosophy, written in a single draft, at the zenith of an inspired life of thought. From Jordan's own notes written in the margins of the handwritten draft we know his final writing is unfinished, but the power of the argument to bring together branches of philosophy in a unified vision of judgement makes *Metaphysics* an important companion to all Jordan's writing and an outstanding achievement in philosophy. In the spirit of reading *Metaphysics* as a companion to Jordan's writing I have here attempted an abridgement to separate the constructive argument from the critique of science as a substitute for philosophy, where possible. Page numbers from the published book are indicated where I have made edits. I would like to dedicate this project to my teacher David R. Wrone who introduced me, and my mother and father, to philosophy.

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### SPACE

Time and Space are, for science and experience, both practical conceptions, in the sense that they come into being as ideas out of the conditions and circumstances of action. Both are then "relative," when considered as forms of sense and in the superficial terms of modern scientific interpretation, but they are also relative in the deeper sense that their content as ideas has significance and is real only as it is related to those facts and features of the universe that impose upon rational beings the necessity for action. And this necessity is rational, that is, an obligation, in that the attainment of ends is possible only through action. But they are rational ideas also in the sense that it is only through its relations that anything is or is known, so that the reflection that they are practical concepts is significant only in that it suggests the general question as to how significance is itself related to or embraced within reality.

The notion, then, that space and time are relative means merely that their nature is relational, which is true also of anything else that is real. That space is relative does not therefore distinguish it from any other form of reality. The real then is rational, but what is rational is relational; it is through

<sup>1</sup> *Metaphysics: An Unfinished Essay* by the late E. Jordan. Edited, with a preface and bibliography, by Max H. Fisch. Principia Press of Illinois: Evanston. 1956.

and in its relations that anything is real. Let it be noticed that we do not say that space is a relation, even though its nature or essence is relational.

It is this general question of relationality that we wish to raise with respect to space - what is its "relation to," or locus or status within, the whole of reality? This, I suggest, is the only sense that can logically be given to the notion of the relativity of space. The answer to this question discloses the nature of space as a rational idea, and formulates its essence as a constituent factor of the universe. The question of its status in "perception" or "experience" is of little consequence. And we shall see, when we come to discuss the general philosophical implications of relation, that this, the relation to, or implication of, the whole of reality, is the question that lies at the bottom of all philosophical inquiry. Then the "essence" of space, as of anything else, is a matter of its relations to the other realities represented by the basic concepts used in the interpretation of the world. The "nature" of space then illustrates the general principle that the reality of any thing, that is to say the intrinsic content or substance of any thing, is to be found in the system of its relations to its circumstance, as the circumstance consists of a set of implications to the world. And of these "external" or circumstantial relations, that to time is fundamental. But the nature of the relation to time is uniformly misstated in the prevailing theories of space and time, and will have to be worked out. The relation will be found to have its substance in the essence of time. In the scientific and mathematical treatment of space the relation that has been regarded as central is that to matter as expressed in terms of extension and quantity; but this perhaps only means that science and mathematics are limited to the interpretation of the world in its immediate practical features, and have nothing to say of space and time considered as elements of reality. Extension is a minor, and for most purposes a negligible, factor in the meaning of space. It implies the total abstraction of space from its continuity relations to the other factors of reality, and thus specializes the notion for the limited designs of practice. Thus "relativity" of space comes to connote some sort of intrinsic limitation of the notion.

For mathematics, it seems, space is, or seems to be, a generalization in the abstract, of the relation between positions, one of which is an arbitrary postulate; that is, it has its sole claim to reality in the subjective determination of a mind with respect to possible action. But this position, in being the point of reference of other positions, means that all positions, position taken as absolute, are postulatory; that is, there is no meaning to position except what is contemplated in the subjective act which "takes" or posits it. So the relations of positions are relative "absolutely;" that is there is no meaning in them except what comes to them from a subjective distinction of the one position from the

other. But this distinction of one position from another must rest upon a ground different from that implied in the characteristic relation between the two. This is to say that position has no status as ground, so that the "place" of objects is not determinable from any specified locations; there is no direct implication from any "place" or location to the world, so that the mathematician's "point" is of no use metaphysically. We shall see that the same is true of the mathematical and physical "instant," so that "point-instants" are hypothetical and methodological devices with no implication to the real. (p. 31)

(p. 33) All these difficulties mathematics undertakes to avoid by the assumption that relations are all characterizable as quantities, that they thus refer to a positive character that belongs inherently to something, namely, mass, or volume, perhaps, that exists on its own. So it postulates matter or the ether as something that through its size or volume can serve as a ground for relations as attributes; but this assumes that relations are real only as they depend on the substance postulated. Also, it is assumed that this ground is something that can be measured, thus meeting the difficulties occasioned by abstraction by postulating further abstractions and by assuming that realities are limited to the practical and the hypothetical. The system of the concepts in mathematics and physical science has thus no basis in reality, but comes into being from the necessities of thought in its effort to find a concrete meaning for the idea of space, where space is the presupposition of the conditions of action. They are thus practical concepts in the narrow sense of technical process. Any position or point in space is relative only to other positions or points for the reason that reality is presupposed as having no characterization except in terms of the abstractions of quantity; so that in a world where there are no distinctions of quality, relation conceived as an abstract attribute is the only character in terms of which such a world can be interpreted. But, as we shall see, such a world is without substance, and can be conceived only as an abstract design with no content, the mere frame of a world empty of all content. This results from considering relation as attributive in essence rather than as substantial. Relations are real, but there would seem to be no compelling reason to assume that they hold only within a world of abstractions, and it would seem reasonable to assume that they have something to do with the qualitative variety of the world. So the real question about relation is as to whether its content can be conceived in terms of quantity and the abstractions of mathematics and physics, or must be considered as involving quality as a character of the real. Also, to assert a relation between two entities is possibly not the postulation of a third entity of exactly the same nature as the two given. It is possible that relations have their own exclusive way of being real, and if so our quest for insight into the world would demand that we find out what their way of being real is. (p. 34)

(p. 36) Concreteness as the essential and immediate feature of reality occurs in the actual or real instance as quality. The problem of space, as of any other concept purporting to relate to reality, is thus one of showing how space, through its relations to other basic entities, contributes to the determination of an object whose essence is manifest directly in and as a unique quality. This quality is just the synoptic whole of all the constituent relational characters of the object when the object is real; that is to say that, when the object is considered in its "independence" of the act by which it is apprehended, its quality is objective as a synthesis or fusion of all of its characteristic relations. These relations are characteristic when they identify their object as an element with other objects in the genus or type to which the object belongs. So that the essential or objective quality of the object is an expression or exhibition of the universal that states the **kind** of the object, and it requires reference to experience only when the object appears as a detail presupposed in the practical relation, that is, where the object represents some phase of an act and at the same time some constituent element in an end.

Where there is no necessary implication of an end the quality is analyzable into a set of relations within a system of circumstance, the system of circumstance itself being individuated by the fact that each element in it carries an implication to the object represented by the quality. Thus in the judgment, "This apple is red," the quality red is objectively a set of implications, including that to the light and the sun, that to the eye of the person who asserts it, and others to the tree, the orchard, and to the environment generally. The red as the synthetic whole of all these implications is the implication to the universe, and thus it becomes the type or species of the object and so renders the judgement universal. The judgment is not universal because it refers to "all" objects, but because it refers one object, through its substantial quality, to the universe. The red is thus the implication to the universe that individuates the apple. The red is "subjective" only when its implication is characteristically to an act or a practical situation, e.g., when it indicates the apple as ripe or ready for sale, but this interpretation states the place the apple is fitted to occupy in a specialized situation, one other than that whose relational synthesis identifies the object as an instance of a kind or species. The red of the apple is the space in which the apple stands as the space is interpreted for experience. The red is thus identical with the relations that determine the object's spatial position, so that the red is the space in its essential substance or quality. The red is the quality of the space, since it is a synthesis of the same relational circumstance of the apple which determines its spatial position.

As a purely subjective event the color red could be described by reference to the sensations and reactions of the perceiver, but this interpretation could only lead eventually to judgements about the

perceiver, where the objective quality of the object is confused with subjective perturbations of an agent. The final issue of this procedure is to represent the perceiver as abstractly unique without reference to the system of objective relations that endow him with a type or kind, so that all judgements purporting thus to express the quality of an object really assert the unique characters of the subject. The contradictoriness of this procedure is demonstrated in the empirical philosophy, and with complete clearness in empirical idealism.

If therefore space is to be considered as objective and as real, it must be treated as an element of the constitution of things, that element, viz., which is exhibited in the quality that individuates the object in which it appears. We shall inquire lower down about the individuating quality.

The problem of space then is a question of objects and their relations. We shall thus have to consider objects in their relations if we are to reach an adequate notion of space. The relations of objects that are regarded by science and mathematics as fundamental are the external relations of "congruence," "continuity," etc. But there are other relations that are involved in the complication of objects into wholes and systems, and these syntheses represent the relations as internal to their objects in such fashion as to render the relations universal. They at the same time exhibit their objects as types, or as instances of types, as individuals, that is, so that such external relations as congruence and continuity are shown to be superficial and merely empirical and as failing to render their objects genuinely real. We shall have to show therefore that the "congruence" and "continuity" that are relations of concrete objects and not mere hypothetical abstractions are the mathematician's misconceptions of relations that we shall show are fusion and identity. This will require us to distinguish the pseudo-principle of identity, as the mathematician conceives it, from the principle of identity as it operates among real objects, which we shall call analogical identity.

For there are a number of vicious assumptions involved in the mathematical concept of congruence, assumptions that make the concept contradictory. It apparently assumes that two objects can be exactly alike in all their characteristics, and that **all** characteristics of objects are external in the sense that the object may or may not have them and still remain the same object. This separability of the object and its characters overlooks one of the fundamental insights of the empirical philosophy, an insight, however, which that philosophy fails to carry through to its full significance. For there is no character that is applicable to an object that can be distinguished from some phase of the essence of the object, so that the object is, when real, precisely the synthetic totality of its characters. That a real object can be substituted for or superimposed upon another with no real differences violates the most

fundamental principle of the real, namely, that the real is individual. It is of course true that the abstract design of an object which is stripped of all its qualitative concreteness can be represented as another, or substituted for or superimposed upon another, for the simple reason that the design is an empty symbol and “stands for” the object only in the designation for that purpose by a subjective motive. But no real object can function in any capacity for another, which means that real objects are not congruent, but are individual and unique.

Nor can any sense be made of the notion of the continuity of objects so long as objects are regarded as the mathematician regards them. The idea that an infinity of points can be interposed between any two points and that the whole of points can be fused thereby into a real entity, or that it can in any way represent a real object, is self-contradictory. It is of course useful in many ways, and there is a remote and superficial correspondence between the “entities” thus represented and the real objects of nature, simply because the representation in abstract symbols is a sort of replica of the acts we perform in dealing with real objects. But this makes it a mere device of convenience in representation, a picture of the modes of representation in consciousness that guides our movements in the control of the objects we use in practical or technical expression. The mathematician can thus work out the design of a bridge and express it in pure symbols which the construction gang can follow in erecting the bridge. And the bridge will stand up - sometimes, but the fact that it stands up nearly every time proves nothing as to the adequacy of the symbols, but is rather a tribute to the wide “margins of error” which governed the process of forging the girders and other structural parts.

It is true, as Einstein says, that the theorems of congruence are “fundamental in geometry,” but they have no meaning when applied to real objects. It is also true that “if these concepts (of points as elements of space, and space as a continuum) are assumed, together with their relation to the solid bodies of experience, then it is easy to say what we mean by the three-dimensionality of space;” but it still is not possible to justify the assumptions so long as we are dealing with real objects. These assumptions can, of course, be given abstract representation in symbols, and the symbols can be manipulated with a certain semblance to consistency and a remote resemblance to the actual operations of nature. (p. 41) “We can form new bodies by bringing bodies **B**, **C**, . . . up to body **A**; we say that we continue body **A**.” Quite naturally after we say this we can manipulate symbols in any way we please, but nobody who has any sense of reality will take us very seriously so far as the interpretation of the real world is concerned. The capacity to construct abstractions and to represent them by symbols is useful to

the immediate purpose of practice, but we must not use them as a basis upon which to construct a theory of the universe.

Or, if we should argue that our abstract formulations are true of the physical universe, then the physical universe cannot exist, and our judgements about it cannot be true, however useful they may be. But propositions that are not true of the universe as a whole are not true of the physical universe nor of any other restricted universe. For the physical universe is real only as a presupposition of the universe which is fully characterized only as the universe of culture, and a proposition which does not carry an implication to the system of culture cannot be wholly true. (p. 42)

(p. 43) Not then the ensemble of all continuations of body **A**, but the total relationality of the object. And that object is not arbitrarily chosen, but the object which **is**, in that, since all its relations are internal to it, it is a replica of the total universe: every one of its relations is an implication to the world, and it is the synthesis of them all. And all of them are together and in their universality the space - not of something arbitrarily chosen, not something that is the end product of a subjective attitude - but of the universe, the universe that is the whole of the implications of the object. "We can form new bodies by bringing bodies **B, C, . . .** up to body **A**. We can continue body **A** in such a way that it comes into contact with any other body, **X**." But you cannot manipulate **objects** in any such artificial fashion, for genuine objects, "bodies" that are real, could be so manhandled only by disordering the universe. For every real object is a constituent factor of the universe, and a universe is not constituted by having its objects sidled up to each other. The relations that hold externally between objects are internally constitutive of the objects; or the internal and the external relations of an object are "continuous;" that is to say, they are identical. And the form of the identity is the factor that is the secret not only of the nature of the object but also of the nature and constitution of the world.

The space of an object thus is the object's total relationality. And the space of the universe is the system of its relationality functioning as its constitution. By this is meant that space is the synthesis of **all kinds** of relations, and not merely of the external relations of sidling up of mathematics and science. For the synthesis of all relations - not their sum - is the metaphysical substance of the universe. By the principle of analogical identity the synthesis reconstitutes the relations, so that they lose their abstract character as mere connectives, and become a homogeneous substance which we recognize as quality. And this assimilation, rather identification, of relation and quality, is the central concept of any metaphysics that can give an account of the world which unifies the system of nature with the system of culture in a universe that gives truth to true propositions because it endows them with universality.

The first condition of an understanding of this metaphysics is a proper and adequate distinction between the ideas of universality and generalization. Generalization is the quite adequate central concept of method for science, which has nothing to do with truth or complete knowledge, but is limited to the formulation of techniques of practice. The universal, on the other hand, is the formulation as truth of the principle by which reality is constituted a universe. So that universal means of the universe. And while it is customary to speak of wholeness as the essential character of the universal, it is to be kept in mind that wholeness is not a reference to the abstract "all" of science, but to the qualitative totality of relation-structure that forms the constitution or real design of an object. So fundamental is this distinction that a treatise on logic should be worked out to show all of its implications, and there is an important sense in which the development of the system of these implications itself constitutes the discipline of logic, and thus lays down the basic principles upon which alone an adequate metaphysics is to be formulated. This would settle once for all the question as to the relation of logic and metaphysics to science, and show that the only function of science is to operate as a method for empirical investigation, and that it has nothing at all to do with questions as to the nature of reality.

Space is then a reference of an object to its universe. Or, it is the object's total implication to the universe. Or, it is that character of the object that demands a universe as its end reality, that which terminates all the relations in which it stands. Or, it is that complex characterization of the universe that constitutes the object as the universal of all relations. Or, it is that which identifies the object with the universe. But an object is not a body, and a universe is not the end-term of generalization.

All of these characterizations of space are, however, not uniquely true of space. For every one of them, all we have said of space, can be said truly of time, if we make certain developments of some of the statements. Consequently, what we have said is literally true of space-time, which must be regarded as a homogeneous entity, so that the question raised by what we have said of space is that which can be formulated as the relation between space and time. And an adequate discussion of this problem involves the working out of the basic principles of metaphysics. For the relation between space and time is the identity that is at the same time the self-identity of the world, and if it can be adequately formulated we shall have the principle not only of all knowledge but also of all being.



## TIME

Perhaps the traditional assumptions as to the nature of time do not exhaust the possibilities. The common sense, Newtonian conception of time as the existent absolute is satisfactory for a view of the world which sees it as a material or mechanical system, and as a presupposition for the world conceived as the arena of action in the ordinary practical sense. It was also satisfactory as an ultimate presupposition for science until the practical motive of science led it into contradiction, and until the mathematical method of abstraction undertook to formulate it in terms which have or need no reference or relevance to the concrete realities of the world as known in experience. For the process of measurement, which is supposed to disclose the nature of time, is itself governed by nothing but a standard of measurement, so that reality is necessarily ignored. The ground of measurement is thus absolutely arbitrary. Mathematics, that is, was led by its method of abstraction to postulate relations as real without consideration of the terms which give them definiteness of status, or in so far as terms were involved they were themselves conceived as constituted upon a relational structure, but both relation and structure were misconceived. So both relation and term are for mathematics abstractions.

Thus it became necessary to define time and space as having their essence in relation. And since the conception of relation appears to implicate immediately the notion of betweenness, along with the entities between which relation holds, these entities had themselves to be defined in terms of relation, and this relation which defines terms had in the nature of things to be constitutive of the relations in which the terms which it constitutes stands. But that which stands in relation and is also constituted of relation is what is known in general as the individuate object; so the problem of the nature of time came

to be the problem of the constitution and the relationality of objects. This will be true also of other major concepts, - all are defined in terms of their relevance to objects.

But the relation that constitutes an object is that of the mutual interreference of its elements as its elements are defined in and by its circumstance. This makes the object a complex system constituted of elements, and the elements must be of the same nature as the object constituted by them, otherwise the self-identity of the object could not be maintained. Thus the distinction between an object and its elements is, when the reference is to the essences of objects, cancelled out, and the object and its elements are identified. Not, of course, that the object is identical with its elements individually, but as a synoptic whole. Hence the object is a complex of relations, since its elements are relations, and its constituent relations are determined by the circumstances which stand as their terms. And as these terms are also constituted of relations, relation will be a metaphysical ultimate if reality is to refer to the system of objects by reference to which a world is postulated. Thus the relation that is constitutive of objects is at the same time the relation whose essence lies in the reference to the world which it is the meaning of objects to determine, and this defines the principle of relation as the reference to the world which at the same time determines the substantial nature of the object. The essence of time is defined within this relational system; it is not a relation, but an aspect of this relational whole.

It is thus that the essence of relation is this implication of and to a world, and this world is characterized by being the wholeness of the system of objects, the objects themselves being constituted of relations. An object is therefore real by and through its implication to the universe, and this implication is thus constitutive both of the object that carries it and of the universe to which it is directed and thus constituted by it.

Time, as a relation of mutual interreference among objects, is therefore real, and is "objective" in the sense that it defines the entities the serial relations of which determine a direction toward the whole of objects as ultimate, and as this whole is the universe itself, this direction becomes the implication to the universe which establishes the criterion for the reality of what is real. The limitation of science to the merely practical is seen nowhere more clearly than in its failure to give a stable definition to direction. For its notion of direction implies a limited area of space with points established arbitrarily, the whole situation being naturally "relative." But the basic meaning of direction lies in the relation by which an object is made continuous with its universe, so that direction is absolute. With respect to time this means that the "flow" of time is irreversible with respect to its object, and this result can only be questioned by denying that the essence of time is its lapse. Time is less of a mystery once we deny the

lapse, which has its ground perhaps in the notion of change in space, or the notion of transition among points.

This system of relations so far considered as a structure and as determining the design of objects that are real as well as the design of the universe as a whole, is not yet the complete object that it must be if its implication of the universe is to be final. For it is so far open to the charge of “abstraction” in that the universe implicated by it is an object only in that its determinateness is limited to its relational complexity; and it stands only as a framework which yet must be bodied out with terminal definiteness. It is a skeletal structure merely, and not yet a corporate entity because it lacks the materiality which would individuate it. It carries a reference to the universe, but its reference cannot be distinguished from the reference of another complex, since it lacks direction; or, in so far as it is distinguishable, it is so only as numerically different; that is to say, its essence can be distinguished only negatively by the abstraction of its reference to another “finite” entity. This reference of particulars to particulars **ad infinitum** is the process of “empirical” science, which attains only generalization and never reaches the universal. So that none of its propositions is true, and none of its “objects” real. This “object” negatively determined is the object of physical science, and the universe to which it refers is the blank universe of abstract possibility, judgments referring to which can only be predicated by a “may be.” This is the reason why the physicists can offer us only the bizarre speculations about time as the universe “running down” or “growing,” etc. Also, this abstract scientific approach to the question of the nature of the universe can only, so far as it is characterized by time, lead to the absurdities of “judgments” as to its “age” and “size” and to its “origin” and to its ultimate dissolution. This situation is also what makes a “principle” for science of uncertainty, and its goal abstract probability. “Prediction” and the reference to the future are meaningless when the lapse of time is given up.

Time is “absolute” in that its relational nature draws the lines among objects whose directions run to the universe as a whole; and, as relational in nature, it is “objective” in that its relationality constitutes objects. But time does not **by itself** constitute an object, but only contributes, along with other factors, to the integrity or wholeness that states the essence of the object. It is perhaps this inadequacy of time by itself to constitute an object that allows the scientist and the scientific philosopher to represent it by abstractions, but it is this also that shows the necessity to interpret time through its relations to other constitutive factors of the real, and in particular to emphasize the relation to space. But the intimacy of the relation to space must not be allowed to blind us to the fact that time is related with equal intimacy to matter, form, tone, color and the other basic characters of the real. To

describe time in its full reality demands that these other factors all are to be considered. As we shall see, it is the relation to tone that is principle for half the universe, as the relation to space is principle for the other half. There is no character of the real that can be made fully intelligible except through tracing its relation to all these other factors, since it is the system of these relations that gives us the structural design of the universe. Each relation is therefore essentially an implication to the universe, and it constitutes the principle of the object and at the same time shows itself to be an element of the structure of the world. (p. 52)

(p. 53) In fact, it is just the relations that hold between time and the other elements that make it possible for time to be a constitutive factor in the real. By itself it is impotent and meaningless, except as a mathematical and scientific abstraction, and even then it is real only as an element of method. But time modifies matter and form and color through space, and the relation thus set up is a quality. Or, if we deny quality of time fused with space alone, we must remember that space **in se** is an abstraction, and characterizes the universe only by analogical identity with color. Color again implies tone, and the system of all the basic factors in their synthesis is quality. This implication of quality will be worked out when we come to consider space-time as the substance of the world. That is to say that time complicated with space, and in their synthesis by analogical identity with other elements, constitutes a quality, and time and the other elements are transformed from their abstract conceptual status into a sensible status; that is, they become entities that may be perceived. But this capacity for being perceived is a character of reality before the actual process of perception has occurred, and exists objectively in the complex of relations that hold the manifold of objects together in a universe.

But this element of quality is a topic in itself, and so important that it must have separate consideration. But it is necessary to state here that quality is a necessary implicate of relation as relation is found in complication, and we are to see when it comes up for discussion that this implication is unique in that its direction is unlimited, a character which we represent as mutuality. The status of quality with respect to relation, as we are to see, relieves us of the absurdities of the "principle" of indeterminacy, in that it furnishes the ground for what we call the principle of indifference of reference, by which any complex of characters are mutually consistent as they constitute an object. So that the object, when fully real, is unpredictable as to the specific relationship which it may establish with another object. The relation between relation and quality is thus mutual and indifferent in direction, since direction is itself an objective character, and it is the balanced status thus constituted that justifies regarding quality as substance.

The scientific notion that time is an element of only one character, namely its lapse as an abstract quantity, is thus seen to be inadequate to the nature of time. In fact, the lapse of time, as the relation of change that arises from the indifference with which time relates to the other elements of color, space, tone, etc., represents only a very limited phase of the whole meaning of time, and it will be necessary to point out a number of other characters that are of more significance if time is to be regarded as having a determinable status in respect of reality. For the lapse of time represents it as a linear extension in one direction, and we want to show that its peculiar relations with other elements give it a variety of characters that are much more important from the standpoint of reality than its lapse. Its relation to space, for example, gives it a mode of width and depth and so of volume, where volume means not mass alone but significance; so that as lapsing it is a moving volume each instant of which is filled with a variety of real content. (p. 55)

(p. 56) But the meaning of quality for time must await the discussion of the nature of quality in general. This discussion will concern the relation of quality to relation considered as a primary character of reality, and will involve the development of the principles of analogy and identity. Also there will be involved the statement of the function of mutuality, through which the principles of analogy and identity are synthesized in the principle of analogical identity. The abstract theory of identity as ordinarily treated in mathematics and logic and science is useful and meaningful only as an element of method; what we must have here is a concept of identity that will be constitutive of reality in those aspects of it by which it is concrete, and thus a phenomenon which can appear in and for experience. This means, of course, that we must find a principle of identity that will give us access to quality - and order, where the mathematical principle gives us access only to structure and quantity, and organization, and thus a partial view of reality. The principle of identity of the real must naturally presuppose the identity of structure, but it must go further and develop the identity of quality, and still further to equate by synthesis the principle of the identity of structure with the principle of identity of quality in the notion of **order**, so that it may show that identity is a principle of reality in the law of self-identity. (p. 57)

(p. 63) A different categorical system from that of science and mathematics is thus required if we are to get at the reality of time.

This new system rests in all its details upon the concept of the object. The mathematics-physics concept of body, with all its subsidiary concepts of matter, motion, quantity, etc., is an absolute abstraction derived from nothing more substantial than the facility of thought in dealing with practical considerations, where the practical connotes nothing more than choice among technical procedures.

The subsidiary concepts necessary for the description or explanation of a real object are all derived from constituent characters **of the object**, as these characters are implied in the universe which must be assumed in order to make an act of thought intelligible. The ultimate ground upon which any postulate of thought must finally rest is the universe that the function of thought implies and is implied by, for it is the self-identity of this mutual implication that gives authority and validity to thought. Thought and its validity thus are features of the real world, and not mere necessities of the gadgeteering purposes of men. These purposes themselves require a basis in the nature of things if they are to be valid. Even the purposes of men have significance only as they pertain in some way to the real object; for an objectless purpose is a contradiction.

Now the object is the concrete embodiment of this mutual implication, this implication that equates thought to the universe of objects. It is therefore the ground of reference not only for all thought distinctions, but also for all distinctions that purport to represent differences among the elements of reality. And the characters which must be attributed to the object because of its implication to the universe are the characters that are **known** as elements of reality, and the description of these characters in terms of their mutual interrelationships is the account of reality which is made valid by the universal postulates upon which the description rests and which give it meaning.

And here we have indicated the place in reality occupied by space and time and by every other element that contributes to the constitution of the real. In their most universal form these elements are space, time, color, and tone. It is now our task to picture these elements as their interrelations in synthesis constitute the design of the universe, and as the system of these interrelations precipitates into the substance that realizes that design.

Apparently the notion of the relation of space to time commonly held by science and mathematics is that which as generalized constitutes the place or space of bodies. It is thus an aspect of the abstract concept of position, the position in general of bodies. It seems that body, as an absolute abstraction, is the best that the scientist can do in the way of an attempt at the formulation of the concept of the object. This means that space is for science the abstract medium within which bodies exist. It has nothing to do with the nature or character of what occupies it, and is in general the inert medium, with no describable characters and no quality. If it has any positive characterization of its own, its character seems to be the stretch or extension which is implied by the idea of a number or manifold of bodies with intervals between, and this manifold seems to be assumed in order to provide an explanation of the change of position of bodies and, more generally, of the facts of motion, or what are

regarded as the facts of motion. Something like this is, as it seems, what space is from the practical point of view of science, and it is also the point of view of "common sense."

And within the newer theories of space there seem difficulties in making space mean anything more than the presupposition of a plurality of bodies in their abstract numerical relations. Even the doctrine of the "four-dimensional space-time continuum" has difficulty in making space mean anything more than the extensional or expansive general condition of a plurality or multiplicity of bodies. It is difficult therefore with this, as also with the common-sense and the older scientific view, to find more meaning in space than what is implied in the methodological procedures by which supposed realities are by hypotheses given the conditions of their existence. That is to say that space, instead of being a reality, or an aspect of reality on its own hook, is merely a condition, logical and physical, of the existence of realities of a nature quite distinct from that of space. While in some statements of the new theory space seems to be real in itself or to have a part in the determination of what is fundamentally real, it nevertheless turns out finally to be a mere aspect of the methods by which the procedure of thought is determined. For it is represented by a system of dimensions, and these dimensions have their meaning only in their convenience to the mind in imagining space, and in their determining attitudes of action. Space thus seems to be reduced to the abstract idea of length, a concept which has its "reason" in nothing more solid than the practical necessities of measurement. It is thus not reality, but a phase or condition, an attribute or some kind of floating adjunct of reality, and not a constituent of it. It is yet some sort of phenomenal or adjectival character of "matter" or "ether" or "field," and remains a device of convenience contributing in some way to the measurement of body and its expression in terms of number or in measurable relations of position.

But this procedure is a misconception of what it means to be an attribute of or an adjective to something regarded as substantial. It is the old fallacy of numerical separation of substance and quality, the assumption that the nature of a real relation must take its form from the forms of thought as they are expressed in language: the notion that substance and attribute must duplicate the form of subject and predicate, and that the distinction between subject and predicate must be sharp and final. What is overlooked here is that reality must be a duplicate or replica of the substance of thought and not of its symbolical representation. The mere fact that to express an idea in symbols involves a resort to distinction does not necessitate that the distinction must sever the reality; in fact, while thought resorts to distinction as a mode of procedure in expression, its actual substance or subject-matter is constituted about the principle of identity. So where space, in being made a condition or attribute, is severed from

the reality which “occupies” it, its “representation” of the real presupposes its identity with the real, otherwise we are caught in the contradiction that distinction in thought necessitates actual separation in reality. Space therefore is as substantial as that which it conditions, and it identifies in substance with that to which it is an attribute. This identity is the self-identity of the object, the instance of reality as such. “Body” is an abstract practical image of the object, whose reality is ignored in the abstraction. It is the scientist’s falsification of the real.

Now the better way to say all this is provided in the older philosophical terminology of substance and quality. And as “subject” and “predicate” are identified in the assertion which gives them meaning, substance and quality are asserted to be the same thing in the existence of the object, for the existence of the object is asserted through its substantial quality. And this means that substance **is** quality, or that quality is substance.

The foregoing argument prepares us to say that space **is** the reality, and that it is such by virtue of being the quality of reality. And what is true of space is true also of time, but yet it is true of time in and through different characters of time. To put the matter bluntly and to say it briefly, space is real through its fusion with time, and time is real through its fusion with space, and both are real in the identity which realizes them. We have yet to see that the identity is not yet whole, but is completed only in the mutualization of space-time with color-tone as the mutualization by identity of color and tone. And to explain how the fusion of space and time with these other factors is possible makes necessary the development and explanation of the principle of analogical identity, and the demonstration of the identity of substance with quality.

Time then is not a relation. It is a phase of the general relationality of objects. This general relationality of objects is the substance of the universe. And this substance is quality.

We have given this discussion of space here by way of illustrating the mode of approach to the description of reality - the approach through the constituent characters of reality as they are known in experience. Space is perhaps the simplest of these constituent characters, simplest in the sense that it is the most immediate of the forms of quality as quality becomes the substance of knowledge. The discussion of time follows the same form; it is described in terms of its relational characteristics; but its characteristics are a little more difficult to follow since they appear in experience not as perceptible characters but as logical presuppositions that are implied in the nature of objects as objects are known in experience. That is to say that the approach to time is inferential in a more profound sense than is the



case with the other constituents of the real, and this results in the fact that our experience of time is less immediately clear than in the case of the other elements of the real. Its characters lie in the obscure relations that constitute the identity of the real, and we shall have to get at them by and through inferences based on postulates that formulate the more fundamental elements of world structure. It may be hinted here that these more fundamental elements of the real are tone and its subsidiary concepts, and that the most direct approach through experience to the real as known in time is by way of the theory of musical relations in rhythm and the doctrine of harmony. This of course involves a reconstruction of the musical theory of time as measured by number and "vibrations."

We can begin the description of time by attempting to correct the prevailing assumption as to its nature. As we have noticed a number of times, time has quite generally been explained by supposing that its essence lies in its lapse, and the idea of the lapse seems to be derived from the assumption that the multiplicity of "bodies" implies their relation in series, and that the serial relation of bodies is the relation that constitutes the reality of objects. But this overlooks the fact that the reality of objects, from which is derived the reality of everything else that is real, does not lie in any distinguishable relation, but is a mode of their general relationality. And the serial relation of objects is not to be identified with any character of the objects as they stand in their interrelations with each other, but is a practical relation in the sense that it carries an implication to the structure of the world only when it implies an act as the instrument through which its implication is mediated. That is to say that its implication is indirect, that it is an implication only through its dependence upon some other relation whose implication is unmediated. The serial relation thus presupposes a system of relations that are more fundamental in that their implication to the universe is direct. And this means that the unmediated relations are constitutive of the world and are thus constitutional to objects, while such relations as the serial are attributed to objects by the process of thought where thought is designing the plan of an act.

It is true of course that the serial relation becomes real as the instrumentation of act when the act is completed, for the idea of an act is that of a process which realizes itself in an object, and the object is the real. If time were thus identified with the serial or successive relation of objects, it would have to be realized through an act that realized the world in one stroke, which act itself would presuppose a set of constitutive conditions outside the world, and the contradictoriness of such an idea has been made sufficiently evident in the history of theology. It is clear therefore that the serial relation, as resting on the postulated lapse of time, and particularly that which is thus contemplated as

successive, like the causal relation of science which it implies, is illusory, and that it has its only ground in the processes by which objects are represented as factors in a contemplated act. (p.70)

(p. 72) As opposed to all these representations of time as mathematical or physical abstractions, which are all due to the representation of the reality of time in terms of its lapse, it will be attempted here to show that time is a substantial constituent of reality, and that it thus has its essence in quality. (p. 72) The essence of time is then its relation to space, and the problem here is to show how the relation to space, with other relations complicated with it, constitute the substance of quality. But as the essence of space, as well as that of time, is its relation to other elements, it will be necessary to find these other elements and to show how they all together constitute the quality which we insist is the reality.

The other elements required are color and tone. And our problem will be to show how these elements, space, time, color and tone, enter into the self-identity of quality. This can be done here only in terms of abstraction, since the full development of the statement will have to await the description of color and tone in ways analogous to that by which space and time have been described. (p 72)

(p. 73) This problem of the constitution of quality by the interrelations of space, time, color and tone, can be approached best through a development of the principle of fusion. It is necessary to develop a set of categories for this purpose which will avoid the mechanical process of combination as it is employed in science, which appears to be necessitated by the requirement that all scientific statement shall take the mathematical form of the equation. The equation appears to be useful primarily because of the absolute equivalence of its two "sides," for the scientist must be careful that none of his processes should result in more than is contained in his "premises," or the set of presuppositions with which he sets out. Or, if the two sides display differences, these must be recognized and then ignored. His world must be done, fixed, finished, stay put while time, awkwardly for him, flows on. And this, once more, seems to be a dogma derived from the mathematician's primary notion of congruence, which is the supposition that two things can remain two after they have been identified in every particular. (p. 73)

(p. 74) We insist then that the "operation" of fusion negates this whole fabrication of the scientist - that a simple description of what takes place in reality shows the artificiality of the scientific scheme. (p. 74) The "combination" of two chemical substances will result in the appearance of characters that are not to be accounted for by any reference to what went into the combination. The substances combined have individually characters that disappear in the combination. And the product of the combination will have characters that are not accounted for in any aspect of the substances

combined. "Combination" is therefore a procedural abstraction which misrepresents what actually takes place in reality; what actually happens is a fusing of factors that transforms their essential natures and gives rise to new qualities. The occurrence of the "qualitatively new," which is a mystery for science in evolution theory, is a simple observable fact whose formulation constitutes a universal principle; namely, the principle of fusion. This, of course, is not a scientific generalization. The attempt to dodge this fact of actual transformation by arguing that these characters are "secondary qualities" makes sense only after the dogma of measurement and its corollary of absolute equivalence have been accepted - the self-contradictory assumption that one reality can be substituted for another. (p. 75)

(p. 76) It is true, of course, that these realities founded on the principle of fusion become a problem for the principle that reality is individual. If the individual is ultimate, then the transformation of the individual seems meaningless to anyone who is not a positivist or phenomenalist. So also is the idea of a new individual. But here the philosopher resorts to another principle which the scientist has perverted - the principle of growth. The scientist with his "principle" of evolution has made a tissue of absurdities of the notion of growth, primarily because time and space for him are mere media within which realities exist, but which have nothing to do with the constitution of realities. Where growth means nothing more than quantitative increase with "increasing complexity of organization," the idea of growth is meaningless as applied to realities. The problem of growth is another instance where the philosopher will have to go back to Plato for suggestions, over the head of Aristotle.

"Combinations" of realities then are fusions. And the principle of these "combinations" is not congruence or equivalence, not the absolute identity of abstractions of the mathematician. Their principle is analogical identity, and this principle is a synthesis of a system of categories entirely different from the categories of mathematics and science.

It is not the purpose here to work out an elaborate deduction of the principle of analogical identity, since that has been done in another work. We shall say just enough here to exhibit the idea of the principle. The color, form, size, shape, odor, tone, feel of the rose are compossible in the rose because as synthesized they are mutualized in the fact that each of these factors is modified in its essential nature by the presence of each of the other factors. The size of the rose modifies its color, and the color as compossible with its odor modifies the odor, while the color and the odor modify the other characters. This is expressed in general in the statement that each of the characters modifies and is modified by each of the others, so that together all the characters in their order constitute the rose an object that is unique in its individuality. The rose therefore has a quality which did not exist before, and

is not identifiable with any of the constituent qualities. Thus the qualities are not identifiable **with** each other, but they are all identified **in** the rose. The rose is thus the identity of all its characteristics, and is a new and unique fact in the constitution of things. Nothing is identified with anything in the sense that they are congruent or superposable or that they somehow as two become one. What happens is that each factor fits with each other in the identity of the whole - they are identified in the whole in that the whole possesses the self-identity as a consequence of the fusion of its elements. These elements are analogues in the sense that each has its meaning and its being in its relations to the others and to the whole which they together constitute, so that the whole is an identity through the analogical relations of its elements. The fact that a real entity comes into being out of the relational order of a system of elements each of which in its own integrity is an object and thus a constituent of reality, is the universal which we designate the principle of analogical identity. (p. 78)

(p. 79) Time is therefore an element of the real in that by mutualization with other elements the real is constituted. The other elements, when stripped to their essentials, are space and color and tone. The “four-dimensional space-time continuum” is not thus the three dimensions of space plus time. For time and color and tone have no dimensions, and space has dimensions only because the scientist and the mathematician insist on approaching the world armed only with the devices of quantity and measurement, and with the dogmas of congruence and abstract identity. They therefore make no contact with the real, for the real has its substance in quality.

Our principle of analogical identity refuses thus to abstract away from the real its essential factors. It can deal with the real in all its infinite characters, and need neglect nothing. It is not necessary to neglect the color of the world, for instance, in order to fit it into an arbitrary mechanical pattern, for the constitution contemplated by our principle can accommodate **any** character that may be found in the universe. Thus the mutualization of factors by analogy proceeds independently of the specific characters of the factors, so that **any** collocation of **any** characters are fused into a whole, and the whole assumes the integrity of the individual and thus is real. A society can be constituted of any and all of the varying types of human individuals, and its unity and integrity assure it substantial quality.

This indifference of the principle to the specific characters of the elements it integrates is due to the essential nature of the relation as the metaphysical real. We have noted in the discussion of relation that its connexity is effective whatever may be the characters of its terms. Also, any term may effect its implication to the universe through any other term; that is, all directions of implication emanate from a term where the term is a real object. It is therefore absolutely indifferent to any term as to what other

terms it may be mutualized with, so that any and all things are constituent to the total world. This fact that any object may fit with any or all other objects in the constitution of a new object is called the principle of indifference, and it signifies the fact that a relation may have as its terms any objects. An object therefore is a term for any and all relations, and a relation may direct its reference to any object whatever. All this "indifference" is due to the fact that time, as well as all other reality factors, is infinite. (p. 80)

(p. 80) This general fact that is formulated as the principle of indifference of reference has been recognized by the scientist, but he has failed altogether to see its basic meaning and importance. He has attempted to formulate it as the principle of indeterminacy or the principle of uncertainty, thus attempting to force a contradictory absurdity into the form of a judgment. The fact that it is for experience uncertain to what specific point as term a relation may direct its reference does not necessarily give us a characterization of the world but merely exemplifies the fact that a relation has an existence and meaning independently of the specific quality of its terms. A relation, therefore, in so far as it is considered as an implication to the universe, may apply to any term that implies a universe. So that, as Leibniz saw, any fact has a relation to every other fact, and it is because of this that all relations and all facts together constitute a universe.

This is the general relationality a phase of which is known to us as objective time.

## **SPACE-TIME**

What makes the difficulty about time and space for the philosophers is that they are supposed to have each but one characteristic, and this is conceived of as a dimension, that is, is regarded as an aspect of extension. Time is supposed to have but one "attribute," viz., lapse, and lapse is to be conceived as a form or phase of extension; that is to say, the character by which any given instant or instance of it is superseded and anticipated by its like. But extension is itself a phase of the relations of objects, so the lapse is an implicate of the relations of objects. The "lapse" of time is therefore really change in the relations of objects; time remains an element of the ultimate substance, and the duration, endurance, of substance, is the standard of reference by which change of objects is perceived. So that the lapse of time is identical with change of position in space, and time as substance is indistinguishable from space. This equivalence or identity with space is an indication of the fact that time somehow has something to do with quality, but just what its relation to quality is has never been made clear. Quality is usually treated as a character of space, but it is in reality an implicate of space-time as the substance of objects. The essence of the object is defined in terms of its relations to other objects, and the totality of these relations is the structural frame of the universe. Every real object thus participates in the constitution of the universe, and its implication of the total universe is its essence as an object. And space has had, in the tradition, but one "attribute," extension, or its stretch beyond any point of definiteness; and this stretch is, in reality, but the omnipresent implication to the universe, which is characteristic of every real object. But here, also, its "quality" has been conceived in pure abstraction, so that its implication of beyondness has not usually been recognized as involving it with other characters which can be given concrete definition. Dimensions are really not characters **of space**, but of positions that have been postulated as **in** space. A "position" is thus a reference to the object, but the object abstracted from specific quality. Dimensions are really abstract representations of the relations of objects, and are not necessities of thought, but of the attempt at symbolical representation of objects which substitutes abstract points for real objects. (p. 84)

(p. 84) Time has been taken in abstract isolation from all other characterizations of the real, and has sometimes been regarded, alone and by itself, as a "cause" of the "existence" of things; thus making a mystery of history, which is an interpretation of the qualitative significance of events, and not a description of the abstract sequence or positional relations of events. But time, taken by itself and with but the one attribute of lapse, is an absolute abstraction, without meaning, and discussion of it, in mathematics and science and the philosophy based on them, has only led and can only lead to

mystification. And the attempt to find three “dimensions” of time to correspond to the three dimensions of space, as by Alexander, leads only to confusion. Thus succession, irreversibility, and betweenness, are all aspects of the lapse, so do not characterize time at all. It is thus overlooked that time is neither a “particle” nor a “wave,” nor even a “field,” so that quantity cannot characterize it; but an element of the substance with a relational structure which conditions it with quality; and its function is not causal but constitutive. This means that, as a relation, and with the conjunction of its terms, and together with other factors, it constitutes an object; and as the object has quality, that is, relationality to other objects, it conditions the structure by which the plurality of objects constitutes a world. As relational, then, time immediately implicates space with all the qualitative consequences of their analogical identity, and through the relation with space it immediately involves all the other elementary characters that are included in the nature of objects. As space is also relational, and not characterizable as a quantity merely, the complication with time constitutes space-time the existential ground of all determination; and this existential ground, as it is synthesized with the color-tone synthesis as value ground, thus becomes the **Urgrund** of all characterization of the real of whatever kind. All the descriptions of the space-time system with which I am familiar fail to perceive the significance of the mutuality of implication as between space and time as a relation that is constitutive of the nature of its terms. It is thus the mutuality of implication between space and time that constitutes their unity as space-time in a single substance. It is thus also the **fact** of mutuality as a universal that justifies positing the concept of substance. Substance thus has its ground in relation, and not in the fact that it is a base of qualities. It is the mutuality of implication between relation and quality that necessitates the idea of substance. (p. 86)

(p. 89) The failure of the philosophy based on Space-Time is due to the misinterpretation of the relation between Space and Time. The prevailing interpretation is confused by the effort to identify two assumptions which in the nature of the case cannot be identified. It assumes that the coming together of space and time results in the ultimate substance, and then assumes that the substance can be identified with motion. But in this there is complete failure to apprehend the concrete nature of the “continuity” and “congruence” of space and time as expressed in their analogical identity. The consequence of this failure is the philosophy of abstract process, and this is the apotheosis of scientific methodology, the assumption that the procedural devices which the practical motive finds necessary or convenient can be identified with the reality of the world. Very impressive systems have been built up in the effort to make abstract motion in the form of process the basis of the interpretation of the world, and these all, as it seems to me, are due to the assumption that time, as meaning mere lapse, is to be taken as the substance of reality. And this is once more going back to the fallacious notion that reality

can be identified with one of its elements, where time is regarded as the central element. It is the assumption that time has a reality and a meaning out of relation to anything else, that time alone and by itself is the stuff of reality.

Now this superstition appears to have two sources. One of its sources is plainly the emphasis of modern science upon the “principle” of evolution as the ground of explanation of everything. But the logic of evolution easily shows the contradictoriness of the concepts of evolution theory when considered as a system of concepts that are applicable to the universe taken as a whole. The theory has had great value in the interpretation of relations among elements **within** the universe as represented in the special sciences, but falls down sadly when elevated to the status of philosophy.

The other source of the importance which moderns attach to time as a constitutional principle is religion. Here time becomes important as the primary condition of the realization of values within the conditions of existence, so it becomes the basis of the hope and faith that in spite of temporary frustration of all purposes ultimately ends are to be attained through the infinity of time. The importance of the eschatological motive in the cultural life of mankind is overlooked by those who are obsessed by the facts, but the attitude nevertheless enters into the faith of the scientist that the conquest of knowledge of the world is ultimately possible, “given time.” (p. 90)

(p. 96) We have therefore to assume that time and space and motion are objective realities with characteristics that cannot be forced into the formulas of mathematics and science if we are to succeed in accounting for the fact that they enter constitutionally into the nature and structure of the real world. Time is real and not an abstraction; but it is so only as a universal relational character of objects. Space is real, but only as a relational character of objects that constitute a world. And motion is objectively and constructively real in that it is a relational character absolutely necessary to make a real object of a term or item in a process or an abstract continuity. The problem is then to show in what sense these statements are all true in the sense that their falsity would negate a world that is real if anything is real, or if reality is to have meaning.

Time is real, but only through its relation to space, which relation is the reality of both time and space. But space is real only through its analogical identity with color. And color is real, but only through its relation of analogical identity with tone. And tone again is real only as an analogue of time. So the circle of self-identity is complete through the “congruence” of all these elements. And everything in the world is real in that it is an identity by analogy of space and time and color and tone, and nothing in the



world is real in the absence from it of any of these factors or of the full functioning among them of the relation of analogical identity. And the absence of any of these elements in a purported object is what is meant by abstraction when the meaning is substantive.

The fallacy of the space-time conception is its covert assumption that the relation between space and time is not real, that it has no attributes except its connexity, that the reality lies in space and time regarded as independent entities, and that the relation has nothing to do with their reality, in that it does not affect their characteristic quality. But it is the relation **alone**, as nearly as anything in the world can be alone, that realizes space and time - relation is the ultimate substance that underlies all the essential attributes of objects, that gives reality to everything that has it. And the exhibiting itself as quality is the condition of the world's being known - but we do not wish to raise the superficial and meaningless "problem" of epistemology.

The same fallacy assumes that motion is an abstraction of time and bodiless change, that the mere going on of change involves or need involve no realities at all, and that motion can be accounted for by reference to its mere continuance alone as if time and its lapse had no substantial relation to the objects whose order and structure constitute the real. (p. 98)

(p. 99) All this means of course that we must have or find some way to make the concept of motion significant as a feature of the real world. And this implies that we must be able to say exactly where the fallacy of the scientific notion of motion lies. And this, I think, we have already pointed out. The fallacy of motion consists in the assumption that as a relation it is external to and not constitutive of the objects between which it holds or operates. Motion is a constitutional character of objects or it is nothing. (p. 99)

(p. 100) What is real motion, then, and where is it to be found? Real or realized motion is rhythm. And it is to be found where the lapse of time and the extension of space and the "continuity" of movement are arrested by the substance of quality; where the empty passing of time is blocked by a substantial content, where, that is, time has a real nature of substantial body which is not expressed by its lapse.

The "problem," then, at this point, is to "deduce" the "category" of rhythm. Here we have the suggestion that motion is "deduced" from the relation of time and space; and, if rhythm is real as a factor or feature of the world, it will be substantiated in a relation that will be obviated in experience in the form of entities that are analogues of time and space. And it seems that there can be no question as to

what these analogues of time and space are. It is a common observation that a space is visible only as a spread of color, and it is felt by the finger or other sense organ through a motor-induced image, and this image is a tactual replica of the visual image. Distances are “judged” also by the tone of a sound. The tones of the organ or violin carry obvious implications to color, and time elements are resorted to for the measurement of tones and tone relations. So multitudinous are the mutual implications between time and space on the one hand and color and tone on the other that it is safe to conclude that there is some deep-lying relation involved, and this relation is all we need to get a clue to the roles that color and tone play in the constitution of reality along with time and space.

But the relation of space to time is, as we have seen, one of mutual implication, and we have further seen that a relation of any kind, so far as it has a function in the determination of reality, is itself real as an object in that, being internal to its terms, it becomes the inner design of the terms, and as such it constitutes the structure of the terms. The relation of color to tone is one of this constitutional sort. That is, it is a relation of mutual implication; and this means that color in the absence of tone is an abstraction, and a tone that is not colored is likewise an abstraction. Perhaps it can be said that the tone of a color is its central or distinguishing characteristic, and that the color of a tone is its determining attribute. Such relations are perhaps to be determined by psychological investigation (when psychology returns from its muckraking expedition in the subconscious and the pathological), but it is quite obvious that color and tone are substantiated in their interrelations so that each may be regarded as an essential factor in the nature of the other.

Also, it is, I think, obvious that color and tone are the basic “sensations” in that all the other sense forms may be regarded as phases in some way of color or tone. The tastes and smells and feels, and the organic sensations, whose characters are as yet undetermined closely enough to permit of clear designation, are all aspects of color or tone, and it has been suggested that all the sense “qualities” may be modifications of and developments out of the primitive sense of light. But it could be argued that there is a primitive form of tone as the basis of all the senses, which appears in the elementary feeling of rhythm or whatever it is that induces organisms to move in unison from some “stimulus” below the line of consciousness. It is certainly true that from the point of view of culture color and tone are basic elements, and we shall assume that we have the primitive elements of culture and the world it constitutes represented in color and tone.

But what we want to argue here is that color and tone are elements of reality on the same plane as space and time, and that color and tone in their synthesis, and space and time in their synthesis, with

the synthetic or analogical identity of space-time with color-tone, constitute reality in all its degrees and forms.

## **RELATION**

The concept of relation in mathematics and science is recognized as central, but when one undertakes to make out from the use of it in scientific discussion just what it means and how it is to be conceived, one finds nothing but unstated assumptions which have to be formulated in other than scientific terms before any clear meaning can be given them. What appears most obvious from the examination of the "logic" of science with respect to relation is that "a" relation is a third term which "stands between" two other terms. It appears not to modify its terms in any way, but serves merely to occupy the space between them, which space is not characterized in any way but is merely designated or pointed out as that which prevents the two terms from coalescing into one. Or where it appears to have a character of its own, this character takes meaning in exactly the same way and sense as that which characterizes the terms. In other words, a relation is treated as a term that stands between two other terms, and its positive character is the same in kind as that of the two other terms. Its function seems then to be merely to cancel out the void of space that separates two elements of reality, or, where it is supposed to have an intrinsic character, this character is implied in the act by which its terms are connected, but this "connexity" is never explained. What the connexity appears to mean as a positive implication is that it is a presupposition of continuity within the real. Perhaps this is the reason why mathematics takes so seriously the notion of continuity after the world has been pulverized or granulated so as to correspond to their dogma that whatever is real must be real through its own uniqueness and self-reference, and this unique nature must be statable in terms of quantity and number. Once more, reality is confused with the element of technique by which it is to be apprehended by the mind - the subjectivist assumption. (p. 104)

(p. 105) There is a profound insight involved in the assumption that a relation is real in the same way or to the same degree as the terms between which it holds. Only, the use which the scientist makes of this insight eliminates all the advantages that are speculatively to be derived from it. From his point of view all realities are identical in the characters that make them real, so the only differences that are recognized are such as can be stated in numerical or quantitative terms. The **r** then is identical in character with the **a** and the **b** in what makes them real - its exclusive uniqueness - the "principle" of negation which states that **a** is not **b** and that **r** is neither **a** nor **b**. This "principle" is necessary when the reality of an entity is identified with its exclusivity, and when the essence of relation is its externality. There is insight also in the scientist's unconscious assumption that what is positively **r** or **a** can be on occasion substituted for what is not **r** or **a** at all, as in the case of congruence; but as in nearly every other case he makes the wrong use of it.

To make the right use of these insights we have to see that our terms are all resolvable into relations, and that all relations can be precipitated into terms, where our relations and terms carry a genuine relevance to reality. But where they carry this relevance, terms are not isolable from other terms and relations, and relations do more than “stand between;” they enter into the nature of the terms they connect. If we are to assume that all terms and relations are abstractions in that they have no individuating or qualitative characters, so that a term merely occupies or establishes a position relatively to another position, with nothing specific about either position; and if we assume that a relation has no meaning other than such as is involved in distinguishing positions, then the term and the relation can both be reduced to the abstract mathematical identity which assumes they are “congruent” or “superposable” and that one can be used in any connection that the other can. Where everything is nothing, all things are the same. Any judgment of identity is abstractly “valid” where the entities identified are abstractions with no characterizing quality. Where judgment has no more significance than the manipulation of pure symbols, any manipulation of them is justified so long as it corresponds to the formula which directs the procedure that is arbitrarily chosen.

But there is another sense in which terms and relations are identical. It is the sense in which any reality, as it is such as can function in a valid judgment, can be represented as either a term or a relation, or, better, can be regarded either as terminal or relational in essence or nature. When I use the term “rose” in a valid judgment, it means the object constituted by a complex of relations among the light, moisture, temperature, soil, etc., which constitutes an implication to the universe of nature; and it also means the specific practical relation between me and my purposes with respect to it, which constitutes an implication to the universe of culture. The rose is therefore, as a term for judgment, an object in the constitution of things, and it is just the synthesis of these relations; and it stands there as a point of reference for a system of other relations to other objects. These terms-relations in their total synthesis constitute, as we shall see, the substantial quality of the world. A relation can stand in relation to another relation, and there will be a sense in which at the same time each of the three relations will itself be an object capable of standing in its own system of relations. That relations are also terms and can stand in relation is the condition of proportion and harmony, and this may be what the scientist is feeling his way toward in his notion of “congruence.” With these relations we are in direct contact with reality itself, as Plato so profoundly observed. (p. 107)

(p. 111) The idea suggested above that quality is the substance of the real will open up a good many lines for speculative adventure, not only in science but also in metaphysics as well. It is possible

here only to show the status of relation with respect to quality, and to suggest the principle that governs the transformations of the one into the other. It has already been noticed that a quality **is**, in nature, and considered as distinct from the cultural superstructure which may be erected upon it, the synthetic fusion of the relations that hold within a plexus of natural circumstances. Thus the relations between the sun with its heat and light, and the soil with its constituent nutrient elements and its moisture, with whatever other factors there are in the situation, all these are fused and integrated by the principle of their order; and they **are** precisely the color of the rose, considered as a natural phenomenon; that is to say that all these relations, when individuated by a principle of order, constitute the color, make it the substance of the natural situation. Note that I do not say that heat, light, moisture, etc., constitute the color: it is the synthetic individuation of the **relations** of these elements that is the color and the substance of the situation. (p. 112)

(p. 112) What we are arguing here is that a manifold of relations, when integrated by a principle of order, really becomes a new quality, and that this new quality **is** a new object added to the universe. The quality **is** then the substance of the situation, since it “underlies” the order of the relations to each other, and suggests the type of design which will fix the order as the structure of a new object. The idea that there must be a mysterious substance or matter behind the situation leads to the infinite regress, for as soon as the matter is analytically investigated it turns up as a system or set of mutualized relations with its suggestion of quality, and this, once more, calls for a new investigation, with a similar result in a set of relations, **ad infinitum**.

So there is no going behind quality; analysis will always find it resolved into relations, and analysis of the order of a set of relations always ends in a unique quality. The inevitable conclusion is that in this circle of quality-relation we have the ultimate of reality; and whether, in a given case, we “find” relations or quality will depend upon which of the two aspects of the situation is given the emphasis by some practical purpose. In the case that the situation is regarded as abstractly relational, the emphasis will determine the situation one of nature. But where the emphasis determines the situation an entity of quality, it will appear as an object of the cultural system. A simple abstract relational situation, one regarded as nothing more than the complex of its relations, will be, e.g., a stone. But the same set of relations, ordered by reference to the image of an object of quality, will become a statue. The statue as an image is merely the quality of the stone as it appears in the design of the sculptor.

The only substance that is required by consistent thought in the interest of knowledge of the real is this ultimate of quality-relation. And the only "fact" required to prove that this complex is ultimate is the "congruence" of the two notions, the fact that any analysis of a real situation will issue in one or the other as the substance beyond which it is not possible to go, and the fact that any analysis of either notion will end up with the other as issue. (p. 114)

(p. 114) It can, of course, and may, perhaps, be argued that what we have demonstrated is merely an instance of two possible points of view, that the distinction of relation and quality is nothing more than one of the "purposes" of the analyst, and that the analysis leaves the object the thing that it is; its qualities and thus relations are subjective and pertain to the object only as different attitudes of mind of the "observer." Also, it can be affirmed that what we are dealing with here are the elements of language and our concepts "mere" words, which words are symbols of objects which exist for us only as hypotheses, necessary for practical purposes, but have no knowable or known status in reality.

I do not care to argue on these "theories" further than to make two observations that anybody who chooses may condemn as pure dogmatism. But I have given reasons elsewhere for the assertion that there are realities involved in "practice," if practice is to mean the system of acts that can be demonstrated intelligible, and I have, I think, shown that the realities involved in action are realities because they have their nature determined for them in the constitution of the universe, and that their implication to and of the universe is what makes them real and at the same time renders them knowable. And as the second assertion, I have, I think, shown that the system of intelligible concepts necessary for thought and its expression in language, indeed every character that can be called a word, is itself constituent to reality, and its primary function consists in the fact that it can legitimately only be used as an element in an object that can be shown to have a place in the world of realities. This means that the primary function of language is to constitute an object, and that the use of words and language for the purpose of communication between minds is a secondary function of language, - its "practical" use in the technical sense, that is to say its use in concocting the devices of a mere utility which is dominated by subjective motives.

I should, therefore, submit that this use of language as mere communication is not even its use in a genuine practice. And I should offer the example of the use of language in genuine scientific investigation. Even the language of symbols, as used in expressing the results of experiment, is intended to represent a real object, and the abbreviated form of the characters has to be developed and expanded into full-fledged language before the object can be demonstrated real. And the scientific

essay which is “communicated” to the journals is not intended by the real scientist as a batch of information to be handed on to other scientists, but is intended to give permanent form to the object his investigation has created. As put together in language the object created in the experiment can be regarded as finished and thus stored away for reference and to render further experimentation in that particular detail unnecessary. And it has served its primary purpose as a language structure even though it may never be read by anybody, so long as workers in that field know of its existence.

These objects of scientific investigation are substantiated in a relation-structure, and their quality is a minor feature. But there are cases of pure relation-structure where the element of quality may be pronounced, if not primary. The “beauty” of a perfect mathematical demonstration is a feature of the relation-structure often of an object in which the relational factors are trivial except as they contribute to the beauty of the object. This is the case also in many objects of abstract art, where the manipulation of technique may rise to the dignity of a substantial quality.

The examples just given of the interrelations of relation and quality indicate that the interrelations, taken as themselves and as a whole characterized by an internal design, imply an identity. That is to say that all the relations between relation and quality are relations of mutual implication, and as such establish such a congruence between their terms as to amount in the end to a completed continuity, so that their meanings so run into each other as to establish their identity. But the identity does not imply that the two are superposable or interchangeable or that the one can in any connection be substituted for the other. They maintain their internal self-identity as terms, but the internal relations that design each term are continuous with the design of the other term, so that the two terms are made one in the reference they make to the whole which they constitute.

Relation and quality are thus related to each other through the self-identity of the object they tend to create. This object in its ultimate form is the universe itself, since its design is the continuity that holds among all the objects that make up the content of the universe. Each object therefore maintains the design and structure that identifies it, while at the same time it comes into harmony with all other objects to form the world as a whole. This identity is thus the **order** that is discoverable as the design of any object that is capable of self-maintenance, that is, of every object that is real. This order is then the principle we are seeking.

The order is the design of the object, and the principle of the self-identity of the object. Stated as the principle of the interrelations of objects it is the principle of continuity. It is the self-reference or



mutual implication that constitutes every object, and the implication universalized which constitutes the world of objects. It identifies every object with itself, and identifies every object with the universe through its cosmic reference. As an identity consistent with the individuality of every object, and at the same time constituting a universe of individuate objects, it is the principle of analogical identity.

The qualities that are interrelated within an object constitute the object by the relation of continuity among them. The color, tone, form, taste, smell, feel, etc., constitute the apple by virtue of the order which holds among them and which gives to each quality its unique individuality. The same qualities constitute the peach, but the order that individuates them in the peach gives to each quality its uniqueness, so that the sweet of the peach differs from the sweet of the apple, while each at the same time maintains its specific character as sweet. The qualities in the object maintain an order that constitutes the design of the object, and this order is an instance of the principle of analogical identity.

Quality and relation are thus the “same” thing in that their identity constitutes every object that is real. In determining the condition of the reality of objects, their identity establishes the continuity of objects in the universe.

## QUALITY

The real world, taken in its essential unity, is subordinated in quality. When the world is considered in its variety, where difference and plurality carry their consequent potentiality for the manifold of new objects, the world is a designed structure of relations. The apprehension of the world

therefore is conditioned upon the objective identity of quality and relation. It will be necessary to explain in what sense of these elementary terms this identity is possible. The fact that men consent to think seriously about the world assumes, as a basic hypothesis, that genuine knowledge of the world is not only possible but that such knowledge actually exists. The “epistemological problem” can therefore be ignored.

The customary way of approach of the philosophers to basic problems is the psychological; that is, the philosophers begin the research into fundamental issues by assuming that there is no direct access to reality, but that all such questions must be approached from the supposition that it is the way reality appears in consciousness that is to give the clue to the nature of things; that it is “experience” we must first investigate, and that what we find to be true about experience will be true also of the nature of things “outside” experience. But, as a matter of fact, its being outside experience is the first thing we are supposed to know of anything; in any case the externality of the real is universally assumed, so that we must start from this outsideness in order to attain to any valid knowledge. But it is a bit strange that we should have to study experience in its internal nature first in order to know about what is outside experience. The proper attitude to experience in philosophical research is to ignore it. (p. 120)

(p. 120) But I should suggest that all we know about our minds and their modes of procedure in perception or elsewhere we have learned from objects that are known and known to be real before we discover our minds or their methods. Objects are known through the identity of their substantial quality with the substantial quality that is immediate in the individual mind as feeling; i.e., the quality of the universe is continuous with and so identical with the quality in us as the basic feeling. So that the how of their relation is an idle question, since a relation of identity does not submit to a how. The presence or “existence” of objects is the original fact, and these objects are the knowledge that we have of the world; and in their qualities and relations they are the source and origin of the knowledge we have of ourselves. What is original is the system of objects; and it is a spurious and unnatural question to ask **how** or **why** they are “given” to us. This “given” cannot be made to mean anything, for it presupposes that the mind is “there” complete from the start and that the objects are “there” and known in full before the “givenness” can be made intelligible. So the mind as an independent fact and the object as known in its essential character must be presupposed before the “given” in perception has any meaning. And the description of the **process** of perception can only be done by exhibiting the characteristic features of the object. The theory of perception therefore is interesting within the limits of descriptive science where practical considerations are dominant, but it presupposes a more or less complete

knowledge of the world of objects, which is the content of philosophical discussion in every case. The continuity of the essential quality of mind with the essential quality of objects is thus a necessary presupposition, so that the unity of mind with its object guarantees the possibility of knowledge as a necessary postulate. That I can know and know the real in the sense that I identify myself with real objects in a community of quality is the ground postulate of metaphysics. The universe of objects and I are one in quality, and the “proof” or justification of the postulate is the system of knowledge that constitutes the essence of human culture.

The question then of the “how” of knowledge is, when genuine, a question of the nature of this world of objects, and this knowledge exists in and through the identity of the substantial quality of these objects with the substantial quality that is immediate in the individual as his “consciousness” or his primordial feeling. The quality of the universe, which is its substance, is identical and continuous with the quality or substance of the basic feeling which is the self-identity of the individual “mind”; and the attempt to explain **how** this identity comes into being is to prejudge the issue because of the prior acceptance of the “principles” of cause and origin as the total necessary bases of explanation. But merely to state the cause of a fact is not an explanation of it, nor is pointing out its origin or tracing the succession of its antecedents an explanation, except for a narrow practice. For by an explanation of a fact we mean establishing its place or status within the universe by identifying its constituent quality - that is to say, by showing that its characteristic quality is necessary to the ordered structure of the universe. For ordinary purposes this identity is considered as established by showing that the quality of the individual object is consistent with what is known of the system of objects. Judgements expressing this consistency are considered as true, and falsity is a mistake in the identification occasioned for the most part by inadequate acquaintance with the universe of objects in respect of a given object’s specific quality. Naturally, to know the cause and the origin of an object, in the sense of the linear succession in time of its antecedents, is practically useful in aiding the agent to make his way around among objects. But this gives only a temporary basis for utility, and it tells little or nothing about the position and function of the object in the universe, and this latter, for purposes of knowledge, is what we demand.

The question, then, as to the **how** of the “process” of knowledge is, I repeat, an idle one, for knowledge is essentially a matter of recognizing identity, and to ask for the how of an identity is meaningless, except in so far as the principle of analogy can be shown to be the ground of the identity. But to ask for the **how** implies that all questions are matters whose answers are mere references to time and cause, while neither time nor cause is an immediate character of the universe, but both are

accidental aspects of objects taken as details within it. It is here assumed that the reality of anything, its explanation, and the truth about it are all references to the implication to the universe which constitutes the substance of the thing. And the substance of things is quality.

And this implication to the universe is, objectively, the quality constituted by and of the relations in which the thing (object) stands with respect to other objects that are constituent to the universe in the same way. That in an object which makes it real is just the total relationality through which it contributes to the structure of the universe, and knowledge of it is simply the recognition of this general relationality. Quality then is the substantial stuff of objects as objects are constituted within complexes of relations. Quality and relation are thus the “same” thing, and an object is just their identity instanced in an individual. And the research for the substance of things can go no further than the quality-relation duad, their inherent unity constituting the object that makes reality accessible to knowledge, whether we recognize knowledge psychologically as derived either from perception or reason-intuition.

It is ignoring the substantial reality of quality by science and “logic,” and the treatment of it as an accident of objects instead of their substance, where it is recognized, that makes the so-called problem of knowledge appear important, and which leads “logic” to deny the existence and importance of metaphysics. Naturally, when we assume that reality is what is given in the process of perception, it will be necessary to deny the independent existence of the world, and the only “philosophy” possible will be the psychology of sense-perception. And the only world possible to the “philosopher” will be the realm of the private constructs of his mental states, with the utter instability of any system their relations will permit to them.

Equally naturally, the world of action for such a philosophy will consist of the chaos of practical gadgets whose reality lies in their subserving a momentary purpose, and the “system” they constitute will be the chaos where no relation can be regarded as permanent. Relations will thus be external to the “objects” between which they “hold,” and no relation will have anything to do with determining the qualitative nature of its objects. Relation and quality are then absolutely independent of each other; neither can have any relation to the other. Relation has no continuity with objects; it fills only the “betweenness” between objects, has no contact of any kind with them except externally at an abstract point, which means that in reality there is no contact at all. Also, quality, in so far as it has anything at all to do with objects, will be an accidental character of objects which they may “have” or refuse, a floating adjective existing only in the limbo of imagination and in a world of abstract quantity. This quantity as

magnitude will thus be the only criterion of reality, attested by the practically necessary processes of measurement. (p. 125)

(p. 126) But we do not enjoy arguing with the sophistries and superficialities of science and mathematics. It is more to the purposes of truth, even ultimately to the purposes of practicality, so far as they are valid, to develop a conception and a principle of identity that is self-consistent and at the same time gives us a picture of reality conformable to our experience of it and adequate to all the end-purposes which life within the system of its objects demands.

Quality is the substance of an identity of relations. Reality in its concrete form is the system of objects. What is real then in an object is quality as individuated in the confluence of the relations that design the structure of the object.

Here in these simple statements we have made use of all of the major concepts of metaphysics, and the construction of a system of metaphysics would involve no more than carefully working out the order of these concepts from an examination of the relations that obtain among them, and the evaluation of the quality constituted by the relations in their system. Here we are interested primarily in the position and function which quality occupies and performs within the system, and we are placing the emphasis on quality for the reason that it has been quite generally neglected. The ordinary explanation of the apple as a real object would ignore its color, or would count it merely as a detail among a batch of attributes all of which would be ignored after they had been represented by a quantity. But qualities cannot be symbolized by quantities nor by numbers - there is no real relation that can hold between them. This neglect of quality appears to be due to the fact that philosophers have not been aware of the metaphysical implications of the concept of quality, but have tended to consider it, when it is taken seriously, as merely an accident of some other supposedly more fundamental notion. Quality for the philosophers has been for the most part a mere attribute of body or matter, not real in itself but having its meaning in its specific relation to something else. But this relation they have consistently failed to explain or examine, because, perhaps, they have not been aware of its existence in any other form than as a hypothesis.

Or, what is perhaps more common, quality has been described, regarded as "secondary" in the sense that it pertains to bodies or matter only as these appear in consciousness or mind, and, if it has any permanent inherence, it is rather as an attribute or phase in some undefined way of the consciousness considered as a "stream" or a fleeting process. Quality is thus considered as an attribute

of “mind,” and as in this view mind is a process with no fixed habitation, quality is mere phenomenal appearance and can consequently be ignored. In any case and with all the points of view in philosophy, quality is attributive and accidental, or merely a phase of the consciousness and so subjective, and in no case is it recognized as substantial and as having a status of its own in reality. This assumption as to the nature of quality as not involving the essence of objects is an instance of the same or a companion fallacy that regards relation as having nothing to do with the essence of objects, but as holding externally and accidentally between objects - objects thus considered as self-identical entities without regard to either quality or relation. Objects are quantities of mass or matter, and exist independently of both relation and quality. But an object **is** in essence the identity of its relations with its qualities.

As we shall treat it, quality is not only substantial but is **the** substance. And we accept the obligation which this implies to explain what this means and to attempt to justify it by such proof as matters of this kind are susceptible of.

We may commence the discussion by taking the simplest empirical point of view, that reality is given to us immediately in sense-perception. Here, what is perceived in every case are the qualities “of” things. But the “things” are not perceived; they are the consequence of an inference from “observed” qualities. As a consequence, the qualities are regarded as given, as data, and from the point of view of immediate experience there is nothing beyond them, they are the only things that are given. Reality therefore in this view is, so far as it is known at all, given once for all in or by means of these qualities and the only other questions that are valid refer to the relations among the qualities as the combinations of the qualities construct the objects of experience. The qualities themselves are abandoned once their combination or organization suggests the object to which they adhere, and the objects are apprehended as masses or as some other aspect of quantity and as having nothing further to do with quality. The qualities are therefore abstract elements to be merely counted and the task of the philosopher consists from here on in merely showing how their combinations and associations give the things and objects of experience as phases of quantity which are supposed to be reality in its concrete form. In these combinations and associations the relations among the elements are never regarded in their concreteness or as real, but are generalized by abstraction and represented as cause and effect, or as purely spatial or temporal relations, or in terms of some other abstract generalization. The effect is that philosophical discussion of these realities is confined to generalizations **about** them, so that their concrete natures are totally neglected. All that can in the end be got from these elements and relations are statements about their possibilities of arrangement with respect to each other, their organization

into types or species. No object as individual ever appears, since quality is totally neglected after being counted, and relations are treated as abstract nothings which accidentally lie between masses. The scientific empiricism of modern philosophy touches reality at no point.

From a practical point of view this is of course all justified. Where our interest in reality is limited to its being shaped into instruments of action, and where action has no end beyond its preparing the conditions of further action, reality in its concrete quality need not be involved at all, and the scientific philosophers can spell it with a big R as a butt of crude jokes. But what we want to note is that even from the point of view of sense-perception and experience these qualities are the realities, and everything else, even the things in which the qualities are supposed to inhere, are “inferences from” them, or are consequences of the manipulation of them in the interest of some practical motive. In the experience philosophy and the philosophy of sense perception, therefore, the reality, in so far as there is any, is ultimately quality, and it is this fact that gives to this philosophy its persistence as the ground of all “common-sense” and practical scientific interpretation.

The basic fallacy involved in this philosophy lies in the fact that its recognition of the reality of quality is unconscious and unintended. The fault lies then in the practical assumption that qualities as given in sense can be formulated as quantities and their substantial nature and their relations can be explained by the manipulation of numbers or other abstract symbols by the methods of mathematics. (p. 131)

(p. 132) When on the other hand relations are regarded as elementary to the nature of objects, as by rationalist systems, the problem that is most important lies in connection with the status of relation with respect to quality within the real. The question is, that is, by what principle or principles do relation and quality conspire to constitute the object as the instance of concrete reality? We have pointed out in a number of connections that quality is the stuff of objects, and that relation establishes the inner design of the object as the element of order that establishes continuity with other objects and at the same time extends the continuity to the universe of objects. The internal design of a real object therefore is continuous with the design of the universe, and this connection is the implication to the universe that makes the object real and also validates all judgments about the object. We have here then, to put the case in historic terms, the matter or substance or stuff of objects in quality, and the form of objects in relation. And as we are reminded that the metaphysical problem is that of finding the ground principle by which matter and form are identified in the real, our question here will be that as to

how relation and quality stand with respect to each other in the object so as to determine the object as reality.

This question I conceive to be answered by and in the analysis of relation and quality as their natures are disclosed by an examination of the object.

The analysis of relation has already been made in another essay, where relation was revealed to have two functions when considered with respect to the object. The one function represented relation, by virtue of its implication of space and time and the order of their identity, as constituting the inner design of the object, thus giving to the object its structure by which it maintains its own integrity as individual. The other showed how relation, again by virtue of its implication of space and time, and in this case as "external" to the object, carries the implication of the object to other objects, and on through the system of objects to the universe of objects. The integrity of the object is due to the mutuality of its implications, to its self-reference, that is; and the other-reference of the object is due to the continuity of its relations as the continuity of relations determines the structure of the world.

Here we are interested primarily in the way relation operates to furnish the inner design of the object, for it is in this design that relation comes to identity with quality, and thus discloses the nature of quality. The question of the relation of relation to quality in design can be stated very simply, and the justification of the statement can only be accomplished by pointing out the objective fact in which it is exemplified.

The statement runs like this: the plexus of inner relations that constitute the structural design of the object, taken all together, and in the mass they imply by virtue of their spatial character, **are** the substantial quality of the object, the stuff that, as formed by its constituent relations and given a universal implication by them, **is** the qualified object as the instance of concrete reality.

The justification of this statement consists merely in pointing to the object as the object is known in experience. The total quality in which the apple as a real object exists, and by which it is recognized as such, is just the synthetic whole of its internal and external relations. The relations that constitute the inner structure of the object are continuous with, that is, are continued in, the relations in which the apple stands to other objects with which it posits the universe of objects. And this whole of relations constitutes the characteristic quality of the apple. This quality appears in experience as color, or some aspect of color as taste or odor; or as tone in the total feel of the object in its relation to the



organism and as the whole-of-sense by which the object is recognized as to its species. It is this quality that identifies the object with its universal, so the quality is the substance of the apple.

And here the proper function of science is also indicated. For it is science that gives us the disciplined experience that enables us to distinguish individual objects by the total quality of their constituent relations, and by relations thus integrated in quality to construct the abstract schemes by which the relations of objects to each other are to be represented for such uses as thought or action may make of them. When we say therefore that the ends of science are attained in practice, and that the practice is expressed in utility, we are giving to it all the dignity that is required; and it is only to protest the attempts of some of its representatives to push it beyond its limits into metaphysics that we here insist on the limitation to the practical. (p. 135)

(p. 135) Thus when we point to an instance of a real object we can depend upon science to detail for us its individual characters, in so far, at least, as its characters are given in experience. But the limitation of science to generalization denies it access to non-empirical characters which are known only in the universal. The tree **is** the synthetic whole of whatever characters the natural sciences will analyze it into - what the tree is as fact will be furnished by physics, chemistry, botany, etc. But this will be given to us in the form of an enormous system of particulars, each particular character indicating some specific type of use that may be made of the tree.

What we want of the tree is, however, a synoptic form that will present it to us as a whole without immediate reference to the details of its nature, such a form as will suggest the universal by which it becomes for us individual and thus in itself real. This form is recognized empirically only as a synthesis of the total quality of the tree; but this is an idea, the replica of the universe as contemplated from the point in the universe that is occupied by the tree. And for this idea, this total quality which is substance, we have to appeal to the artist, who, as painter or as poet, will give us the tree as an object that signifies the universe as the ground of reality as such.

That is to say, the painter or the poet will “see” the tree as the symbol of the universe and as thus standing complete and whole and by itself without connection or “continuity” with anything. Its continuity is its internal structure as qualified by its totality, so that its implication is to itself and involves no beyond. In this particular, naturally, the implication of the universe is to the tree, and the artist’s seeing the implication of the universe **in** the tree is what makes his representation genuine art. The tree as a universe is its own end, and, for the artist, his end also, since nothing is implicated beyond it. This

whole of immediacy is the quality of the object, and it is, analytically, the amalgam or fusion of all the relations that may be discovered as holding among its constituent elements, as the relations are unified or identified in the implication to the universe beyond. The design of the object that, structurally considered, consists of the internal relations of the object in their synthetic unity, is the quality of the object, the stuff that entitles it to claim reality on its own account.

But the quality of the object, through its relational constitution, has implications beyond the object to the universe as a whole, and this implication is carried by its external relations as continuations of its internal design.

Here the nature of the implication to the universe which quality carries through relation may be abstractly represented by a simple mathematical figure. Three lines intersecting each other in plane space “construct” a triangle, in that they confine a space by the lines as limits. But it is the lines in relation to each other, that is, the lines as relations, that determine the limited space which is called the triangle. At the same time the lines as relations imply or “construct” a space beyond the limits, in that they as relations do not limit each other, but intersect so that a space beyond the limits is necessitated for their indefinite extension, that is, to “infinity.” But infinity is a limit only for each line taken individually. For the lines taken together, and with their tendency to individuality occasioned by their intersection, they involve a space as a whole, a universe of space, as the infinity made concrete, and this universe of space is not determined by the infinite extension of the lines as relations, but by their mutuality, the fact that each relation implies the others and the whole that they together constitute. So that the infinity postulated is not a quantitative representation of the world, but the world’s total quality. In the same way, the quality of an object of any kind, as constituted by the relational design of the object, implies a universe of quality which endows the objective quality with completeness and thus with the self-identity which realizes it.

Thus the reality of the object is its quality as designed by its relations. Or, the reality of the object is its relational design as substantiated by its quality. And the reality of the object is the reality of the world, since the world is constituted by and of the universal implications of the object. Or, the object is constituted a world as a center of universal implication.

All these statements thus have their truth in the identity of quality and relation, which identity is the **being** of the world. It is therefore necessary to be clear as to what this identity means.

The meaning of identity as we use the term has been stated already on numerous occasions, but it is perhaps worth while to repeat it here. This may be best done by drawing as clearly as possible the distinction between identity as the term is used in mathematics and science, and as implied in all the concepts of congruence, and as we use it here. In mathematics, identity appears to be the central one among the concepts of congruence, and thus to sum up the common connotation of such concepts as equivalence, superposability, substitutability, interchangeability, where the meaning seems to be that of absolute sameness. (p. 139)

(p. 140) Thus the mathematical notions of congruence are devices of method for dealing with abstract processes, and have no meaning in connection with reality. Realities are never the same or even equivalent, for although the sides of an equation may show differences, these differences must be ignored whenever there is a reference to reality. There is a suspicion attached to the practice of recognizing and ignoring difference at the same time without precise statement of change of point of view; and the mathematician jumps from one to the other without apparently being aware of what is going on. There is no doubt but that these concepts of congruence are useful in the manipulation of abstract processes, but also no doubt that they are useless in dealing with concrete realities.

The concept of identity then, as it applies to concrete realities, does not depend upon the concept of sameness or likeness, or equivalence or any other abstract condition, nor does it permit the substitution of one reality for another in any case. Abstract points in space cannot be substituted one for another if they represent any real character of space, but must be regarded as outside limits to space. But then what are they? The identity that is significant of realities is one that rests on the idea of difference as the most immediate criterion of reality.

The old problem then of identity in difference is a set of contradictions if we apply the terms of the problem to real objects, and if our terms are used in the mathematical sense. What we find actually in the relations of realities is that any real situation as a set of conditions is an identity **of** differences, or, better, an identity of **differents**. For by differences we cannot mean to refer to external characteristics, for we have discovered that any qualitative character has to be regarded as itself a substantial reality, so that differences must be differences of quality if they involve realities. Differences of quantity, therefore, or of abstract position, or temporal differences, none of these can be differences of or in realities, since if they are referred to realities they act as limits and thus quantify the real, and that means that they do not affect the substance of the real. The phrase identity of differences, then, or of differents, implies a situation made up of a plurality of individuate entities which are constituted a unity by the operation

among them, and not by an act upon them, of a unique principle, the principle of analogy or analogical identity. And this principle, while it can only be defined or described in terms of the objects among which it operates, is not determined in any way by the external characters or qualities of the objects, but by the qualitative substance of the universal which determines the species of the objects. The mathematician and the scientist with their generalizations know nothing of the universal, hence their pronouncements have no reference to reality or truth.

The independence of the principal of unity of the specific characters of the objects among which it operates introduces another principle of great significance, namely, the principle of indifference. This is simply a statement of the independence of the principles governing realities of the specific quality of the realities, and it means that the principles apply to or refer to the realities without regard to their characteristic qualities. A set of conditions therefore are integrated into a unity by a principle of synthesis without being modified or limited in any way by the types of facts involved. This fact that **any** circumstances of any kinds are integrated we have called the principle of indifference of reference, and it is probably what the scientist is aiming at when he refers to the principle of indeterminacy. And it is this principle of indifference of reference that the scientist has in mind, if anything, when he speaks of the "principle of uncertainty." The ground of the principle lies in the nature of relation, that character by which a relation can attach to **any** object as term within the universe contemplated by its form of continuity. Whether then a relation may subsist without terms is merely raising the issue of indifference; and this means that a relation, as the implication of an object, may attach itself to **any** other object in the universe, and this is merely a statement of the universality of implication.

The fact therefore that there is in the nature of things no possibility of a limitation of relation, and no possibility of determining in advance of fact where or to what a relation dependent from a given real will apply as its other term, attests the fact that relation is of the essence of reality. Also, the fact that its quality is the substance of every real that can stand in relation, or that quality is in the last resort the only term that a relation can refer to; and the further fact that relation and quality are convertible the one into the other, or the one is explicable only in terms of the other, mean that quality and relation are the two metaphysical ultimates, and their relation to each other is one of identity. (p. 143)

(p. 143) Differences also remain ultimates within the identity, so that identity means the integration of differences that maintain their unique characters. Identity therefore does not mean a reduction to abstract sameness or even to any degree of likeness. It presupposes rather a plurality of unique elements that remain unique. But identity also implies that within it the elements attain new

characters by virtue of their integration, so that while the principle of integration is not determined or modified by the nature of the elements, the elements acquire new characters by virtue of the operation of the principle, so that the integrated whole of the elements becomes a new and unique individuality, and a reality is created thereby.

It is this identity that we call the principle of analogical identity to distinguish it from the identity of sameness of abstractions which the mathematician and the scientist employ. While relation is regarded as a metaphysical ultimate and quality its analogue, there can be no mystery in the appearance of new entities or individuate objects, for a new set of relations once established, a new quality is created, for quality is in its essence a plexus of relations, and a relation is in its essence an implication of a quality; and the relation of implication of a quality to the universe is the identity which makes a world of a chaos. This identity of relation and quality in the real is the expression of the fact that they imply each other, and this fact as universal becomes the principle of mutual implication. And it is this mutual implication of realities in synthesis that is the ground and agent of their integration or individuation, the analogical identity that constitutes the reality of the factual.

The fact that to discuss quality as a metaphysical ultimate will inevitably fall into terms of relation, and the fact that relation will always issue in quality, is a demonstration, once more, that we are here at the identity whose analogy is reality itself.

## **COLOR-TONE**

We have seen that quality is the substance of the real. But quality is, at the ultimate, color-tone. It will be necessary therefore to inquire what are the nature and implications to reality of color and tone, and what is the metaphysical status of their identity. This will raise again the question of the meaning of the principle of identity when it is regarded as the key to the nature of reality itself.

The major cultural or practical concerns of men, as represented in the "sciences" of morality, politics, religion, art, history, industry, are well-developed in their technical detail, and they are effective practically in their modes of function within the corporate structure of life. So far as the "facts" and the practical procedures and maxims of action are concerned, each of these disciplines is an imposing system. But they lack an adequate ground in theory, and the ultimate principles which would ground

their presuppositions of method and would justify their maxims of practice are unknown. There is an almost universal tendency to establish these disciplines upon the system of principles which underlie the natural sciences. But such procedure results uniformly in the neglect of those features of reality that give to life and culture their peculiar significance. These disciplines are thus not sciences in the generally accepted sense of that term, but are phases of philosophy in its broadest reach; i.e., of metaphysics. The cultural disciplines, as of now, that is, have no status in the system of the world, in so far as that system is intended to satisfy the demands of the intellect, and there are formulated no metaphysical principles upon which their status could be determined. The principles that grounded them in the classical philosophical systems require reformulation with respect to the changed factual circumstances of modern times. But the facts will not give direct access to the required principles for the practical disciplines, as is supposed by present theory. They all are, or tend to be, in the prevailing thought-schemes, "sciences"; they are systems of "fact" organized upon "principles" whose content contemplates only modes of procedure determined by immediate natural necessities. Ethics, politics, religion, aesthetics are thus in modern theory systems of empirically determined forms of action and modes of thought which, so far as any intelligible ground is concerned, hang in mid air, and the question whether they have or can have a status in the constitution of things, in modern or contemporary thought, is not asked.

The sciences of nature, on the other hand, have a fairly well developed system of principles of method, at least, upon which they stand. It is not necessary to assume that these principles are adequate, but they nevertheless represent an effort to find a ground. The system formulated in terms of time and space and quantity offers a more or less stable basis for the natural sciences, and while it is possible and perhaps necessary to question its ultimacy, it yet furnishes a workable program for them, and at the same time gives a consistent picture, whether valid or not, of the world which their system implies. But there is no world-concept or system of concepts behind or beneath the cultural disciplines that establishes their continuity, and they will suffer from confusion until one is worked out that will establish an intelligible order within and among them. As they stand now, they rest upon a purely empirical and pragmatic basis, and this basis is now proving itself catastrophically inadequate. The "problem" of the relation of church to state, of the relation of industry to education, the relation of politics or ethics to the other cultural institutions, etc., cannot even be satisfactorily formulated as long as there is no world-system to which they can be referred as principle. The attempts now being made in the direction of an international or world-law are floundering because there exists no world-concept to direct them. The concept or abstract notion of unity, as in the idea of united nations, is inadequate for

the reason that nobody asks upon what principles unity is possible. The two suggested principles of democracy and communism are after all not principles at all, but mere maxims of method referring not to the structure of the state, but to the organization of government. As a consequence, the emphasis is upon economic considerations rather than political, so failure is inevitable. And theorists are not facing the issue. In practical politics and the attempt to apply ethical principles in legal relations, even in industrial relations and their implications for world order, something is being attempted. This is the significance of the United Nations and the movement toward world unity in religion. The same practical motive is to be observed in the effort at world-wide organization of labor. But there is no corresponding effort on the part of theorists to find principles of world order for the cultural disciplines.

The success of the metaphysics of nature, partial though it is in many respects, suggests that a system analogous to it might be found which will serve as a metaphysics of culture. The question is at once suggested as to whether the system that has "worked" for nature might not also, with appropriate modifications, work as a basis for culture; whether, that is, the system of culture may not be based upon a naturalistic ground. But no such system has been found that permanently satisfies thought. It is true that naturalistic and religious philosophies are often beautifully neat and consistent systems, but examination invariably shows their inadequacy in the fact that they either ignore large areas of reality or force them by distortion into their rigid systems. Lucretius can construct a system so neat as to fit into a poetic form, and Hobbes constructs perhaps the most formally perfect system of modern times. St. Augustine also gives us the plot of the Beautiful City. But they pay the price of formal perfection by ignoring large and important areas of reality, or by twisting those realities until their content is squeezed out. The question of a ground of culture remains as a persistent problem. There are, however, suggestions within the historic systems which require only reformulation and adaptation to subsequent attainments of philosophy in order to found the cultural disciplines more firmly than are the natural disciplines upon their basis of time-space-quantity. I should submit that Plato, St. Thomas and Hegel have not yet been exhausted on the question of a metaphysics of culture which will have no leanings upon either natural or religious grounds.

Religion has presented its scheme as a world basis for the cultural systems and has given perhaps the most consistent suggestions for a world ground that have appeared in history. The suggestion of God as a principle of moralized intelligence for such a basis has provided some imposing structures, and these must be accorded the respect of serious thought. But if the religious system is offered as a world scheme, as it uniformly has been, it must prove itself adequate not only for the

cultural system but also for the system of nature, and this necessity has formulated a question to which religion has given and can give no final answer. The question, that is, of the existence of God, as the question of the relation between the system of natural existence and the system of cultural value, has been the rock upon which religious thought has foundered, and there seems to be no answer that is based upon religious assumptions that can be given adequate formulation. Systems of theology have uniformly failed to find an answer to this question, and have dropped the issue in the interest of the postulates of faith. (p. 149)

(p. 149) And the efforts of philosophy in this direction have also, for the most part, proved unsatisfactory. The great systems, Plato, St. Thomas, Spinoza, Hegel, when they approach the question of a total world synthesis, have tended to issue in either a highly imaginative fancy, which ignores the realm of structural relations, or, in recognizing structural considerations, construct a rigid mechanism which ignores the qualitative content of the world. That is to say, they resort to quasi-religious presuppositions, or to the abstract schemes of science when they approach the ultimate. The realistic idealism of Plato or Hegel appears no more satisfactory than the logical mechanism of St. Thomas or Spinoza, although both points of view have been more successful in their cultural formulations than the scientists or the strict religionists. Plato's cultural suggestions in ethics and politics and aesthetics are as near perfection as have ever been conceived, but his idea of the system of nature is a hopeless fancy. And a similar situation is true of all who succeed in constructing an idealistic philosophical system. In the attempt to force the world system to take its locus within the realm comprehended by the principle of Mind or Thought, they have been led either to a fanciful idealization of nature or to a crude naturalistic interpretation of culture, with the consequence that they have failed to represent either realm with the concreteness which would guarantee its reality. It is true of course that these philosophical systems represent the best thought of which men have been capable; but the confusion in the world and the uncertainty in the realm of thought indicate clearly that an adequate system which embraces both nature and culture has not been found.

The attempts at philosophy by the empiricists are negligible on the question of a world order, although their contributions to the details of the cultural systems have been impressive. But in so far as a concept of a world is implied in the empirical tradition, it tends to be that of natural science with all of the limitations of natural science. (p. 151)

(p. 151) What seems to me to be the fault of all efforts in this direction has been the neglect of the quality of the world. Perhaps it is true that systems of idealistic philosophy have attempted to



include quality in their formulations; but it appears that they have so transformed quality that it is not recognizable as a content when the structure is complete. Quality is transformed into a subjective abstraction where it is subsumed by the idealists under the principle of mind or thought, and as such it cannot be identified with the quality which must be recognized as the content of the objective world. It is in a sense true that the color of the sunset is an idea or an Idea, but to be such it does not seem necessary to reduce it to the state or process of a mind, or even to an element of content in the Mind. It is only as a factor of the world considered as an objective scheme of things that the colors of the sunset are **colors**, and it would appear necessary to leave them there as such if our theory as to the nature and status of color is to represent it as a reality. To remove it from its status must deprive it of its nature, for its nature or essence is determined for it by the relations among objective elements which constitute it a color. That is to say that its nature and status are determined by the relations of the sun and the light to the other objects of the world; it **is** a color only as a synthetic center of a set of relations among other elements, and it would not appear necessary to detach it from this system of connections in order to find a place for it in the theory of the world. There is always the question as to whether the idealists have conceived of quality as detached or severed from the factual world, and it seems to me obviously not true that Plato did thus abstract quality from its existential ground. It is for this reason that I should insist that world-theory must appeal to Plato for a method by which principles for a new synthesis are to be derived. Plato demonstrated that direct appeal to facts will not find principles. But he also proved that principles that are universal can only be arrived at through speculation. But the method of speculation does not appeal to the theorist of the present.

It is only necessary therefore to consider color as its factual definition identifies it as a pure quality to see that it is objective in the same way and sense that any other object is an element of the world; it is as "hard" a fact as can be found, and its importance, as it is, is as great as the import of any other fact. It is not necessary that a color be useful to break skulls in order to be as real as the brickbat which will break skulls. But it is just as material as the brickbat in that it **matters** in the scheme of the world as much as any stone. But the tragedy of the philosophy of the "facts" is just that it ignores color and quality generally except in so far as it reduces all quality to quantity when it recognizes it at all. But for the most part this philosophy ignores quality altogether, apparently regarding it as "secondary" or as a mere "attribute," that is, as a character which is real only as it is referred by a mind to an object. (p. 153)

(p. 153) But the color matters more than any stone. For it must be, while itself an object, an element of any and every other object if the object is to fulfill the conditions of being real. It is impossible to conceive of a thing as real which does not have constitutive implications to light and visual phenomena generally. Even the remote abstractions of religion, or the tone structures of music, have to be represented as factors in the aesthetic objects which are constituted of light and color; and moral acts have to be dramatized visually before they are conceded the reality that grounds their authority. And what demonstrates mathematics an absolute abstraction is just that its "objects" "have" no qualities. The color is therefore an Idea, a universal, and has a part in every object in the world, a part analogous to that played by time or space. It thus has an equal status with space and time, and, with its analogue tone, is an element of the same grade and status as Space-Time. So that Color-Tone is a metaphysical entity in the same way and sense as Space-Time, and the two duads, Space-Time and Color-Tone, are the ultimate elements of the universe. For practical purposes we have to have atoms as physical facts to satisfy the imagination of the active man where action is limited to utility, but for the man active in the ethical sense these "atoms" become ends and are ideal, and are characterizable only as colors and tones. This is true also of the typical ethical object, the aesthetic object, whose quantitative aspects can be represented only as phases of colors and tones.

An equally elaborate system of proofs and exemplifications to show the reality of color and tone could be worked out as are given to show the reality of space and time. And as great a system of characterizations and "attributes" and specific relations could be set up if the question were given the equal amount of time and energy as are given to the status of space and time. (p. 154)

(p. 155) The world which we now represent as a Space-Time system must be represented also as a Color-Tone system. And as science has been useful in explaining the detail of the system of Space-Time, so it may continue to be useful in working out the detail of the system of Color-Tone. There must be a Newton-Einstein for the system of Color-Tone if we are to have a rounded picture of the universe, and indeed suggestions and hints have already been given by the Lucretiuses and Goethes who are his precursors and have pointed the way. Not, naturally, a Newton of the spirit, for once the universe finds adequate expression in its wholeness the realities of the spirit will be found to be represented as fully as can be required in the systems of ethical and aesthetic values. Any other aspects of the "spirit" can be given over to Freud and the religionists. And there must appear also a philosopher as metaphysician to show how the two systems are to be integrated into a World-Whole if our Universe is to possess the

significance which establishes its reality - the significance which is wholly lacking to the world of mere Space-Time.

The fundamental problem for philosophy at the present moment, so far as it involves an ultimate synthesis, is therefore that of demonstrating the reality of color and tone and the reality of their identity in Color-Tone; and further of demonstrating the analogical identity of Color-Tone with Space-Time in the Object as the instance of concrete Reality. It is thus, formally, the problem of explicating the "relation" of Identity as the Universal of all relations that are constitutive of objects in their design; and of showing that the relation system of the object is substantial as the Quality that is the essence of every object. The Object is thus the real as a designed quality, a substance given form by its immanent design.

The problem is one, first, of pure speculation, and its solution will consist in the development of the logic which formulates the principle of analogical identity. This is the metaphysical principle by which diverse relations are integrated and their identity substantiated in a specific quality, meaning by specific the quality that is the substance of a species and that constitutes the individual object a universal. As a principle of pure or abstract logic, identity is the synthesis of all relations of congruence, in the mathematical sense; and rests thus upon the concept of likeness or similarity, which it interprets as sameness. But realities are alike or similar and their objects are "congruent," only in their abstract relational characters; only, that is, while their connotation of quality is neglected and they are regarded as abstract relational structures and as they stand naked in the system of space-time. There is no sense in which qualities can be said to be alike, for each instance of a quality is individual, and qualities cannot thus be integrated with each other by any process of assimilation but only by an act through which their essences are identified, and this is accomplished only in the act of individuation. In this act, differents are integrated into a higher individuality in which they retain their uniqueness of self-reference. When realities are regarded as having real status in Space-Time, that is, when they stand in Space-Time as real objects, and not merely as relational designs, they are shown to have such status only because their formal Space-Time structure is subordinated in quality, and this quality will appear in the instance as complexes of differences. That is to say that an object cannot be represented as real while it has a status merely in Space-Time. (p. 157) When thus objects are to be represented as real the complexes of differences have to be integrated, their abstract plurality must be gathered up in a unity which is substantial at the same time that its constituent differences remain distinguishable as differents. The constituent elements of an object therefore are coincident in the unity of the object, although not coincident with each other as distinct particulars. They do not coalesce with each other when they are

themselves regarded as objects, but they do fuse with each other in the identity of the object which they constitute. (p. 157) But the relations that connect objects are continuous with the relations that constitute the inner designs of the objects; that is, the relations that form the design of an object are “extensive” in that they extend beyond the limits of the object whose design they constitute, and connect this object with other objects through their continuity with the relations that are the design of the other objects. Two objects are thus the “same” or congruent because their designs are constituted of the same relations, relations that hold within and are common to both. This is the reason why we could say in another connection that the content of a given object is the system of objects that are its circumstance; that an object has its content and meaning outside itself in the objective relations which determine its status and function in the system of objects. (p. 158)

(p. 159) This integrative act by which different elements are unified in such a way as to preserve the individual identities of the elements and at the same time to appropriate them to each other in a higher identity is the principle of analogical identity, and it is the principle by which the real is formulated. It is thus the first principle of metaphysics. (p.159)

(p. 160) The principle of reality is then that of analogical identity. (p. 160) Analogical identity recognizes the world as constituted of elements that are distinguished by real differences, that is, by differences in the substantial quality in which objects are realized. Judgments formulated on it as a basis are or can be true, and the content of the judgments consists of the real objects of which the real world is the total integration. (p. 160)

(p. 162) The principle of analogical identity depends upon appropriateness. As it appears in empirical fact, it is the fitness or harmony and complementariness by which things that are really different nevertheless conspire to constitute an object whose internal unity and self-identity individuate it. It rests on the reciprocity of reals, upon the fact that real objects have, with respect to each other, reciprocal configurations, and this applies to reals both in respect of their inner designs and their qualitative substance. Both the form of an object and its content or significance or “meaning” possess configurations which are reciprocal in the sense that they can be matched with corresponding characters in another object, and the possibility of thus matching objects is infinite - in the real world there is the possibility of the “congruence” of **any** objects. This once more illustrates the principle of indifference of reference among reals, which is presumably what is meant by the so-called principle of uncertainty or indeterminacy. The compossibility of colors and tones in an object thus has, or appears to have, no

limits. Any number or types of colors and tones are possible in an object, and it is this, together with the universality of design, that accounts for the infinite variety of the world.

But the variety of the world has significance primarily in that it sets the problem for philosophy. In experience this variety means only confusion until some degree of order can be found or made of it, and the attainment of such a degree of order as is sufficient for practical purposes is the task of science. The demand that the world be conceivable as an ordered whole as the basis and ground of a total meaning is what gives philosophy its reason for being. How that order is to be represented as possible and then demonstrated actual is precisely the meaning of the philosophic quest. The nature of the problem necessitates that the method of approach to it is the speculative, and this sets out uniformly from the recognition of ideal objective characteristics as the medium or common element between the world as an object and thought as the principle governing the object's being. Science also appeals to ideal characters, but these are treated as replicas of forms of action where action is limited to utility. Where action is not thus limited, the ideal forms become principles of ethics, and the motive is again philosophical.

The ultimate ideal objective elements of the world recognizable in pure or speculative thought are relation and quality. The ultimates of the real world are not space and time. For space and time are abstractions, and must be interpreted in terms of relation and quality to establish their implication to reality. Space must be conceptualized as extensity, and time as duration, thus expressed as relations, before their perceptual stretch can be represented as objective and thus become an instrument of thought and a phase of the real. They are abstractions designed to facilitate the approach of thought to the real world in the interest of some practical motive until they are given a relational structure. By this we mean that these "attributes" of relation and quality must "characterize" the world at every point if thought is to have access to it. They are thus not attributes, and they do not merely characterize. They are the world in the forms of thought. The ultimate fact of variety itself would not be apprehensible to thought except as the elements of variety were distinguishable, that is to say, except as the variety presents itself as related differentials, and the differences are experienceable only as variations of quality, and thinkable only as variations of relational structure. The fact that the world presents itself under the forms of relation and quality is the ultimate fact of perception, which, so far as philosophy is concerned, is a fact merely to be accepted, since it is thought as it recognizes itself. The how of the process of perception can be described, but this is not, except for British philosophers, a concern of philosophy, but a matter for descriptive and analytical psychology. Where the purpose is limited to description and

analysis there are no principles involved, no universals, but only generalizations as maxims of method, and the motive is scientific. For perception, relation and quality, considered as simply facts to be described, are regarded as attributes, or as mere phenomenal aspects of objects, and as having no being outside the process of perception. But the operation of speculative thought soon discovers that they have a being that goes beyond the superficial view of science and experience, and are the basic conditions of reality itself.

The significance of relation, that which makes relation an ultimate category, is thus the fact that it participates directly in the constitution of objects. And the object is the instance of full or complete reality. Relation constitutes objects in the fact that its complication forms and grounds the design of the object, and design is the factor in the object that makes the elements of variety compossible; that is, it is design that imposes upon abstract variety the harmony that makes possible its unity. All these facts are consequences of the nature of relation. For relation has a meaning that is not circumscribed by its terms; that is, it is only in a restricted sense that the terms of a relation are limits, and the meaning for reality of relation consists in the fact of its universality, and with respect to its terms its universality is to be interpreted merely as infinity. If we will remember that the terms of a relation are always relations, then we can say that it is limited by its terms. But this is saying that it is limited by itself, and this is a statement of its self-identity. Relations are thus "extensive;" they extend "infinitely" beyond any terms, in the sense that the terms of any relation may be any other relation-complex, and the only real limit to any relation is the world-whole, which is constituted of the relations that design it. This means that relation at "infinity" returns upon itself and thus constitutes the world by becoming its own limit. It is this fact that relation, at the point of its realization or return upon itself as the design of the universe which it implies, becomes identical with quality that makes it representable as substance, and thus gives the world the character of permanence. And we mean by infinity here only that the meaning of relation can go no further, since no other considerations are necessary to make its concept self-consistent. This is obvious in experience in the fact of complication of relations, in which relations become terms for relations, and this defines the term by showing how it is constituted by a clot of mutually intersecting relations. This is illustrated formally in the notion of a mathematical proportion, which is a relation between relations, and which integrates and individuates the relational situation as a totality. This totality can now function as a term, since it is constituted an entity by its self-sufficiency and "independence." The world itself is then, abstractly, an object constituted of relations that formulate their own terms.

This elementary nature of relation we have indicated in numerous connections, and need not be further developed here. Also, as has been mentioned on previous occasions, this complication of relations which designs an object is, materially, the substance of the object which appears in experience as quality. Quality and relation are thus the same fact; this fact is relation when it determines the continuity of the world, and it is quality when it is formulated as filling in the design of the object and as that which endows the object with its permanence, that is to say, gives to the object its substance. A clot of relations thus fuses and melts down into a homogeneous mass, giving the idea of a space filled in by its own defining limits. The nusus toward infinity of each relation is checked and blocked by the same character of each other relation, so that the movement which a single relation implies is counterbalanced by the movement of the other relations, and the total movement of the whole is massed by their combined inertias into a solid substance. When we think of this substance as movement quieted by its own limits, we call it rhythm; so we speak of the rhythm of a work of architecture or sculpture, and as a substantive it is the fusion into a whole of the lines of the design of the object. This design has the feeling of energy expended without reference to any specific end, and is properly called the synergy of the object. The physicist will of course represent these masses as hard knots of resistance, since he must give them a nature that is representable in sense perception. But their essence is relational, so that they appeal to thought as conceptual forms. The object as the instance of the real is thus designed and given its inner structure by relation, and also has its character determined as that which makes the continuity of objects possible in a world. The externality of relations then necessitates that the object has no fixed limits, so that objects share a common content and transgress each other's boundaries, overlap each other in content so that the individuality of each object is universal. This is the final condition of the object's reality. But the ultimate fact is quality when the object demonstrates its persistence and permanence, when, that is, it exhibits the continuity of objects in the world as maintaining the world as itself the ultimate object. Quality, then, if we must "define our terms," is the objectivity of relation, occasioned by the integration of a set of relations by their mutual intersection. The plurality and variety of a set of relations is thus rendered down into a continuous whole; the many have become one. Quality is therefore the substance of the world, the matter of its design.

When we express this sustained continuity among objects and the consequent permanence of design of the objects of the world in the form of a principle, it becomes that of the identity of the real, or the self-identity of the real. (p. 168)

(p. 169) Here we have tried to show that identity, considered as the principle of the constitution of reality, holds as the inner law by which the object maintains its persistent design and thus the permanent form of the object. But the principle also, as an expression of the universality of relation, holds beyond the object in such fashion as to establish and maintain the continuity of objects with each other in the world, thus demonstrating the internality of relation as the constitution of the object, as well as the externality of relation as extending beyond the object in the implication to the universe which is the key to the reality of the object. In this implication to the universe we found not only the criterion of the reality of the object, but also the principle by which objects are integrated in a world; that is to say, the essential nature of the universe is adumbrated in the principle by which the object is individuated. This principle of continuity, when operating as the bond of the universe, we might think of as itself individuated in an object, and give it a name – **synechia** - to indicate its universality. The principle of continuity is thus established as a corollary, or better, as a restatement, of the principle of analogical identity which states the ultimate nature of things in their concreteness, and thus avoids the whole scheme of science and the nest of contradictions which it entails.

Again, and it cannot be repeated too often, the principle of identity, as we formulate it, makes intelligible the notion of continuity, since it is the principle of the constitution of things as well as the principle by which the integration of things in a unity is established. We saw that continuity is a self-contradiction for the mathematician because of his efforts to build up continuity out of atoms defined in terms of their uniqueness. (p. 170)

(p. 170) But with our principle of identity the relation of continuity is built into the nature of objects. This is accomplished by the fact or principle that the content of an object is constituted by the integration of its circumstance, and this means that the essential content of an object as real consists of other objects, so that there are no fixed boundaries or limits to objects. An object is the integration of objects, so that their continuity is the principle of their nature, and we designate this integrity of objects as the principle of analogical identity.

The continuity of objects, when objects are regarded as entities with fixed limits, as mathematics in the principle of measurement assumes, can never be made intelligible. But continuity on our principle of identity is the simplest of facts. The family as a corporate individuate entity is, as simple fact, the individuation of a group of individuals; and the individuals integrated in the family are the individuals they are because of the integration. The individual who enters into a family loses nothing of his essential individuality, but gains in many ways by virtue of the new relations that now help to constitute him and



that endow him with capacities and characters he did not have before. A similar description is true of any other object, as a tree or a stone. The tree is a center of its relations to soil, moisture, light, etc., and differs as an object from a stone in that the stone is a center of a different set of relations. By the principle of identity thus the concept of an isolated real is contradictory, and to be real at all means that an object is a synthesis of other objects so that the content of objects fuses and transcends all boundaries. (p. 171)

(p. 174) The essence of the real is quality. Quality thus is not a descriptive character or an attribute of things, but the very being of things. It is real as the analogue of relation, and this means that it is not derived from relation or dependent on relation, but **is** relation as relations are individuated as the design of an object. The complex of relations that design an object fuse with each other and coalesce into a substance, and this substance is quality - not the quality as an attribute of the object, but the quality which is the object. The object then is a relational design substantiated as and in a quality, and as this quality it is the stuff of the world. (p. 175)

(p. 177) But the question as to how the reality is related to experience is fundamentally important, and not to be answered by invention and the reference to utility or to mystification by the domination of anthropomorphic human interests. The question about the ultimate ground of action and the place which the systems of thought occupy which have to do with finding a place for the active life of men in the universe is, for men, and in the interest of the practical, one of the utmost importance and the greatest difficulty. And it is to be faced speculatively and not to be shunted off to "practice" and gadgeteering. I submit that the only way to find reality in conformity to human experience is to demonstrate how experience itself is a solid constituent part of reality, or to show that experience is a qualitative character of reality taken as a whole. In the latter case it will turn out that, since quality is substantial, it is the essence of reality, and the logic of experience will not differ in any formal part from the logic of existence.

Once more, the principle to which we must appeal on this problem is the principle of identity. We have seen that reality is the object, and that when we "analyze" the object what we ultimately find as "elements" are relation and quality. But relation and quality, we saw, are identical by analogy in Relation-Quality; that relation finds itself real as the ground of Space-Time, and quality is real as ground in Color-Tone. Space-Time-Relation is the design of the object, and (Color-Tone-) Quality is the substance in which the design is realized. The **realization** of Color-Tone is Quality as Substance of the Object, and considered as a process, is the process by which the real becomes self-conscious, and the basic matrix in

which consciousness appears is feeling, that is, experience. Experience thus is the process by which the real becomes aware of itself, and the awareness arises within the matrix of quality, and then and there recognizes itself as feeling. Then by our principle Quality as Substance is Feeling, and the world lives because feeling is its persistence or duration in time and its "extension" in space and its "appearance" to itself in Color and Tone. Or, if preferred, Tone is the awareness of life in Time, and Color is the permanence of life in Space.

In this statement two things must be fully realized and kept in mind if the statement is to be understood. One is that a process in "nature," or in "mind," when it is real, is a **cosmic act**, and not a causal relation nor a "stream of consciousness." The going on or temporal duration or spatial extensity of an "event" is not a character of the event but a phase of the cosmic whole. The consciousness that arises within the substantiation of a quality is then a cosmic process, and not to be confused with the consciousness of the "observer." Secondly, as a consequence of the above, feeling in this connection is the matter or substance of the real and not a mere passing condition of an individual "mind." It is thus the substantial stuff of the universe in that manifestation by which it serves as ground of all forms of cultural reality, and is "objective" in the same sense as the matter of nature is objective. The proof of this in the case of both the matter of nature and of culture is that analysis will resolve them into relations whose synthesis is experienceable quality, which is the circle in the argument that indicates that we have arrived at reality in the concrete.

Science has given an impressive account of the world in space and time. But it has failed to see the identity of space and time in relation. It can only see in their identity **another** entity, or element, space-time, which is not a relation. Consequently its interpretation of relation is faulty, since it has limited the meaning of relation to abstract conexty, which means that the only type of relation it will recognize is quantity. So the only meaning it can see for space is extension, ignoring the qualitative aspect of space in its implication to color, and its only meaning for time is duration or its stretch or lapse, which is extension unconsciously modified by time, while the extension of space is space interpreted only in terms of distance or length, or aspects that can be measured. Time as abstract duration is a pure quantity, but this is the scientist's device and not time as it is in nature, where time has no reality apart from tone, which effects its continuity with color and space. Time has no meaning outside the Space-Time-Color-Tone whole, and tone is just the relation that establishes the continuity of space with time and color, as color is the relation that establishes the continuity of Space-Time-Tone. But space, for science, is a matter of application of a "rigid rod," and time is a counting by "clocks."

The scientific account of the world thus is an account of certain aspects of the world, namely those which have meaning only when interpreted in terms of human utility. But this is an abstraction, true in no sense of the world as a universe, of which science knows nothing.

And science has also given us an account of the world in its qualitative aspects. But it has assumed from the first that quality is unreal, for it has insisted on interpreting all qualities as quantities, or on ignoring such qualities as it could not force into the quantitative scheme. Imagine, if you can, a tone expressed as a time duration, and measured by a motion, with the motion expressed as a rate. And, since the motive of science is practical and utilitarian, and its procedure a methodology, its quantities are all expressed as motions, since quantity in time, which action always presupposes, is movement. But to represent quality in terms of movement is a total misrepresentation of the nature of quality, since the motion of a quality is a movement, not **in**, but **of** space, which is ridiculous. Even movement referred to quantity and space is not a movement **of** space but one **in** space; that is to say that motion is a mode of space, or of “bodies” in space, and does not characterize space as an attribute. The confusion of quality with quantity thus raises a batch of irrational issues about motion, while motion has nothing directly to do with quality. The “motion” of quality is rhythm, and this involves motion only in a very indirect way and by an analogical relation.

In any case, the attempt to represent quality in terms of motion and the quantity which motion implies involves a total misrepresentation of the nature of quality; for, except for the cosmic implication which all realities involve as their essence, quality has no relation to motion at all. The mistake of science here lies in the fact that it fails to see that quality does have an intimate relation to the **analogue** of motion, of which science is totally ignorant. The fundamental mode of quality is rhythm, and it is only in terms of rhythm that quality, in its temporal aspect, can be interpreted at all. Of course, since rhythm is the value analogue of motion, it does have an indirect relation to motion; but this relation of indirection or of “cousinage” is one of which science knows nothing. So quality is related to motion and quantity only indirectly through the round-about route of color-tone-space-time, which is the reason its essential or basic mode, rhythm, is, in scientific procedure, interpreted in terms of time. But the interpretation of rhythm in terms of time fails to give any clue to the nature of rhythm, just as the attempt to explain motion in terms of space alone misrepresents the nature of motion. The explanation of rhythm is a complicated process, and involves the whole system of its cognate categories, just as the explanation of motion involves an account of the whole family of its related categories. And, so far, an adequate account of rhythm does not exist in any terms at all, for the attempts all assume that it is to be

completely stated in terms of temporal characters that can be measured by means of a clock. But clocks measure duration only, and in terms of "ticks"; that is to say, they break up the essential continuity of duration into bits which themselves have no duration, just as the yardstick breaks space up into elements that have no extension. How the addition of unextended entities can result in an extended line or space is a problem for the mathematician to deal with; but his explanation will be meaningless, since he will put it in terms of infinity and "as many as you please," which is his way of saying that his interests in explanation extend only so far as practical considerations demand. This once more suggests the contradictoriness of the mathematician's conception of continuity, which can have a consistent meaning only so long as meanings are to be stated in scientific or mathematical terms. But scientific and mathematical terms are entirely inadequate to express real meanings, that is to say meanings that represent the concrete reality of things in quality. A "meaning" that does not involve quality is an abstract symbolical signification, which is a meaning only for and within a methodological procedure, which pertains only to the abstract representation of things.

The reality of the universe is then, for experience, the analogical synthesis of Space-Time with Color-Tone, and it "exists" objectively as the Rhythm which comes to self-consciousness in Feeling. For the purposes of practice this reality can be represented in abstraction as matter or energy, or in any of the cognate categories of the existential system. But if we want to understand the world in those aspects in which it is a system of objective values we shall have to appeal to the system of categories which have their analogical synthetic identity in Feeling. Reality exists when seen through our human interests; for itself, it feels.