

Emergence (1921)

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§ I. Emergents and Resultants.

We live in a world in which there seems to be an orderly sequence of events. It is the business of science, and of a philosophy which keeps in touch with science, to describe the course of events in this or that instance of their occurrence, and to discover the plan on which they proceed. Evolution, in the broad sense of the word, is the name we give to the comprehensive plan of sequence in all natural events.

But the orderly sequence, historically viewed, appears to present, from time to time, something genuinely new. Under what I here call emergent evolution stress is laid on this incoming of the new. Salient examples are afforded in the advent of life, in the advent of mind, and in the advent of reflective thought. But in the physical world emergence is no less exemplified in the advent of each new kind of atom, and of each new kind of molecule. It is beyond the wit of man to number the instances of emergence. But if nothing new emerge—if there be only regrouping of pre-existing events *and nothing more*—then there is no emergent evolution.

The naturalistic contention is that, on the evidence, not only atoms and molecules, but organisms and minds are susceptible of treatment by scientific methods fundamentally of like kind; that all belong to one tissue of events; and that all exemplify one foundational plan. In other words the position is that, in a philosophy based on the procedure sanctioned by progress in scientific research and thought, the advent of novelty of any kind is loyally to be accepted wherever it is found, without invoking any extra-natural Power (Force, Entelechy, Elan, or God) through the efficient Activity of which the observed facts may be explained. The question then arises whether such scientific or naturalistic interpretation suffices, or whether some further supra-naturalistic explanation is admissible at the bar of philosophy, not as superseding but as supplementing the outcome of scientific enquiry. I shall claim that it is admissible, and that there is nothing in emergent evolution, which purports to be strictly naturalistic, that precludes an acknowledgment of God. This implies (i) that a constructive philosophy is more than science, and (2) that such acknowledgment is here to be founded on philosophic considerations only.

The concept of emergence was dealt with (to go no further back) by J. S. Mill in his *Logic* (Bk. III. ch. vi. § 2) under the discussion of “heteropathic laws” in causation. The word “emergent,” as contrasted with “resultant,” was suggested by G. H. Lewes in his *Problems of Life and Mind* (Vol. II. Prob. V. ch. iii. p. 412). Both adduce examples from chemistry and from physiology; both deal with properties; both distinguish those properties (*a*) which are additive and subtractive only, and predictable, from those (*b*) which are new and unpredictable; both insist on the claim that the latter no less than the former fall under the rubric of uniform causation. A simple and familiar illustration must suffice. When carbon having certain properties combines with sulphur having other properties there is formed, not a mere mixture but a new compound, some of the properties of which are quite different from those of either component. Now the weight of the compound is an additive resultant, the sum of the weights of the components; and this could be predicted before any molecule of carbon-bisulphide had been formed. One could say in advance that if carbon and sulphur shall be

found to combine in any ascertainable proportions there will be such and such weight as resultant. But sundry other properties are constitutive emergents which (it is claimed) could not be foretold in advance of any instance of such combination. Of course when one has learnt what emerges in *this* particular instance one may predict what will emerge in *that* like instance under similar circumstances. One has learnt something of the natural plan of emergent evolution.

Such emergence of the new is now widely accepted where life and mind are concerned. It is a doctrine untiringly advocated by Professor Bergson. Wundt pressed its acceptance under his “principle of creative resultants” (*i.e.* what we distinguish as emergents) which, he says, “attempts to state the fact that in all psychical combinations the product is not a mere sum of the separate elements... but that it represents a new creation.” (I. P. p. 164). Browning in *Abt Vogler*, poetically emphasised it in reference to our appreciation of a musical chord.

And I know not if, save in this, such gift be allowed to man
That out of three sounds he frame, not a fourth sound, but a star.

By “star” he lays poetic stress on the emergent character of “chordiness” which is something more than the additive resultant of the constituent tones—something genuinely new. If it be given in, or for, our hearing, all we can say is: “Consider and bow the head.” That, in some sense, should be our loyal attitude towards all emergents. As Professor Alexander puts it, we must accept them, one and all, “with natural piety.”

Professor McDougall has analytically distinguished what one may call the constituent notes in the chord of *reverence*. There is an element of tender emotion or love, of fear, suitably defined, of wonder; there is an attitude of upward regard to some being at a higher level; and so on. These and the like are the additive notes which are summed up in reverence. But is there not also something more; something which gives to the additive result its distinctive character of reverence; something of which we may say: “Consider and bow the head”? If this be so, that which gives to the combination of these several notes its character as a chord is, in our interpretation, an emergent quality.

Browning, be it noted, does not deny the summation of constituent notes in the chord; he asserts that there is more in the chord than can be interpreted as the outcome of summation only. Additive characters, as resultants, may be—I shall accept the hypothesis that they always are—co-existent with constitutive characters, as emergents. There may often be resultants without emergence; but there are no emergents that do not involve resultant effects also. Resultants give quantitative continuity which underlies new constitutive steps in emergence. And the emergent step, though it may seem more or less saltatory, is best regarded as a qualitative change of direction, or critical turning-point, in the course of events. In that sense there is not the discontinuous break of a gap or hiatus. It may be said, then, that through resultants there is continuity in progress; through emergence there is progress in continuity.

Lewes says that the nature of emergent characters can only be learnt by experience of their occurrence; hence they are unpredictable before the event. But it may be urged that this is true of all characters, whether resultant or emergent. Only as the outcome of experience can they be foretold. That, in a sense, is so. The point of emphasis, however, is this. Let there be three successive levels of natural events, A, B, and C. Let there be in B a *kind of relation* which is not present in A; and in C a kind of relation, not yet present in B or in A. If then one lived and gained experience on the B-level, one could not predict the emergent characters of the C-level, because the relations, of which they are the expression, are not yet in being. Nor if one lived on the A-level could one predict the emergent character of *b*-events, because *ex hypothesis* there are *no such events* as yet in existence. What, it is claimed, one cannot predict, then, is the emergent expression of some new kind of relatedness among pre-existent events. One could not foretell the emergent character of vital events from the

fullest possible knowledge of physico-chemical events only, if life be an emergent chord and not merely due to the summation, however complex, of constituent *a*-notes. Such is the hypothesis accepted under emergent evolution.

One does not either deny or ignore the evidence that some additive or resultant characters are, so to speak, discretely incremental. Nor does one deny that only through experience can one learn the incremental order. It seems not improbable that the so-called elements differ by the successive addition of an electron. Up to eight they may be pictured as forming an inner planetary electron, or set of electrons, whirling round a solar nucleus. Further additions are on a wider orbital sphere again up to eight. Beyond that we have a third and yet wider orbital course of the added electrons; and so on. But it seems also that there are certain constitutive or qualitative characters which distinguish instances of +1, +2, +3... increments in successive orbits. They have certain features in common and form family groups. May one say that in each such family group there is not only an incremental resultant, but also a specific kind of integral relatedness of which the constitutive characters of each member of the group is an emergent expression? If so, we have here an illustration of what is meant by emergent evolution.

In a different field of scientific research much has lately been done to render probable resultant continuity between the not-living and the living. No evolutionist is likely to under-estimate its value. But one may still ask whether there is not at some stage of this process a new emergent character of life, the supervenience of which must be accepted with natural piety and described in suitable terms of vital integration or otherwise. There does seem to be something genuinely new at some stage of the resultant continuity.

And if we follow up the story further, with Dr. E. J. Allen's Presidential Address (Brit. Assoc. Sec. D. 1922), on *The Progression of Life in the Sea* as our guide, while the stress is perhaps on resultant continuity, one asks again and again whether there be not emergence also.

There is one more preliminary matter on which a few words must be said. It is pretty certain that the interpretation of nature I put forward will, in some quarters, be characterised as mechanical and vitiated throughout by an uncritical acceptance of what is sometimes spoken of as "the mechanistic dogma." The odd thing here is that the whole doctrine of emergence is a continued protest against mechanical interpretation, and the very antithesis to one that is mechanistic. It does not interpret life in terms of physics and chemistry. It does not interpret mind in terms of receptor-patterns and neurone-routes. Those who suppose that it does so, wholly misapprehend its purport.

One must, however, in some way characterise what is here to be regarded as the key-note of mechanism. I should characterise it thus: The essential feature of a mechanical—or, if it be preferred, a mechanistic—interpretation is that it is in terms of resultant effects only, calculable by algebraical summation. It ignores the something more that must be accepted as emergent. It regards a chemical compound as only a more complex mechanical mixture, without any new kind of relatedness of its constituents. It regards life as a regrouping of physico-chemical events with no new kind of relatedness expressed in an integration which seems, on the evidence, to mark a new departure in the passage of natural events. Against *such* a mechanical interpretation—*such* a mechanistic dogma—emergent evolution rises in protest. The gist of its contention is that such an interpretation is quite inadequate. Resultants there are; but there is emergence also. Under naturalistic treatment, however, the emergence, in all its ascending grades, is loyally accepted, on the evidence, with natural piety. That it cannot be mechanically interpreted in terms of resultants only, is just that for which it is our aim to contend with reiterated emphasis. But that it can only be explained by invoking some chemical force, some vital élan, some entelechy, in some sense extra-natural, appears to us to be questionable

metaphysics. It may be that we have just to accept the newly given facts—all the facts as we find them—in the frankly agnostic attitude proper to science. Or it may be that in the acknowledgment of God an ultimate philosophical explanation, supplementary to scientific interpretation, is to be found. That will be the position I shall try to maintain.

§ II. A Pyramidal Scheme.

The most resolute attempt to give a philosophic interpretation of nature as a whole, with adequate stress on the concept of emergence, is that of Professor S. Alexander in *Space, Time, and Deity*. In order to get at the very foundation of nature as it now is, he bids us think out of it all that has emerged in the course of evolutionary progress—all that can possibly be excluded short of annihilation. That gives us, as an inexpugnable remainder, a ground plan of ultimate basal events (pure motions) with naught beyond spatio-temporal terms (point-instants) in fluent relations of like order. This he calls space-time, ubiquitous, all-pervasive, and inseparably hyphenated. From this first emerged “matter” with its primary, and, at a later stage, its secondary qualities. Here new relations, other than those which are spatio-temporal only, supervene. So far, thus supervenient on spatio-temporal events, we have also physical and chemical events in progressively ascending grades. Later in evolutionary sequence life emerges—a new “quality” of certain material or physico-chemical systems with supervenient vital relations hitherto not in being. Here again there are progressively ascending grades. Then within this organic matrix, or some highly differentiated part thereof, already “qualified,” as he says, by life, there emerges the higher quality of consciousness or mind. Here, once more, there are progressively ascending grades. As mental evolution runs its course, there emerge, at the reflective stage of mind, the “tertiary qualities”—ideals of truth, of beauty, and of the ethically right—having relations of “value.” And beyond this, at or near the apex of the evolutionary pyramid of which space-time is the base, the quality of deity—the highest of all—emerges in us the latest products of evolution up to date.

This thumb-nail sketch does scant justice to a picture worked out in elaborate detail on a large canvas. The treatment purports to formulate the whole natural plan of evolution. From all-pervasive space-time emerge in due historical order the inorganic, the organic, and the mental, in all their ascending grades, until the quality of deity is reached in some men.

May I give diagrammatic expression—the simpler and cruder the better—to such a pyramid of emergent evolution? At its base space-time (S. T.) extends throughout all that is. At its apex, but within it no less than space-time, is deity (D), an emergent quality that characterises only certain persons at the highest and latest stage of evolution along a central line of advance. The narrowing which gives the pyramidal form expresses such a fact as that the range of occurrence of material events as such is more extensive than that of events which are also vital, but is not, in Mr. Alexander’s view, coextensive with the range of space-time. The vertical arrow above N stands for what Mr. Alexander calls *nisus*. He speaks of it as the *nisus* towards deity.

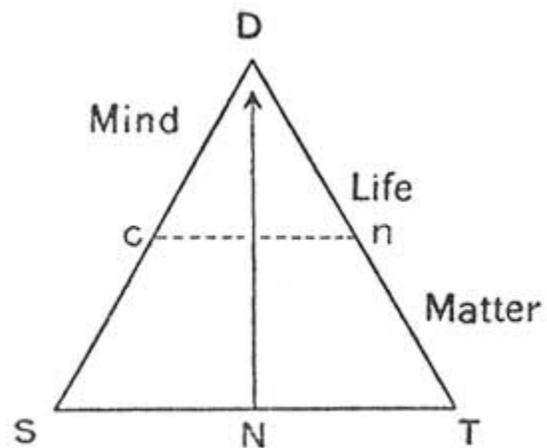


Fig. 1.

Such a diagram—for which Mr. Alexander is nowise

responsible—is, so to speak, a synoptic expression, or composite graph, of a vast multitude of individual pyramids—atom-pyramids near the base, molecules a little higher up, yet higher, “things” (*e.g.* crystals), higher still, plants (in which mind is not yet emergent), then animals (with consciousness), and, near the top, our human selves. Classify how you will; but let every individual entity have its appropriate place in the synoptic pyramid. It is intended to embrace all natural entities from atoms—or, for Mr. Alexander, from “point-instants,” upwards.

We are not to suppose that this means that an atom develops into a molecule, this into a plastidule (or whatever it may be called at the level of life), and so on. Each higher entity in the ascending series is an emergent “complex” of many entities of lower grades, within which a new kind of relatedness gives integral unity. May one say that each higher *com-plex* takes on the role of a *com-plex* in virtue of its integral unity; and that the higher the status of any given entity along the line of advance, the more do both limbs of the compound word, and the concept it names, get the emphasis indicated by italics.

Since it is pretty sure to be said that to speak of an emergent quality of life savours of vitalism, one should here parenthetically say, with due emphasis, that if vitalism connote anything of the nature of Entelechy or Elan—any insertion into physico-chemical evolution of an alien influence which must be invoked to explain the phenomena of life—then, so far from this being implied, it is explicitly rejected under the concept of emergent evolution. One starts, let us say, with electrons and the like; one sees in the atom a higher complex; one sees in the molecule a yet higher complex; one sees in a quartz-crystal, along its line of advance, a still more complex entity; and one sees in an organism, along *its* line of advance, an entity with the different kind of complexity spoken of as vital integration. If one talks of vitalism, why not also of crystalism, of molculism, of atomism? May it not be better, in this regard, to drop overboard all these *-isms*, and lighten the ship of such encumbrances; or, at any rate, only to retain “vitalism” to earmark a doctrine which invokes (as emergent evolution does not invoke) the supplementary concept of Entelechy or Elan from some disparate order of being?

Here, discarding all such *-isms*, we seek to indicate purely naturalistic lines of advance, accepting such new kinds of relatedness as supervene, with natural piety. But assuredly, we are not to suppose that progress along the lines of advance implies that there is in detail no retrogression—no resolution of higher entities into others of a lower status—no degradation or descent within the pyramid. Disintegration or devolution, no less than integration with emergent evolution, has to be reckoned with in the history of natural systems.

One more preliminary question may be put in terms of the diagram—the good of which (such as it is) lies in the questions it provokes. If we acknowledge some Activity of which all pyramidal events are the manifestation, does the diagram suggest that, at this, that, or the other level—this of matter, that of life, the other of mind, and perhaps above all when rational self-consciousness is emergent—there is a special insertion *Ab Extra*? Does it suggest that emergent supervenience is to be explained by Divine (or other) intervention? This is just what the diagram is intended, for, better or worse, to preclude. From the strictly emergent point of view any notion of a so-called “alien influx into nature” is barred. And if we acknowledge Divine Activity, of which for my constructive philosophy emergent evolution is the expression, it is to be conceived as *omnipresent and manifested in every one of the multitudinous entities within the pyramid*. God, if in any, is in all, without distinction of entities.

And if there be no Divine insertion at sporadic points—say at the level of life, of mind in its inception, or of reflective consciousness—there is, assuredly, for us no other kind of insertion. All qualities are emergent *within the pyramid*. Life and mind in no sense act into it, or any part of it, from without—from some disparate order of being.

So far as it expresses, however inadequately, Mr. Alexander's philosophic scheme, the chief difficulties suggested by the diagram arise in connection with the base and the apex of the pyramid, and with regard to the concept of *nisus* which I have introduced into the diagram because it is, I think, for him a cardinal feature. How he grapples with these difficulties may be learnt from his book, from his subsequent statements in *Mind* (Vol. XXX. N. S. p. 409), and from his recent lecture on *Spinoza and Time*.

A further difficulty centres in the relation of mind to life, and hence in descending order to matter. For mind on the one hand and matter on the other hand, seem to be in some special sense heterogeneous in the very nature of their being. How then, it will certainly be asked, can the one "emerge" from the other?

Yet another difficulty arises when we remember that the diagram purports to be the synoptic expression of a vast number of individual pyramids. Take some two of them—one in which mind is emergent, another, say a quartz-crystal, in which the apex does not rise above the level of matter. How can the former in some sense know (perceive) the latter? As Mr. Alexander might put it: How can the mental as a quality of the one, apprehend the non-mental by which the other is "qualified" in accordance with its lower evolutionary status? This cognitive problem is central for any philosophy. It will engage much of our attention in all that follows.

§ III. Involution and Dependence.

I have so far used the words "higher" and "lower," taking it for granted that their signification would be understood in a general way. On this understanding we might agree that natural events at the level of mind are higher than those at the level of life, and these higher than events at the level of matter. But we must now ask: Higher in what sense? They may be higher in more senses than one. What I here mean, however—as that on which the pyramidal concept is in large measure founded—is higher in a special sense on which a good deal of my treatment will hinge.

When two or more kinds of events, such as I spoke of before as A, B and C, co-exist on one complex system in such wise that the C kind involves the co-existence of B, and B in like manner involves A, whereas the A-kind does not involve the co-existence of B, nor B that of C, we may speak of C, as, in this sense, higher than B, and B than A. Thus, for emergent evolution, conscious events at level C (mind) involve specific physiological events at level B (life), and these involve specific physico-chemical events at level A (matter). No C without B, and no B without A. No mind without life; and no life without "a physical basis."

Note that I use the word "involve." I speak of events at any given level in the pyramid of emergent evolution as "involving" concurrent events at lower levels. Now what emerges at any given level affords an instance of what I speak of as a new kind of relatedness of which there are no instances at lower levels. The world has been successively enriched through the advent of vital and of conscious relations. This we must accept "with natural piety," as Mr. Alexander puts it. If it be found as somehow given, it is to be taken just as we find it.

But when some new kind of relatedness is supervenient (say at the level of life), the way in which the physical events which are involved run their course is different in virtue of its presence—different from what it would have been if life had been absent. If this be so, on the evidence, it too must be accepted with natural piety. It appears to me that, on the evidence, it is so. How, then, shall we give expression to it? I shall say that this new manner in which lower events happen—this touch of novelty in evolutionary advance—*depends on* the new kind of relatedness which is expressed in that which Mr. Alexander speaks of as an emergent quality.

The position then is this: Events of the kind we labelled C *involve* events of the kind we labelled B; and these in turn involve *a*-events. But in any given concrete case the specific way in which the *a*-events run their course, then and there, *depends on* the specific presence of some phase of vital B-relatedness; and similarly the

specific way in which these *b*-events run their course—in behaviour for example—depends on such conscious C-relatedness as may be present.

I must beg that this specialised signification attaching to the words “involve” and “depend on,” respectively, be steadily borne in mind. I am nowise wedded to this mode of verbal expression; but I believe that what I seek thus to express is of much importance. At any rate a good deal of that which I shall hereafter say will turn upon it.

Emphasis on “dependence” is no less essential than that on “involution.” In a physical system wherein life has emerged, the way things happen is raised to a higher plane. In an organism within which consciousness is emergent a new course of events depends on its presence. In a person in whom reflective thought is emergent behaviour is sustained at a higher level. If the quality of deity be supervenient, the plane of conduct is yet higher. Strike out deity, and conduct is no longer sustained at that level. Strike out reflective consciousness and action is of a lower impulsive order. Strike out all guiding consciousness and behaviour is that appropriate to the level of life. Strike out life and the course of events drops down to the physical level. The new relations emergent at each higher level guide and sustain the course of events distinctive of that level, which in the phraseology I suggest depends on its continued presence. In its absence disintegration ensues.

Let me further illustrate by taking progressive steps in mental evolution on its cognitive side. I shall presently distinguish (*c*) contemplative thought, (*b*) naïve perception, and (*a*) sensory presentation. The evolutionary genesis of contemplative thought involves that which has already been developed at the lower level of naïve perception; and the genesis of such perception involves, as historically prior, sensory presentation. One cannot have thought unless perception has supplied some of the requisite data; one cannot have perception unless the representative factors thereof have been derived from precedent presentation to sense. So far involution. But, at the level of contemplative thought, *how* perception runs its course depends on the guidance of reflective consciousness, so far as co-existent; and *how* what is given in sensory presentation takes form depends on the guidance of perception, if that level have been reached. One cannot, therefore, accept the old adage: *Nihil in intellectu quod non prius in sensu*, if this means that there is nothing *more* in thought than there is in naïve perception, and nothing *more* in this than is primarily given to sense. Nay, rather, those who may be led to accept emergent evolution will regard this old adage as radically false, just because it takes no account of that emergence on which so much natural progress depends. Leibniz’s pregnant rider, *sbe intellectus ipse*, receives evolutionary justification though perhaps not in the sense he intended.

§ IV. Towards Space-time.

We have now to follow Mr. Alexander downwards towards the space-time base of the pyramid. But we must first clearly grasp his use of the word “quality.” He speaks of the emergence of new qualities. He would say that at some stage of inorganic evolution this or that so-called secondary quality, such as colour, emerged; that at some later stage of evolutionary process the quality of life emerged; and yet later the quality of consciousness. I shall often use the word “quality” in this sense. But my own interpretation runs rather on lines of what I call relatedness. The discussion of relatedness, to which I shall devote the third chapter, requires the consideration of the terms in relation within any given field of relatedness, and of the relations of these terms. Relatedness, in my sense of the word, includes both; not the terms only; not the relations only; for they can never be divorced if my usage of the word “term” be provisionally accepted. I shall speak of the relatedness which obtains wholly within any given system as *intrinsic*; and I shall distinguish the relatedness of this system to some other system, or systems, as *extrinsic*. A system of intrinsic relatedness I shall provisionally

call an entity. In so far as the character of a natural entity is determined by intrinsic relatedness I shall speak of it as a quality which is an expression of that intrinsic relatedness. In so far as the character of a natural entity is determined by extrinsic relatedness to other such entities, I shall speak of it as a property which expresses that extrinsic relatedness (cf. § XXXIII).

On this understanding what is supervenient at any emergent stage of evolutionary progress is a new kind of relatedness—new terms in new relations—hitherto not in being. In virtue of such new kinds of relatedness, not only have natural entities new qualities within their own proper being, but new properties in relation to other entities. The higher entities are not only different in themselves; but they act and react differently in presence of others. At any given stage of emergent evolution the questions, then, are: What is the new kind of relatedness that supervenes? What are the new terms and what the relations? What intrinsic difference is there in the entity which reaches this higher level, and what difference is there in its extrinsic relatedness to other entities? When, for example, an entity becomes an organism, however lowly in status, what intrinsic difference is supervenient, and what extrinsic difference is there in relation to its “world”? Should it become a higher entity in which conscious relatedness is present in addition to all else that is involved—what difference does this make?

Now in order that there shall be a difference in the course of events the relatedness in question must be what I shall call *effective*. By this I mean that when it is present some change in the existing go of events occurs, which would not occur if it were absent.

I shall have occasion hereafter to urge, as against radical behaviourists, that mental guidance of events counts for progress and betokens a kind of relatedness that is effective. When it is present changes occur which do not occur in its absence. The manner of go in the enriched system is different. That is what I mean by speaking of guidance as dependent on the supervenient kind of relatedness at the level of mind. Passing down a stage I accept with natural piety the evidence that there is more in the events that occur in the living organism than can adequately be interpreted in terms of physics and chemistry, though physico-chemical events are always involved. Changes occur in the organism when vital relatedness is present the like of which do not occur when life is absent. This relatedness is therefore effective. Descending from the level of life to that of matter, no one is likely to deny that kinds of relatedness of the chemical and physical orders are severally effective in the sense that the go of events is different when they are present from that which obtains in their absence.

Here someone may intervene and ask: Why this cumbrous and pedantic phraseology? Why relatedness? Why not this or that force as the cause of such and such change in what you call the manner of go of events? We are all quite familiar with the forces of inorganic nature. And we used to be told by materialists that these are the only forces and that life, to go no higher, is merely a subtle re-combination of purely physico-chemical events. You seemingly have to confess that they were mistaken; none the less you shirk the admission that life is a new and different kind of force.

I seek only to avoid ambiguity. I know well that physicists speak of the force of cohesion—to take but one example. But what do they mean? Do they mean more, in this or any other example, than that, given such and such entities that function as terms in certain describable relations, this or that change does occur. This, I conceive, and nothing more than this, is what most modern physicists mean. But what many who *read about* science take them to mean is that there is some agency that makes the entities cohere. This agency it is that they understand by the force of cohesion. And then they ask why one presumes to deny that life, too, is an agency—the vital force which makes organisms live. There is, then, some ambiguity in the word “force.”

And this I seek to avoid by using the word “relatedness,” which is meant to exclude the concept of “agency,” or “activity,” from any place in scientific interpretation.

On this understanding we distinguish mind, life, and matter. Within each, of course, there are many emergent sub-orders of relatedness. It is for science to work out the details—for psychology, for biology, for chemistry and physics. A constructive philosophy, in dealing with net results only, must accept nothing discrepant with the findings of these departmental branches of science. Nor must it accept anything contradictory to the outcome of modern philosophical criticism of the foundational concepts on which the departmental sciences severally build their superstructures.

The position we have reached, then, is that there are different natural systems to be reckoned with—mind-life-matter systems; life-matter systems; and matter systems. At the top-level there are modes of effective relatedness which are not present at the mid-level; at the mid-level there are modes of relatedness which are not present at the bottom-level.

But is it the bottom-level? Mr. Alexander bids us descend a step lower to space-time. An integral system without mind is life-matter only; an integral system without life is material only. But lower still is that which, in the absence of matter, is space-time only. In the ascending order of evolutionary progress, space-time has as yet no effective physical relatedness; matter emerges but has as yet no vital relatedness; life emerges and has this but as yet no mind-relatedness. What then has space-time? It has spatio-temporal relatedness only in a continuum within which point-instants are terms in ever-changing partnership giving pure motion.

One must here ask: (1) Is spatio-temporal relatedness capable of existence apart from any physical events? (2) When it does co-exist with physical events which then become spatial-temporal-and-physical is the spatio-temporal factor as such effective? To the latter question one can give no reply on the basis of *our* criterion. For since spatio-temporal relatedness is ubiquitous and universally present, that criterion of presence or absence ceases to be applicable. Mr. Alexander would, I think, reply to both questions in the affirmative. Space-time is, for him, the primordial base of the pyramid and was existent prior to the emergence of any physical events. And spatio-temporal relatedness is effective at any rate in the sense that it affords the foundational go of the universe through the ceaseless flow of time. The metaphysical grounds of his constructive scheme and its multifarious metaphysical implications are set forth in *Space, Time, and Deity*.

Much more modest is the constructive scheme which the more limited range and penetration of my speculative insight permits me to entertain. I seek in vain for evidence that spatio-temporal relatedness does exist apart from physical events. I can pierce no deeper than events which, in their primordial form are not only spatio-temporal, but physical also. Furthermore, while I acknowledge the flow of physical events, subject always to spatio-temporal relatedness, I doubt whether the concept of the fluency of time, on which so much turns, will stand the test of philosophical criticism. That intrinsic to every minimal physical event, and extrinsic as between such events, there is (*a*) spatial here-there relatedness and that there is (*b*) temporal now-then relatedness—always co-related as inseparably (*ab*)—appears to me to be undeniable; but for the belief that here-there-ness or now-then-ness, severally and *as such*, is effective in determining the course of physical events I find no satisfactory evidence. Fluency there is; but it is the fluency of events in that which is methodologically conceived as a space-time frame.

Metaphysically my modest scheme will not bear comparison with that elaborated with admirable skill by Mr. Alexander, but it is all I have to offer.

How far then can I go towards a basal level of space-time? Only so far as to acknowledge a physical world in which spatio-temporal relatedness is ubiquitous, but as such non-effective. In other words I accept as a going concern such a physical world as may afford a basis for that which has been disclosed in the course

of scientific research. But, as I shall have occasion to confess, I regard the independent existence of such a physical world in its own right as not susceptible of proof under rigid philosophical criticism. Hence I accept it under what I speak of as acknowledgment. I accept it, in brief, as part of a constructive scheme of emergent evolution.

Otherwise phrased, a physical world nowise inconsistent with the positive outcome of departmental researches in the several branches of science, on the one hand, and that of a critical philosophy which deals with the foundational concepts in these branches of science, on the other hand—this seems to lie at the base of our pyramid. And if it cannot be established on positive evidence I am content to acknowledge its existence as part of what purports to be a constructive philosophy of emergent evolution. Mr. Alexander goes further.

§ V. Deity.

In trying to work up towards deity which, it must be remembered, is an emergent quality of the highest natural systems that we know, *i.e.* some human persons—let us start from Mr. Alexander's space-time. Even at this basal level he speaks of time as the mind of space. He warns us, however, that he does not "mean that time is mind or any lowest degree of mind" (S. T. D. II. p. 44). What then does he mean? He means, I think, that throughout the universe, from base to apex of the pyramid, there are two diverse "attributes," as Spinoza called them, or "aspects," sometimes spoken of as "inner" and "outer." All these words, for lack of better, name a quite unique kind of diversity or duality, which, it is claimed, is inherent in the nature of all events. I shall speak of their inseparable union as "correlation" (cf. Huxley, ii. p. 163) in a sense of the word which includes what Mr. Alexander speaks of as identity (S. T. D. II. p. 5).

Without subscribing to Mr. Alexander's doctrine of time as, in any sense, the mind of space—this my attitude towards spatio-temporal relatedness precludes—I fully accept unrestricted and universal correlation as an acknowledgment—avowedly speculative, and admittedly beyond positive proof (or disproof), but essential to my constructive philosophy of evolution. This means, for me, that there are no physical systems, of integral status, that are not also psychical systems; and no psychical systems that are not also physical systems. All systems of events are in their degree psycho-physical. Both attributes, inseparable in essence, are pervasive throughout the universe of natural entities. This is crudely represented by the dotted line *c... n* crossing the diagram on page II. Every natural entity, say from atom to man, expresses both attributes while still preserving its substantial identity, in some sense of this phrase. The concept is familiar to students of Spinoza, who says in effect that the physical aspect of the correlate constituting the human mind is the body (Eth. Pt. ii. Prop. 13), and is careful to add in the *scholium* that this applies "not more to men than to other individual things, all of which, though in different degrees, are animated," *i.e.* "enjoy" in their own fashion the psychical correlate.

I repeat that this is from the nature of things not susceptible of positive proof; but it is also, I urge, beyond disproof.

However we may phrase it, there are two quite different ways in which we human folk are acquainted with psycho-physical events. In one way we are acquainted with their physical nature. In the other way, with their psychical nature. The latter way M. Bergson speaks of as intuition; Mr. Alexander as enjoyment. And this latter way is restricted to each several integral system—to you or me or another.

Now, when we are discussing mind, at its appropriate evolutionary level, we install ourselves in the psychical attribute; and then we acknowledge physical correlates of all mental events in that psychical system. But when we are discussing physical systems, as such, then we acknowledge psychical correlates of the go of

events in those systems. We name the level of mind from the point of view of psychical approach, acknowledging (in brackets, so to speak) physical correlates. We name the level of life from the physical approach, acknowledging (in brackets) psychical correlates. And so, too, at the level of matter. Hence our comprehensive scheme runs thus:

C, Mind (with physical correlates).

B, Life (with psychical correlates).

A, Matter (with psychical correlates).

It is at level C that there seems to be positive evidence of *some* correlation. But even here we must confess that there is no positive proof that *all* mental events have such correlates. We therefore accept this under acknowledgment which goes beyond the evidence but is not, we think, contradictory thereto—thus taking up a quite familiar philosophical position. We urge that from the nature of the case we can only “enjoy” such psychical correlates of life and matter as are involved in the whole integral psychical system at our level of mind. With psychical correlates of life at level B only, and of matter at level A only, we can have no direct acquaintance; for we cannot *be* an amoeba at the one level, or a molecule at the other level, so as to be *thus* acquainted with the psychical attribute which it alone can “enjoy.”

It need hardly be added that there is no causal relation of the one attribute to the other. To modernise Spinoza: The orderly plan of advance in the psychical attribute is strictly correlated with that in the physical attribute. We have “one and the same thing [evolution], though expressed in different ways” (*Eth.* Pt. II. Prop. vii. cf. *scholium*).

I have departed from my text—Mr. Alexander’s treatment—to put the position in my own way and not his. I now return to the text to raise some questions—partly verbal but surely also something more.

Starting with time as, in the sense intended, the mind of space, Mr. Alexander regards each quality in the ascending hierarchy as a higher mind-aspect supervenient in the course of evolutionary progress; and that which lies below it—that which I speak of as involved—as playing to this mind the part of its body. Thus a secondary quality is, he says, the mind of its primary substrate (S. T. D. II. p. 60); life is the mind of physico-chemical events; consciousness is the mind of the living organism in which it emerges. Furthermore, if I mistake not, each higher quality plays also the part of deity to that which lies below it.

I cannot here follow his lead. At any rate I should put the position differently. The word “mind” seems to be used in at least two senses; (1) as the name of a quality at a distinctively emergent level; (2) to signify the correlate of that which is also a bodily or physical process—such correlate implying substantial identity. If it be used in the former sense it seems inadvisable to apply it to anything other than that distinctive quality. The most that can be said is that life stands to matter in the same kind of relation as mind stands to life. And this, I submit, can be better expressed by saying that life involves a basis of matter just as mind involves a basis of life. The relation common to both is that which I call involution.

And if the word “mind” be used in the latter sense, I should urge that, *qua* correlate, it stands *on the same level* as that with which it is correlated—not above it.

I think, however, that the disagreement here is, at bottom, rather in modes of statement than in principles of interpretation. In any case, what is common to both of us is that hyphening of the two attributes which I speak of as correlation and he as substantial identity.

There is another reason why I think it undesirable to use the word “mind” in the two senses, (1) as a quality that emerges at an assignable level in our hierarchy, and (2) as correlated attribute at *all* levels. It will be urged by many critics of our thesis that *mind does not emerge*. That *is* true of mind (2) as correlate; *that* mind does not emerge. But there are emergent levels of such mind, as correlate; and it is at an assignable level that mind

(2) *does* emerge. It is an emergent quality of the correlated psychical order at an approximately definable stage of evolutionary advance. Hence if we say that mind emerges at this stage, whereas others affirm that mind does not emerge and cannot be treated as emergent, this *may* be because the word “mind” is used in these two different senses.

With regard to deity, towards which we are working up, we must revert to the *nisus*. We have seen that out of one level in the hierarchy of levels a new kind of existence emerges. This fact of progressive emergence is *nisus* which is, therefore, something more than the *conatus* of Spinoza (cf. § XXIV.). “Thus the *nisus* of the world is reflected in the transformation of types which takes place, as attested by observation and theory, out of lower to higher levels.” And it is shared by everything. Within our reflective consciousness, within the minds of lowly organisms, and even of material things, it “is felt as a *nisus* towards something unattained” (Sp. T. pp. 72–77).

Here again I have difficulties. First I should say that the *nisus* towards deity—if deity be a quality supervenient on reflective consciousness—is along *one* quite specific line of advance. Otherwise I fail to see what answer can be given to the question: How do you propose to characterise this quality of deity? Should it not be susceptible at least of indication if not of definition? If so we can say: deity is that which is exemplified in this or that person, or group of persons, who attain this emergent level. If *all* lines of advance exemplify a *nisus* towards deity—then deity must be characterised in some different way—say, that which is higher on any line of advance.

Now I want to lay stress on *one* line of advance and take it quite literally; and I want to emphasise what it may imply. It seems, as I think on the evidence, that the higher we ascend in the hierarchy—and especially when we reach human persons—the emergent complexity is such that it appears justifiable to say that no two persons are quite alike. Each person is an uniquely individual product along one of very many lines of advance—say Shakespeare, Goethe, Newton, and Darwin. If this be so, the *nisus* towards deity on its strictly central line should culminate in one unique person, at the very apex of the pyramid. If an impartial historical survey should lead to the conclusion that the *nisus* towards deity has culminated in one unique individual, there is, so far as I can see, nothing in the naturalistic interpretation of emergent evolution which precludes the acceptance of this conclusion.

Take, however, the view that *all* lines of advance exemplify in some sense a *nisus* towards deity, and that deity should be defined in such wise as will accord with this view—let us say “something higher as yet unattained”—even so the unattained, as such, seems to imply that which is not yet; and this, as I think, can only be foreseen, however dimly and vaguely, when the level of conscious mind is attained.

But apart from some matters in which I am led to disagree I fully agree that, along multifarious lines of advance—all no doubt interconnected by branch lines into one system of nature—there is throughout, as net result, an upward and onward progress (notwithstanding many a backslide), which is that which I seek to emphasise under emergent evolution.

We come then finally to the concept of Activity.

An age-long question—not in science but in philosophy—takes on for us a new form. What makes emergents emerge? What directs the course of events in which a salient line is the *nisus* towards deity? Some may say we know not and cannot know. Others may ask what need there is for a directive Source of emergence. Why should it not proceed without one? Yet others may urge that it is idle to put into an active Source just what is said to come out of it. For if there be less, something remains to be accounted for; and if there be more (*eminenter*, as the Schoolmen said), what evidence thereof is as yet forthcoming?

On the other hand it may be urged that what at the outset I spoke of as the comprehensive plan of sequence in all natural events, is surely of itself sufficient evidence of Purpose; and this implies, it is said, some Mind through whose Activity (I use initial capital letters for concepts of this type), the course of events is directed. We have, however, in this concept of Mind, (3) something different from mind (1) as an emergent quality, as this is different from mind (2) as universal correlate. It is difficult to avoid the use of the word “Mind” in this sense. Perhaps the initial capital may suffice to indicate that it comprises indefinitely more than mind in sense (1); or it may be differentiated as Spirit.

Now apart from correlation, which I accept under what I speak of as acknowledgment, I accept, also under acknowledgment, a physical world existent in its own right quite independently of any human or sub-human mind. Why do I accept this *under acknowledgment*? Because I am not satisfied that its existence can irrefragably be established subject to the search-light of modern philosophical criticism. I admit then that in accepting it I go beyond the positive evidence. But I claim that it embodies nothing that is discrepant with, or contradictory to, that evidence. How, then, do I reach this acknowledged physical world? By following downwards the line of “involution” till I reach what is, for my constructive philosophy, the limiting concept. But if, in like manner, I follow upwards the line of “dependence” I again reach (for my constructive philosophy) a limiting concept—that of ultimate dependence in terms of which the whole course of emergent evolution is explained (not merely interpreted) within one consistent and balanced scheme. This, too, I accept under acknowledgment. It too lies, as I think, beyond proof by the positive evidence that philosophical criticism demands and, within its province, is right in demanding. But is it discrepant with, or contradictory to, any positive evidence that we are bound to accept with natural piety? I think not. And I feel therefore free to urge its legitimacy under acknowledgment. This, for me, leads upwards towards God, as directive Activity within a scheme which aims at constructive consistency.

Much more of course lies behind the scene in this manner disclosed. We must seek the relation of the God thus barely acknowledged to those persons in whom there is some measure of the quality of deity. For Mr. Alexander deity no less than mind (in sense 1) is an emergent quality. He distinguishes between “deity as a quality and God as a being.” And he says that “God as actually possessing deity does not exist but is an ideal, is always becoming; but God as the whole universe tending towards deity does exist” (*Mind*, XXX. p. 428). According to the second part of this statement, with its ring of Spinoza, God, as being, is the nusus of the universe pressing onwards to levels as yet unattained; or, as I should prefer to say, is the Nisus directive of the course of events. With regard to the first part, the crucial question arises whether, and if so in what sense, such an ideal is veritably Real.

Conwy Lloyd Morgan, “Lecture I. Emergence,” *Emergent Evolution* (Gifford Lectures, 1921–1922)

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