

# First Principles

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IN 1860 Herbert Spencer issued the prospectus of his Synthetic Philosophy, and in 1896 he completed, with the third volume of the Principles of Sociology, this heroic attempt at a synthesis of all scientific knowledge. First Principles, the initial volume of the series, appeared in 1862. Its thesis is that, while metaphysical questions are ultimately insoluble, they compel the recognition of an inscrutable power beyond all phenomena; secondly, it formulates and illustrates the law and philosophy of evolution.

## I—THE UNKNOWABLE AND ABSOLUTE

IN all commonly accepted beliefs there is an underlying verity. Even beliefs that seem contradictory are in fundamental harmony, and though science and religion may seem in opposition, they really only express opposite sides of the same fact, and their views may be reconciled.

When we analyse different religious views of the origin and nature of the universe, we find that all religions, howsoever opposed in their overt doctrines, are perfectly at one in the conviction that the universe is a mystery; and we find, too, that all religions fail to solve the mystery.

When, again, we examine such ultimate scientific ideas as space and time, we find that they all are representative of realities that cannot be comprehended. The explanation of that which is explicable merely shows the unknowable and the inexplicable behind.

On the basis of this deepest, widest and most certain of all facts—that the power which the universe manifests to us is utterly inscrutable—a reconciliation between science and religion is possible. To understand fully how real is the reconciliation thus reached it will be needful to look at the respective attitudes which religion and science have all along maintained towards this belief in the Unknowable and Absolute.

Religion has always, amid its many errors and corruptions, maintained the supreme verity that all things are manifestations of a power that transcends our knowledge. This has been the most vital and most truly religious element of religion, and its errors and defects in doctrine and practice have been due to disloyalty to this fundamental verity.

And this disloyalty science has always opposed; for the progress of science is of necessity a progress to causes that are more and more abstract and less and less conceivable; and, indeed, the most abstract conception to which

science is ever slowly approaching is one that merges into the inconceivable and unthinkable. And so the beliefs which science has forced upon religion have been essentially more religious than those which they supplanted. Only when science has rested content with superficial solutions has it been in conflict with true religion.

Some maintain that though the ultimate cause of things is unknowable, yet we must endow it with definite attributes, and this is a legitimate enough course, provided that we understand that the idea we thus create is merely a symbol utterly without resemblance to that for which it stands. For certainly most men will refuse an indefinite and shadowy belief, and will demand definite formal conceptions. Having always embodied the ultimate cause so far as was needful to its mental realization, they must necessarily resent the substitution of an ultimate cause which cannot be mentally realized at all.

To cultivate the widest spirit of tolerance, let three cardinal principles be borne in mind.

1. That there is a fundamental verity under all forms of religion, however degraded.

2. That the concrete elements in which each creed embodies this truth are relatively good.

3. That varying beliefs are necessary parts of the constituted order of things, and are severally fitted to the societies in which they are indigenous.

These principles do not imply that the current theology should be passively accepted. Though existing religious ideas and institutions have an average adaptation to the characters of the people who live under them, yet as the characters change, the ideas and institutions require remodelling. It is requisite that free play should be given to conservative thought and action; it is equally requisite that progressive thought and action should also have free play, for without the agency of both there cannot be the continual readaptations necessary to orderly progress.

## II—THE DATA OF PHILOSOPHY

As with religious beliefs so with the varied beliefs respecting the nature of philosophy. After the elimination of their discordant elements there remains, as a common element, the

conception of philosophy as 'knowledge of the highest degree of generality.' As each widest generalisation of science comprehends and consolidates those narrower ones of its own

division, so the generalisations of philosophy comprehend and consolidate the widest generalisations of science. Knowledge of the lowest kind is *un-unified* knowledge; science is *partially unified* knowledge; and philosophy is *completely unified* knowledge. The purpose of philosophy is the integration of knowledge.

What is the datum, or rather, the data, which philosophy requires? It is that congruities and incongruities exist and are cognizable by us. The permanence of a consciousness of likeness or difference is our ultimate warrant for asserting the existence of likeness or difference. Knowledge is the grouping of the like and the unlike, and its unification must specify the antithesis between two ultimate classes of experiences. What are these?

Setting out from the conclusion that all things known to us are the manifestations of the Unknowable, we find these manifestations are divisible into two classes—the *vivid* and the *faint*. The former, occurring under the conditions of perception, are originals. The latter, occurring under those of reflection, memory, imagination, or ideation, are copies.

This division is equivalent to that between *object* and *subject*, between *self* and *not-self*. The power which manifests itself in the faint series we call the *ego*, while that in the *vivid* we call the *non-ego*. This ultimate primordial division of self from not-self is a cumulative result of persistent consciousness of likenesses and unlikenesses among manifestations.

The data of philosophy accordingly are: (a) an unknowable power; (b) the existence of knowable likenesses and unlikenesses among the manifestations of that power; (c) a resulting segregation of the manifestations into those of subject and object.

All the ultimate scientific ideas—space, time, matter, motion, force—are derivatives from experience of force, and force is the

ultimate of ultimates, the unknowable. By the indestructibility of matter we really mean the indestructibility of the *force* with which matter affects us. As we become conscious of matter only through the resistance it opposes to our muscular energy, so do we become conscious of the permanence of matter only through the permanence of this resistance—of this *force* either as immediately or as mediately proved to us.

Persistence of force cannot be proved, for it must be assumed in every experiment or observation by which it is proposed to prove it. And what is the force of which we predicate persistence? It is that absolute force of which we are indefinitely conscious as the necessary correlate of the force we know. Thus we come once more to that ultimate truth in which religion and science are reconciled—to the continued existence of an unknowable as the necessary correlative of the knowable.

From the ultimate universal truth that force persists can be deduced the truth that the relations among forces persist.

Given charges of powder, alike in quantity and quality, fired from barrels of the same structure, and propelling bullets of equal weights, sizes and forms, similarly rammed down, no difference can be imagined among the results. And that which here holds good between antecedents and consequents that are comparatively simple, must hold, however involved the antecedents and the consequents may be.

Those modes of the unknowable which we call motion, light, heat, chemical affinity, etc., are alike transformable into each other, and into those modes of the unknowable, which we distinguish as sensation, emotion, thought, these in their turns being directly or indirectly re-transformable into the original shapes. How this metamorphosis takes place remains an unfathomable mystery.

### III—EVOLUTION SCIENTIFICALLY DEFINED

AN entire history of anything must include its appearance out of the imperceptible and its disappearance into the imperceptible, for our theory of things is imperfect so long as any portion of their sensible existences is unexplained.

The entire series of changes is comprehended in this: Loss of motion and consequent integration, eventually followed by gain of motion and consequent disintegration.

Everywhere, and to the last, the change at any moment going on forms a part of one or other of the two processes. While the general history of every aggregate is definable as a change from a diffused imperceptible state, to a concentrated perceptible state, and again to a diffused imperceptible state, every detail of the history is definable as part of either the one change or the other.

These processes, everywhere in antagonism, are evolution and dissolution. We shall everywhere mean by the latter the absorption of motion and disintegration of matter; and by the former, the process which is always an integration of matter and dissipation of motion.

Everywhere evolution, as defined, is at work; it is exemplified in the integration of the earth from a nebula, in the integration of plants and animals from the elements of their food, in the integration of the social organism and of language.

Evolution, then, is a change from a less coherent to a more coherent form, consequent on the dissipation of motion and integration of matter. But, simultaneously with integration of the whole, there is differentiation and integration of parts in the whole. This is the second aspect of evolution. We have here to regard existences of all orders as showing progressive differentiation.

The advance from the homogeneous to the heterogeneous is well seen in man. Man, as an individual, develops from the less to the more heterogeneous, and man, as a species, has been made more heterogeneous by the multiplication and differentiation of human races.

On passing to humanity, as socially embodied, the general law is richly exemplified. The development of literature, science, architecture, the drama and dress, all alike show that from the remotest past an essential trait of evolution has been the transformation of the homogeneous into the heterogeneous.

Hence, as we now understand it, evolution is definable as a change from an incoherent homogeneity to a coherent heterogeneity accompanying the dissipation of motion and integration of matter.

But even this generalisation does not express the whole truth. At the same time that evolution is a change from homogeneous to

heterogeneous it is a change from the indefinite to the definite. Illustrations of this change, which is a secondary phenomenon, are found everywhere, from the solar system to the industrial and aesthetic arts.

To complete our conception of evolution, we have to contemplate, through the cosmos, the metamorphoses of retained motion that accompany the metamorphoses of component matter. When we investigate this question, we find that the rhythmical actions going on in the aggregate differentiate and integrate, *pari passu*, with differentiation and integration of structure. During the evolution of the solar system, the confused, indeterminate motions

of the nebula become definite and heterogeneous. During the evolution of organisms, their functions become more multiform and distinct. And in societies the movements and functions produced by the confluence of individual actions increase in number, multiformity, complexity and precision.

Our formula, therefore, requires an additional clause, and will take this final form. Evolution is an integration of matter and concomitant dissipation of motion, during which the matter passes from an indefinite, incoherent homogeneity to a definite, coherent heterogeneity, and during which the retained motion undergoes a parallel transformation.

#### IV—GENERAL CAUSES OF EVOLUTION AND CHANGE

**T**HE instability of the homogeneous—illustrated by such facts as that red-hot matter, however evenly heated, soon ceases to be so, and that a pair of scales, perfectly balanced, will not remain so—is obviously consequent on the fact that the several parts of any homogeneous aggregation are necessarily exposed to different forces and are of necessity differently modified, and is a corollary for the persistence of force. The relations of outside and inside, and of comparative nearness to neighbouring sources of influence, imply the reception of influences that are unlike in quantity or quality, or both, and it follows that unlike changes will be produced in the parts thus dissimilarly acted upon.

To the conclusion that the changes with which evolution commences are thus necessitated, remains to be added the conclusion that these changes must *continue*. The absolutely homogeneous must lose its equilibrium, and the relatively homogeneous must lapse into the relatively less homogeneous. That which is true of any total mass is true of the parts into which it segregates. The uniformity of each such part must as inevitably be lost in multiformity as was that of the original whole, and for like reasons.

A further cause of increasing complexity has to be added. Action and reaction being equal and opposite, it follows that, in differentiating the parts on which it falls in unlike ways, the incident force must itself be correspondingly differentiated. Thus, when one body is struck against another, there may be, besides the mechanical result, sound, air currents, fracture, incandescence and chemical combination. An incident force decomposed by the reactions of a body into a group of unlike forces, a uniform force thus reduced to a multiform force, becomes the cause of a secondary increase of multiformity in the body which decomposes it. The multiplication of effects must proceed in geometrical progression. Each stage of evolution must initiate a higher stage. These conclusions are not only to be established inductively, but they are deducible from the deepest of all truths. The multiplication of effects is a corollary from the persistence of force.

Thus far no reason has been assigned why there should not ordinarily arise a vague chaotic heterogeneity in place of that orderly heterogeneity displayed in evolution. It still remains to find out the cause of that local integration which accompanies local differentiation—that gradually completed segregation of like units into a group, distinctly separated from neigh-

bouring groups which are severally made up of other kinds of units.

Segregation depends on the principle that different units acted on by the same force must be differently moved, and that similar units must be differently moved by different forces. There is also the complementary truth that mixed forces are segregated by the reaction of uniform matters, just as mixed matters are segregated by the action of uniform forces. The general principle may be deduced from the persistence of force. For the abstract propositions involved amount to this—that in the actions and reactions of force and matter an unlikeness in either of the factors necessitates an unlikeness in the effects and that, in the absence of unlikeness in either of the factors, the effects must be alike.

That universal coexistence of antagonist forces which necessitates the universality of rhythm, and the decomposition of every force into divergent forces, at the same time necessitates the ultimate establishment of a balance. The evolution of every aggregate must go on until a moving equilibrium, or *equilibrium mobile*, is established, since an excess of force which the aggregate possesses in any direction must eventually be expended in overcoming resistances to change in that direction, leaving behind only those movements which compensate each other, and so forming a moving equilibrium.

**F**ROM the highest point of view, all terrestrial changes are incidents in the course of cosmic equilibration. For, of the incessant alterations which the crust and atmosphere of the earth undergo, those which are not due to the still progressing motion of the earth's substance towards its centre of gravity are due to the still progressing motion of the sun's substance towards its centre of gravity, the continuance of which integrations is a continuance of that transformation of sensible motion into insensible motion which ends in equilibration.

Every living body exhibits in a four-fold form the process of equilibration; from moment to moment in the balancing of mechanical forces; from hour to hour in the balancing of functions; from year to year in the changes of state that compensate changes of condition; and, finally, in the complete arrest of vital movements at death. Every species of plant and animal is perpetually undergoing a rhythmical variation in number: now, from abundance of food and absence of enemies, rising above its average; and then, by a consequent scarcity of food, and

abundance of enemies, being depressed below its average. Amid these oscillations lies that average of the species at which its expansive tendency is in equilibrium with the surrounding repressive tendencies.

In society the same equilibrating process is going on, and equilibrium will be reached when the individual has no desires but those which may be satisfied without transgressing his proper sphere of action, while society imposes no restraints save those which the individual voluntarily respects.

The persistence of force and the establishment of equilibria lead to the inferences that there is a gradual advance towards harmony between man's mental nature and his environment, and that evolution can end only in the achievement of the greatest perfection and the most complete happiness.

When an aggregate has reached that equilibrium in which its changes end, it thereafter remains subject to all actions in its environment which may increase the quantity of motion it contains, and are sure, slowly or suddenly, to give its parts such excess of motion as will cause disintegration.

It may be suggested that the evolution will end in universal and eternal equilibrium. But

this is not so. Motion, as well as matter, being fixed in quantity, it would seem that the change in the distribution of matter which motion effects coming to a limit in whichever direction it is carried, the indestructible motion thereupon necessitates a reverse distribution. Apparently, the universally coexistent forces of attraction and repulsion which, as we have seen, necessitate rhythm in all minor changes throughout the universe, also necessitate rhythm in the totality of its changes—produce now an immeasurable period during which the predominance of attractive forces causes universal concentration, and then an immeasurable period during which the predominance of repulsive forces causes universal diffusion—alternate eras of evolution and dissolution. And thus there is suggested the conception of a past during which there have been successive evolutions—like the evolution which is now going on—and a future during which other such evolutions may go on—ever the same in principle but never the same in result.

Thus we are led to the conclusion that the entire process of things, as displayed in the aggregate of the visible universe, is analogous to the entire process of things as displayed in the smallest aggregates.