



Herbert Spencer  
When 76

# FIRST PRINCIPLES

BY

HERBERT SPENCER

AUTHOR OF SOCIAL STATICS, THE PRINCIPLES OF PSYCHOLOGY,  
ESSAYS: SCIENTIFIC, POLITICAL AND SPECULATIVE,  
EDUCATION, ETC.

*SIXTH EDITION*

NEW YORK  
D. APPLETON AND COMPANY

1903

## CHAPTER XXIV.

### SUMMARY AND CONCLUSION.

§ 184. At the close of a work like this, it is more than usually needful to contemplate as a whole that which the successive chapters have presented in parts. A coherent knowledge implies something more than the establishment of connexions: we must not rest after seeing how each minor group of truths falls into its place within some major group, and how all the major groups fit together. It is requisite that we should retire a space, and, looking at the entire structure from a distance at which details are lost to view, observe its general character.

Something more than recapitulation—something more even than an organized re-statement, will come within the scope of the chapter. We shall find that in their *ensemble* the general truths reached exhibit, under certain aspects, a oneness not hitherto observed.

There is, too, a special reason for noting how the various divisions and sub-divisions of the argument consolidate; namely, that the theory at large thereby obtains a final illustration. The reduction of the generalizations which have been set forth separately to a completely integrated state, exemplifies once more the process of Evolution, and strengthens still further the general fabric of conclusions.

§ 185. Here, indeed, we find ourselves brought round unexpectedly to the truth with which we set out, and with

which our re-survey must commence. For this integrated form of knowledge is the form which, apart from the doctrine of Evolution, we decided to be the highest form.

When we inquired what constitutes Philosophy—when we compared men's various conceptions of Philosophy, so that, eliminating the elements in which they differed, we might see in what they agreed; we found in them all the tacit implication that Philosophy is completely unified knowledge. Apart from each scheme of unified knowledge, and apart from proposed methods by which unification is to be effected, we traced in every case a belief that unification is possible, and that the end of Philosophy is achievement of it.

After reaching this conclusion we considered the data with which Philosophy must set out. Fundamental propositions, or propositions not deducible from deeper ones, can be established only by showing the complete congruity of all the results reached through the assumption of them; and, premising that they were simply assumed till thus established, we took as our data those components of our intelligence without which there cannot go on the mental processes implied by philosophizing.

From the specification of these we passed to certain primary truths—"The Indestructibility of Matter," "The Continuity of Motion," and "The Persistence of Force;" of which the last is ultimate and the others derivative. Having previously seen that our experiences of Matter and Motion are resolvable into experiences of Force, we further saw the truths that Matter and Motion are unchangeable in quantity, to be implications of the truth that Force is unchangeable in quantity. This we concluded is the truth by derivation from which all other truths are to be proved.

The first of the truths which presented itself to be so proved, is "The Persistence of the Relations among Forces." This, which is ordinarily called Uniformity of Law, we found to be a necessary implication of the truth that Force can neither arise out of nothing nor lapse into nothing.

The next deduction was that forces which seem to be lost are transformed into their equivalents of other forces; or, conversely, that forces which become manifest, do so by disappearance of pre-existing equivalent forces. These truths we found illustrated by the motions of the heavenly bodies, by the changes going on over the Earth's surface, and by all organic and super-organic actions.

It was shown to be the same with the law that everything moves along the line of least resistance, or the line of greatest traction, or their resultant. Among movements of all orders, from those of stars down to those of nervous discharges and commercial currents, it was shown both that this is so, and that, given the Persistence of Force, it must be so.

So, too, we saw it to be with "The Rhythm of Motion." All motion alternates—be it the motion of planets in their orbits or ethereal molecules in their undulations—be it the cadences of speech or the rises and falls of prices; and, as before, it became manifest that Force being persistent, this perpetual reversal of Motion between limits is inevitable.

§ 186. These truths holding of existences at large, were recognized as of the kind required to constitute what we distinguish as Philosophy. But, on considering them, we perceived that as they stand they do not form a Philosophy; and that a Philosophy cannot be formed by any number of such truths separately known. Each expresses the law of some one factor by which phenomena, as we experience them, are produced; or, at most, expresses the law of co-operation of some two factors. But knowing what are the elements of a process, is not knowing how these elements combine to effect it. That which alone can unify knowledge must be the law of co-operation of the factors—a law expressing simultaneously the complex antecedents and the complex consequents which any phenomenon as a whole presents.

A further inference was that Philosophy, as we under-

stand it, must not unify the changes displayed in separate concrete phenomena only; and must not stop short with unifying the changes displayed in separate classes of concrete phenomena; but must unify the changes displayed in all concrete phenomena. If the law of operation of each factor holds true throughout the Cosmos, so, too, must the law of their co-operation. And hence in comprehending the Cosmos as conforming to this law of co-operation, must consist that highest unification which Philosophy seeks.

Descending to a more concrete view, we saw that the law sought must be the law of the continuous re-distribution of Matter and Motion. The changes everywhere going on, from those which are slowly altering the structure of our galaxy down to those which constitute a chemical decomposition, are changes in the relative positions of component parts; and everywhere necessarily imply that along with a new arrangement of Matter there has arisen a new arrangement of Motion. Hence it follows that there must be a law of the concomitant re-distribution of Matter and Motion which holds of every change, and which, by thus unifying all changes, must be the basis of a Philosophy.

In commencing our search for this universal law of re-distribution, we contemplated from another point of view the problem of Philosophy, and saw that its solution could not but be of the nature indicated. It was shown that an ideally complete Philosophy must formulate the whole series of changes passed through by existences separately and as a whole in passing from the imperceptible to the perceptible and again from the perceptible to the imperceptible. If it begins its explanations with existences that already have concrete forms, or leaves off while they still retain concrete forms, then, manifestly, they had preceding histories, or will have succeeding histories, or both, of which no account is given. Whence we saw it to follow that the formula sought, equally applicable to existences taken singly and in their totality, must be applicable to the whole history of each and to the



whole history of all. This must be the ideal form of a Philosophy, however far short of it the reality may fall.

By these considerations we were brought within view of the formula. For if it had to express the entire progress from the imperceptible to the perceptible and from the perceptible to the imperceptible; and if it was also to express the continuous re-distribution of Matter and Motion, then, obviously, it could be no other than one defining the opposite processes of concentration and diffusion in terms of Matter and Motion. And if so, it must be a statement of the truth that the concentration of Matter implies the dissipation of Motion, and that, conversely, the absorption of Motion implies the diffusion of Matter.

Such, in fact, we found to be the law of the entire cycle of changes passed through by every existence. Moreover we saw that besides applying to the whole history of each existence, it applies to each detail of the history. Both processes are going on at every instant; but always there is a differential result in favour of the first or the second. And every change, even though it be only a transposition of parts, inevitably advances the one process or the other.

Evolution and Dissolution, as we name these opposite transformations, though thus truly defined in their most general characters, are but incompletely defined; or rather, while the definition of Dissolution is sufficient, the definition of Evolution is extremely insufficient. Evolution is always an integration of Matter and dissipation of Motion; but it is in nearly all cases much more than this. The primary re-distribution of Matter and Motion is accompanied by secondary re-distributions.

Distinguishing the different kinds of Evolution thus produced as simple and compound, we went on to consider under what conditions the secondary re-distributions which make Evolution compound, take place. We found that a concentrating aggregate which loses its contained motion rapidly, or integrates quickly, exhibits only simple Evolu-

tion; but in proportion as its largeness, or the peculiar constitution of its components, hinders the dissipation of its motion, its parts, while undergoing that primary re-distribution which results in integration, undergo secondary re-distributions producing more or less complexity.

§ 187. From this conception of Evolution and Dissolution as together making up the entire process through which things pass; and from this conception of Evolution as divided into simple and compound; we went on to consider the law of Evolution, as exhibited among all orders of existences, in general and in detail.

The integration of Matter and concomitant dissipation of Motion, was traced not in each whole only, but in the parts into which each whole divides. By the aggregate Solar System, as well as by each planet and satellite, progressive concentration has been, and is still being, exemplified. In each organism that general incorporation of dispersed materials which causes growth, is accompanied by local incorporations, forming what we call organs. Every society, while it displays the aggregative process by its increasing mass of population, displays it also by the rise of dense masses in special parts of its area. And in all cases, along with these direct integrations there go the indirect integrations by which parts are made mutually dependent.

From this primary re-distribution we were led on to consider the secondary re-distributions, by inquiring how there came to be a formation of parts during the formation of a whole. It turned out that there is habitually a passage from homogeneity to heterogeneity, along with the passage from diffusion to concentration. While the matter composing the Solar System has been assuming a denser form, it has changed from unity to variety of distribution. Solidification of the Earth has been accompanied by a progress from comparative uniformity to extreme multiformity. In the course of its advance from a germ to a mass of relatively

great bulk, every plant and animal also advances from simplicity to complexity. The increase of a society in numbers and consolidation has for its concomitant an increased heterogeneity both of its political and its industrial organization. And the like holds of all super-organic products—Language, Science, Art, and Literature.

But we saw that these secondary re-distributions are not thus completely expressed. While the parts into which each whole is resolved become more unlike one another, they also become more sharply marked off. The result of the secondary re-distributions is therefore to change an indefinite homogeneity into a definite heterogeneity. This additional trait also we found in evolving aggregates of all orders. Further consideration, however, made it apparent that the increasing definiteness which goes along with increasing heterogeneity is not an independent trait, but that it results from the integration which progresses in each of the differentiating parts, while it progresses in the whole they form.

Further, it was pointed out that in all evolutions, inorganic, organic, and super-organic, this change in the arrangement of Matter is accompanied by a parallel change in the arrangement of contained Motion: every increase in structural complexity involving a corresponding increase in functional complexity. It was shown that along with the integration of molecules into masses, there arises an integration of molecular motion into the motion of masses; and that as fast as there results variety in the sizes and forms of aggregates and their relations to incident forces, there also results variety in their movements.

The transformation thus contemplated under separate aspects, being in itself but one transformation, it became needful to unite these separate aspects into a single conception—to regard the primary and secondary re-distributions as simultaneously working their various effects. Everywhere the change from a confused simplicity to a distinct complexity, in the distribution of both matter and motion, is

incidental to the consolidation of the matter and the loss of its internal motion. Hence the re-distribution of the matter and of its retained motion, is from a relatively diffused, uniform, and indeterminate arrangement, to a relatively concentrated, multiform, and determinate arrangement.

§ 188. We come now to one of the additions that may be made to the general argument while summing it up. Here is the fit occasion for observing a higher degree of unity in the foregoing inductions, than we observed while making them.

The law of Evolution has been thus far contemplated as holding true of each order of existences, considered as a separate order. But the induction as so presented, falls short of that completeness which it gains when we contemplate these several orders of existences as forming together one natural whole. While we think of Evolution as divided into astronomic, geologic, biologic, psychologic, sociologic, &c., it may seem to some extent a coincidence that the same law of metamorphosis holds throughout all its divisions. But when we recognize these divisions as mere conventional groupings, made to facilitate the arrangement and acquisition of knowledge—when we remember that the different existences with which they severally deal are component parts of one Cosmos; we see at once that there are not several kinds of Evolution having certain traits in common, but one Evolution going on everywhere after the same manner. We have repeatedly observed that while any whole is evolving, there is always going on an evolution of the parts into which it divides itself; but we have not observed that this equally holds of the totality of things, which is made up of parts within parts from the greatest down to the smallest. We know that while a physically-cohering aggregate like the human body is getting larger and taking on its general shape, each of its organs is doing the same; that while each organ is growing and becoming

unlike others, there is going on a differentiation and integration of its component tissues and vessels; and that even the components of these components are severally increasing and passing into more definitely heterogeneous structures. But we have not duly remarked that while each individual is developing, the society of which he is an insignificant unit is developing too; that while the aggregate mass forming a society is integrating and becoming more definitely heterogeneous, so, too, that total aggregate, the Earth, is continuing to integrate and differentiate; that while the Earth, which in bulk is not a millionth of the Solar System, progresses towards its more concentrated structure, the Solar System similarly progresses.

So understood, Evolution becomes not one in principle only, but one in fact. There are not many metamorphoses similarly carried on, but there is a single metamorphosis universally progressing, wherever the reverse metamorphosis has not set in. In any locality, great or small, where the occupying matter acquires an appreciable individuality or distinguishableness from other matter, there Evolution goes on; or rather, the acquirement of this appreciable individuality is the commencement of Evolution. And this holds regardless of the size of the aggregate, and regardless of its inclusion in other aggregates.

§ 189. After making them, we saw that the inductions which, taken together, establish the law of Evolution, do not, so long as they remain inductions, form that whole rightly named Philosophy; nor does even the foregoing passage of these inductions from agreement into identity, suffice to produce the unity sought. For, as was pointed out at the time, to unify the truths thus reached with other truths, they must be deduced from the Persistence of Force. Our next step, therefore, was to show why, Force being persistent, the transformation which Evolution shows us necessarily results.

The first conclusion was, that any finite homogeneous aggregate must lose its homogeneity, through the unequal exposures of its parts to incident forces, and that the imperfectly homogeneous must lapse into the decidedly non-homogeneous. It was pointed out that the production of diversities of structure by diverse forces, and forces acting under diverse conditions, has been illustrated in astronomic evolution; and that a like connexion of cause and effect is seen in the large and small modifications undergone by our globe. The early changes of organic germs supplied further evidence that unlikenesses of structure follow unlikenesses of relations to surrounding agencies—evidence enforced by the tendency of the differently-placed members of each species to diverge into varieties. And we found that the contrasts, political and industrial, which arise between the parts of societies, serve to illustrate the same principle. The instability of the relatively homogeneous thus everywhere exemplified, we saw also holds in each of the distinguishable parts into which any whole lapses; and that so the less heterogeneous tends continually to become more heterogeneous.

A further step in the inquiry disclosed a secondary cause of increasing multiformity. Every differentiated part is not simply a seat of further differentiations, but also a parent of further differentiations; since in growing unlike other parts, it becomes a centre of unlike reactions on incident forces, and by so adding to the diversity of forces at work, adds to the diversity of effects produced. This multiplication of effects proved to be similarly traceable throughout all Nature—in the actions and reactions that go on throughout the Solar System, in the never-ceasing geologic complications, in the involved changes produced in organisms by new influences, in the many thoughts and feelings generated by single impressions, and in the ever-ramifying results of each additional agency brought to bear on a society. To which was joined the corollary that the multiplication of



effects advances in a geometrical progression along with advancing heterogeneity.

Completely to interpret the structural changes constituting Evolution, there remained to assign a reason for that increasingly-distinct demarcation of parts, which accompanies the production of differences among parts. This reason we discovered to be the segregation of mixed units under the action of forces capable of moving them. We saw that when unlike incident forces have made the parts of an aggregate unlike in the natures of their component units, there necessarily arises a tendency to separation of the dissimilar units from one another, and to a clustering of those units which are similar. This cause of the definiteness of the local integrations which accompany local differentiations, turned out to be likewise exemplified by all kinds of Evolution—by the formation of celestial bodies, by the moulding of the Earth's crust, by organic modifications, by the establishment of mental distinctions, by the genesis of social divisions.

At length, to the query whether these processes have any limit, there came the answer that they must end in equilibrium. That continual division and sub-division of forces which changes the uniform into the multiform and the multiform into the more multiform, is a process by which forces are perpetually dissipated; and dissipation of them, continuing as long as there remain any forces unbalanced by opposing forces, must end in rest. It was shown that when, as happens in aggregates of various orders, many movements go on together, the earlier dispersion of the smaller and more resisted movements, establishes moving equilibria of different kinds: forming transitional stages on the way to complete equilibrium. And further inquiry made it apparent that for the same reason, these moving equilibria have certain self-conserving powers; shown in the neutralization of perturbations, and in the adjustment to new conditions. This general principle of equilibration, like the preceding general

principles, was traced throughout all forms of Evolution—astronomic, geologic, biologic, mental, and social. And our concluding inference was, that the penultimate stage of equilibration in the organic world, in which the extremest multiformity and most complex moving equilibrium are established, must be one implying the highest state of humanity.

But the fact which here chiefly concerns us, is that each of these laws of the re-distribution of Matter and Motion, was found to be a derivative law—a law deducible from the fundamental law. The Persistence of Force being granted, there follow as inevitable inferences “The Instability of the Homogeneous” and “The Multiplication of Effects;” while “Segregation” and “Equilibration” also become corollaries. And on thus discovering that the processes of change grouped under these titles are so many different aspects of one transformation, determined by an ultimate necessity, we arrive at a complete unification of them—a synthesis in which Evolution in general and in detail becomes known as an implication of the law that transcends proof. Moreover, in becoming thus unified with one another the complex truths of Evolution become simultaneously unified with those simpler truths shown to have a like origin—the equivalence of transformed forces, the movement of every mass and molecule along its line of least resistance, and the limitation of its motion by rhythm. Which further unification brings us to a conception of the entire plexus of changes presented by each concrete phenomenon, and by the aggregate of concrete phenomena, as a manifestation of one fundamental fact—a fact shown alike in the total change and in all the separate changes composing it.

§ 190. Finally we turned to contemplate, as exhibited throughout Nature, that process of Dissolution which forms the complement of Evolution, and which, at some time or other, undoes what Evolution has done.

Quickly following the arrest of Evolution in aggregates that are unstable, and following it at periods often long delayed but reached at last in the stable aggregates around us, we saw that even to the vast aggregate of which all these are parts—even to the Earth as a whole—Dissolution must eventually come. Nay we even saw grounds for the belief that local assemblages of those far vaster masses we know as stars will eventually be dissipated: the question remaining unanswered whether our Sidereal System as a whole may not at a time beyond the reach of finite imagination share the same fate. While inferring that in many parts of the visible universe dissolution is following evolution, and that throughout these regions evolution will presently recommence, the question whether there is an alternation of evolution and dissolution in the totality of things is one which must be left unanswered as beyond the reach of human intelligence.

If, however, we lean to the belief that what happens to the parts will eventually happen to the whole, we are led to entertain the conception of Evolutions that have filled an immeasurable past and Evolutions that will fill an immeasurable future. We can no longer contemplate the visible creation as having a definite beginning or end, or as being isolated. It becomes unified with all existence before and after; and the Force which the Universe presents, falls into the same category with its Space and Time, as admitting of no limitation in thought.

§ 191. This conception is congruous with the conclusion reached in Part I., where we dealt with the relation between the Knowable and the Unknowable.

It was there shown by analysis of both religious and scientific ideas, that while knowledge of the Cause which produces effects on consciousness is impossible, the existence of a Cause for these effects is a datum of consciousness. Belief in a Power which transcends knowledge is that fundamental element in Religion which survives all its changes of

form. This inexpugnable belief proved to be likewise that on which all exact Science is based. And this is also the implication to which we are now led back by our completed synthesis. The recognition of a persistent Force, ever changing its manifestations but unchanged in quantity throughout all past time and all future time, is that which we find alone makes possible each concrete interpretation, and at last unifies all concrete interpretations.

Towards some conclusion of this order, inquiry, scientific, metaphysical, and theological, has been, and still is, manifestly advancing. The coalescence of polytheistic conceptions into the monotheistic conception, and the reduction of the monotheistic conception to a more and more general form, in which personal superintendence becomes merged in universal immanence, clearly shows this advance. It is equally shown in the fading away of old theories about "essences," "potentialities," "occult virtues," &c.; in the abandonment of such doctrines as those of "Platonic Ideas," "Pre-established Harmonies," and the like; and in the tendency towards the identification of Being as present in consciousness, with Being as otherwise conditioned beyond consciousness. Still more conspicuous is it in the progress of Science, which, from the beginning, has been grouping isolated facts under laws, uniting special laws under more general laws, and so reaching on to laws of higher and higher generality; until the conception of universal laws has become familiar to it.

Unification being thus the characteristic of developing thought of all kinds, and eventual arrival at unity being fairly inferable, there arises yet a further support to our conclusion. Since, unless there is some other and higher unity, the unity we have reached must be that towards which developing thought tends.

Let no one suppose that any such implied degree of trustworthiness is alleged of the various minor propositions brought in illustration of the general argument. Such an



assumption would be so manifestly absurd, that it seems scarcely needful to disclaim it. But the truth of the doctrine as a whole, is unaffected by errors in the details of its presentation. If it can be shown that the Persistence of Force is not a datum of consciousness; or if it can be shown that the several laws of force above specified are not corollaries from it; or if it can be shown that, given these laws, the re-distribution of Matter and Motion does not necessarily proceed as described; then, indeed, it will be shown that the theory of Evolution has not the high warrant claimed for it. But nothing short of this can invalidate the general conclusions arrived at.

§ 193. If these conclusions be accepted—if it be agreed that the phenomena going on everywhere are parts of the general process of Evolution, save where they are parts of the reverse process of Dissolution; then we may infer that all phenomena receive their complete interpretation, only when recognized as parts of these processes. Whence it follows that the limit towards which Knowledge advances can be reached only when the formulæ of these processes are so applied as to yield interpretations of phenomena in general. But this is an ideal which the real must ever fall short of.

For true though it may be that all phenomenal changes are direct or indirect results of the persistence of force, the proof that they are such can never be more than partially given. Scientific progress is progress in that adjustment of thought to things which we saw is going on, and must continue to go on, but which can never arrive at anything like perfection. Still, though Science can never be reduced to this form, and though only at a far distant time can it be brought anywhere near it, a good deal may even now be done in the way of approximation.

Of course, what may now be done cannot be done by any single individual. No one can possess that encyclopædic

information required for rightly organizing even the truths already established. Nevertheless, as all organization, beginning in faint and blurred outlines, is completed by successive modifications and additions, advantage may accrue from an attempt, however rude, to reduce the facts now accumulated—or rather certain classes of them—to something like co-ordination. Such must be the plea for the several volumes which are to succeed this; dealing with the respective divisions of what we distinguished at the outset as Special Philosophy.

§ 194. A few closing words must be said, concerning the general bearings of the doctrines that are now to be further developed.

Though it is impossible to prevent misrepresentations, especially when the questions involved are of a kind that excite so much *animus*, yet to guard against them as far as may be, it will be well to make a succinct and emphatic restatement of the Philosophico-Religious doctrine which pervades the foregoing pages.

Over and over again it has been shown in various ways, that the deepest truths we can reach, are simply statements of the widest uniformities in our experiences of the relations of Matter, Motion, and Force; and that Matter, Motion, and Force are but symbols of the Unknown Reality. A Power of which the nature remains for ever inconceivable, and to which no limits in Time or Space can be imagined, works in us certain effects. These effects have certain likenesses of kind, the most general of which we class together under the names of Matter, Motion, and Force; and between these effects there are likenesses of connexion, the most constant of which we class as laws of the highest certainty. Analysis reduces these several kinds of effect to one kind of effect; and these several kinds of uniformity to one kind of uniformity. And the highest achievement of Science is the interpretation of all orders of phenomena, as differently-

conditioned manifestations of this one kind of effect, under differently-conditioned modes of this one kind of uniformity. But when Science has done this, it has done nothing more than systematize our experiences, and has in no degree extended the limits of our experiences. We can say no more than before, whether the uniformities are as absolutely necessary as they have become to our thought relatively necessary. The utmost possibility for us is an interpretation of the process of things as it presents itself to our limited consciousness; but how this process is related to the actual process we are unable to conceive, much less to know.

Similarly, it must be remembered that while the connexion between the phenomenal order and the ontological order is for ever inscrutable; so is the connexion between the conditioned forms of being and the unconditioned form of being for ever inscrutable. The interpretation of all phenomena in terms of Matter, Motion, and Force, is nothing more than the reduction of our complex symbols of thought, to the simplest symbols; and when the equation has been brought to its lowest terms the symbols remain symbols still. Hence the reasonings contained in the foregoing pages, afford no support to either of the antagonist hypotheses respecting the ultimate nature of things. As before implied, their implications are no more materialistic than they are spiritualistic; and no more spiritualistic than they are materialistic. The establishment of correlation and equivalence between the forces of the outer and the inner worlds, serves to assimilate either to the other, according as we set out with one or the other. But he who rightly interprets the doctrine contained in this work, will see that neither of them can be taken as ultimate. He will see that though the relation of subject and object renders necessary to us these antithetical conceptions of Spirit and Matter; the one is no less than the other to be regarded as but a sign of the Unknown Reality which underlies both.

## APPENDICES.