

FALSEHOODS AND HYPOTHESES

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Part I: Skeptical based Confidence in Modern Philosophy of Science

Karl Popper believed in the value of modern science. But he did not regard its truth as absolute or its conclusions as certain. The conclusions/findings of science were but provisional and revisable. He thus reasserted against his colleagues of the Vienna Circle the original skeptical basis of the understanding of science since the beginning of the modern era, consolidated by the English empiricists led by David Hume.

The new school of Logical Empiricists or Positivists of the early twentieth century was evidently influenced by the rise of the new mathematics and new logic to which there seemed to be attached at least some mental certitude and belief in “scientific truth”. This probably led them to assert their principle of verification, which stated that a scientific law might be “verified” (made true) at some point (not defined) by empirical evidence. Thus did science progress.

Popper, pointing to the classical modern criticism of inductive reasoning as not finally conclusive, asserted that this kind of progress was not possible. Instead of this principle he posed his principle of falsification, which asserted that though the general law could not be verified it might be falsified – for only one counter instance could do that. Otherwise, the scientific laws had to remain as falsifiable hypotheses. It was possible, then, that modern science was nothing but a collection of false hypotheses, i.e. falsehoods – a disconsolate thought no doubt for a scientist but a bitter “truth”.

The other famous philosopher of science of the late 20th century, Thomas Kuhn, in his 1962 book “The Structure of Scientific Revolutions”, added to this negative assessment of the achievement of science a quite cynical view of the work of scientists, treating them as resisting the necessary fundamental changes (“paradigm shifts”) that inevitably occur in time with scientific progress. This philosophical theory, however, is but a refined version of the philosophical skepticism that underlies the empiricist side of modern thought. Another more recent philosopher of science, David Berlinski, has continued this bleak assessment of the truth value of modern science in his 2009 book “The Devil’s Delusion: Atheism and its Scientific Pretensions”.

Popper, however, looked on the positive side and thought that this negative way could be considered as resulting in an advance of our scientific knowledge. Scientific laws remained purely hypothetical but at least we have excluded ones known to be false, narrowing down the field as it were of possible hypotheses.

Now, as St. Thomas says, negative knowledge can constitute an advance in our knowledge of something. Thus, negative propositions about God, for instance, that God is not changeable, not bodily and so on, is useful knowledge. But this applies with regard to negating limitations or passive potencies so that we can know that God is a higher form of actual being.

That is not the only instance, however, of the usefulness of negation in human knowledge. Generally, negation, or rather privation, is an essential part of our

understanding of things. Aristotle's whole theory of contrariety is built on privation, which is relatively negative. Hot and cold, for instance, are physical contraries; the one excludes the other in the same subject. But, they are not contradictorily opposed. Cold does not signify an absolute opposition to the notion of heat, such as is the tendency to view the opposition in modern science. Moreover, the fact that it is physically impossible to reach a state of total lack of heat is an indication that this is physically false. The cold quality of a subject is based on a privation of heat to an extreme opposed to what we call hot, but not so as to have no heat at all.

The logical mode of negative/contradictory thinking was probably influenced by the greater dominance given in modern science to its mathematical form and the rise of the new mathematics and new logic referred to. Thus, the possibility of a body being without heat altogether (with zero temperature) is conceived even though it cannot be realized physically. The same logical/mathematical mistake is made in regard to the quality of colour, black being conceived as absolutely without colour, white being the integral colour into which others are broken down. For St. Thomas, however, black is treated as a physical quality with minimal colour, the contrary of white.

The principle of falsification, taken as Popper does, leads nowhere, for it is understood purely randomly. What if a repeat of the same experiment that disproves the scientific law previously held proves to confirm it? How are we to trust a single experiment? Even a succession of negative readings would not settle the matter. On Popper's own principle there is no way of arriving at a "verification" of a falsifying reading. There is no reason on Popper's proposal that a string of positive readings might follow upon one negative. Which experiments are we therefore to believe? The pure contingency embedded in the thinking of all empiricists nullifies the possibility of stating any principle. If nothing is certain then no experiment is trustworthy. As well as that we have Aristotle's position that laws of Physics need only apply "for the most part" to be genuine science.

Obviously, then, neither the "principle" of falsification of Popper nor that of verification of the Vienna Circle can lead the empiricists to certain truth or falsity in any way. This is not in so much as they rely on the logical method of induction, but on a materialist or sensist interpretation of it. Empiricists confine science to the gathering of empirical "evidence", i.e. the collection of particular instances. "Evidence" so conceived without anything else is but random instances that cannot go beyond pure contingency or chance. They have no way of providing any general principle of law, positive or negative.

On a careful reading of Aristotle, there is a place for induction in Mathematics as well as in the natural sciences or physics, and through such we can achieve a form of scientific certainty. In the context of modern science the empiricist mistake comes out therefore in two ways.

Firstly, it excludes knowledge gained by mathematical abstraction/induction. Abstraction applies to objects of concepts, induction applies to the composition and division of concepts in propositions, which, as Aristotle points to, are derived directly from the internal senses, imagination and estimative, by the power of the agent intellect.

From these primary concepts and first principles we proceed deductively to build up mathematical science. Thus, having abstracted the concept of triangle, one does not add to or subtract from one's idea of a triangle from a checking of physical examples of it around the world. Nor do we need to check whether the internal angles of a triangle add up to 180 degrees by the careful measurement of all the triangles we can draw with the latest measuring instruments. We have a simple proof that derives ultimately from the application of first geometrical principles to the very two-dimensional form of triangle, and any material differences are put out of consideration by the nature of the abstraction/induction.

Secondly, the empiricist position mistakes the nature of abstraction/induction even in the physical sciences. Here, however, there is much more dependence upon the process of reasoning in the ascending way of definition and more particular inductions from sense experience. So, as well as deductions from first concepts and principles, the physical sciences depend to a large extent upon descriptions and inductive reasoning. We do need to carry out a number of experiments to find that water always boils at 100 degrees centigrade under specified conditions, or that it can be produced from and changed back into hydrogen and oxygen.

To think that this inductive method of investigation cannot provide scientific certainty is a mistake. For, physical things are constituted not only by matter but also by an intelligible form and that intelligible substance or essence, and its necessary properties, can be abstracted/induced by way of the observation (and measurement) of accidental properties, just as a criminal may be convicted "beyond reasonable doubt" on circumstantial evidence.

In order to penetrate into a form of nature or physical essence and its necessary properties (say of water), we need to proceed by way of the material conditions applying to it, which requires observing many accidental features and motions. Thus, we build up a number of indicators or circumstances (that which stand around) pointing to some one thing, if it is still only known in terms of its many accidental features as so necessarily one.

Physical or natural scientific certainty is not the same as mathematical and logical certainty. But, after a certain number of experiments the point is reached where the formal nature of the object of investigation becomes known to the intellect that uses this abstractive/inductive process, even though it falls short of perfect knowledge of the essence and its necessary accidents. No natural scientist is in any doubt about the "facts" of water referred to. They do not live in fear that the scientific laws so discovered may some day be falsified. It is only where more general laws, more remote from particular empirical observations, are concerned that such physical certainty is not to be had. That is where hypothesis (assumption) takes over from theory as thesis in its original Greek sense (statement of "fact", meaning a general law).

Nor is this physical certainty, which belongs to all the natural sciences, to be taken as some sort of probability, as if a dialectical proof only. It is part of physical science, certain proof regarding some physical nature that is obtained, if it allows for exceptions on account of the form being in matter. Probability as a mathematical/statistical notion is another thing again, more belonging to physico-mathematical science.

The human intellect's abstraction from the individual conditions that are commonly experienced enables us to know formal differences such as that between water or fire and plant or animal, so that when we say that the earth absorbs water we do not confuse that with the plant being hydrated as part of its vital process of nourishing itself; or so that when fire "feeds on" the dry grass we do not confuse that with the horse feeding itself from the same grass. We do not worry about experimenting so as to falsify that scientific understanding, as if some day we might find some instance of dusty earth acting in the same way as a living plant, or fire acting as something alive.

There is no problem in this regard in the mind of the real scientists in the field. It is those who "philosophize" in the modern empiricist way about the nature of science and the scientific method who wrestle with reconciling their basic ideology of theoretical skepticism with what actually occurs when scientists use the inductive method in the physical sciences. Science, so conceived in such a fashion, is now called empirical or experimental because its proponents cannot rise above the sense level in thinking about human knowledge.

As Aristotle noted long ago, the empirical investigations and experimental method are only a part of natural science; they are not the whole. Confining one's scientific method to this line of material causality is well styled materialism. However, there is another error possible, which is called rationalism or formalism, which is to undertake formal analysis without proper consideration of the empirical evidence. This in fact was an error of the period leading up to the modern era and contributed to the mistaken reaction against Aristotelian science. But, the real philosophical failures in explanation in this respect were from Platonism and a failure to take Aristotle's warnings to heart, in not further testing the more general theories assumed in ancient Greek science.

All captured by the empiricist philosophy of Hume, including Popper, basically misunderstand physical nature, tending to attribute to it only what belongs to it by reason of its material side or part, thus making it essentially formless, and hence without any stability or determinate status. Matter is the principle of change in natural bodies, but they also have an intrinsic reason of stability, or determining principle, their formal principle. Matter belongs to the substance of natural bodies, and, besides being the intrinsic principle of changes, it limits the substantial form and through that affects or conditions the accidents. It is through these accidents that the physical or natural scientist has to discover what knowledge can be had of the material substance or body, be it mineral, such as gold, living, such as plant, animal, such as ape or ant, or human.

But, the scientist is not primarily interested in the individual nature of this piece of gold, this particular plant, this actual animal or this singular human being. He or she is interested primarily in the nature of a mineral such as gold, or of plant life, such as trees or mushrooms, or of the species of animals, such as apes or ants, or of human nature. Even at the lowest level of scientific abstraction, then, of the natural or physical sciences, there is a penetration into the natures of things beyond the sensible grasp of their individual conditions. We have to start from sense knowledge, for the only things that actually exist are individuals. When we reach the point of having to indulge in hypotheses that means we have to check our hypothetical conclusions (science) against empirical experience.

What we find at this basic level of intellectual abstract knowledge is that the species or natures or forms of bodies cannot be completely detached from their material nature. We need to abstract from individual conditions, but as Aristotle and St. Thomas hold, there remains “common matter” in the concepts formed when we deal with the things that lie underneath the “phenomena” presented by sense observation. One consequence of this is that the laws of physics or natural science do not apply absolutely universally, as if of pure forms, but only “for the most part”.

Though able to be expressed universally in the abstract or general they do not describe what happens without allowing for exceptions that derive from the material condition in which they exist. Thus, we can say that orange trees by a natural law will produce oranges and not lemons. But, it can occur that a particular orange tree or even an orchard of them will fail to produce oranges - but this will be because of the material conditions (lack of water, poor soil etc.). Indeed, if the trees themselves are diseased some abnormal fruit may result. This, however, does not mean that we cannot have a science of botany.

The certainty of such physical science is different from that of mathematics. This means only that the conclusions of physics depend upon a different sort of necessity to that of mathematics. Mathematics, as Aristotle and St. Thomas put it, abstracts not only from “individual matter” but also from “sensible matter”. That removes from the object the influence for physical change or mobility, which comes through the accidental forms that are identified as the sensible qualities and motions. What is focused on, then, is the quantitative order of nature. Without the second degree of abstraction quantity shares in the mobility of bodies. But, so abstracted, mathematical “bodies” or “entities” approach the immobility or fixity of pure forms, as studied in Logic and Metaphysics.

At this point we should refer to the mixed or medial science that is a composite of mathematics and physics, which St. Thomas explains is mathematical according to form, but physical according to matter. It is one genus of science, and stands between pure mathematics and pure physics or natural science. It proves to be a powerful mental tool not so much for understanding nature as for making use of it, precisely because of the intimate relationship of quantity with the matter in bodies.

It is this mixed science that has come to dominate modern thinking. Its mixed method is a powerfully productive one where material production is concerned, but unfortunately its success in this regard has led to its misapplication to the spiritual level of the human practical affairs in the practical sciences of morals, economics and politics, which have been degraded to the materialism particularly found in the modern theoretical sciences of Psychology, Economics and Sociology. Inevitably these subject matters have also been infected by the anti-metaphysical ideology of philosophical skepticism.

It is important then to keep in mind in regard to modern science that when Metaphysics was rejected as the queen of the sciences it was not pure Mathematics or pure Physics that replaced it as the supreme science but Physico-mathematics. This kind of science became identified with science itself in the work of Isaac Newton. The scientific method became equated with the mixed theoretical/empirical method that belongs to physico-mathematics. As noted above, it even invaded the practical human and social

sciences, turning them into theoretical sciences that have become more and more dominated by mathematical science and method.

It is to be remembered, however, that the line of material causal explanation is not so much false as inadequate, needing to be complemented by the formal part which completes the intelligibility of the object of the human intellect, and hence of natural science in the full sense. It is only when this higher consideration is rejected that the science takes on the philosophical error of materialism. In practical sciences, such as Ethics, this formal part has to consist of practical moral principles.

Aristotle had explained that theoretical science of the real was of three basic kinds, by reason of the human mind being able to abstract from the individual existing things according to three steps come to be called “degrees”, thereby giving us three orders of science, physics, mathematics and metaphysics. The first and lowest degree provided the object of the physical sciences. It abstracted the form from the matter but not completely so that the object was still a compound of form and “common matter”. One could not understand the object of natural science without matter being part of it. As St. Thomas put it, the concept of man’s nature or essence does not contain this flesh and these bones, but it must contain flesh and bones taken in common.

Its object, therefore, did abstract from the individual conditions pertaining to a body by reason of its matter. But the knowledge of the form was sufficient, for instance, so that we can distinguish the natures of plants and their activities from that of minerals, and know that living activity is characterized by immanent activity, as in self-nourishing, which is not to be found in non-living bodies.

But, at the next level of abstraction, mathematical, these qualitative features and differences are left behind so that the roundness studied is not that of an orange but of pure quantity. The study of the geometrical globe, then, though derived from such physical objects as oranges, bears upon the quantitative forms alone of the entities – their understanding is not at all affected by the fact that no perfectly globular body exists.

It turns out, indeed, that the study of these pure quantities is of great help in studying the physical world, or the world of nature. This is seen in the medial scientific method that is not two separate methods but a combination of the physical/empirical and mathematical methods. It is to the successful application of this mixed method that we must attribute the huge development in modern times in theoretical science and practical technology.

Yet, how the mistaken understanding of the full nature of science has affected the language of modern science may be seen in the use of the word “theory”, which is from the Greek for “seen”. It may be that a scientific law or principle has actually been “verified” in a sufficient number of cases as to be considered part of the science, but in the modern philosophy of science it is still to be regarded as hypothetical only, as explained above. “Theory” has therefore come to be equated with “not seen” or supposed.

Basic philosophical skepticism is required of the modern scientist, despite ignoring it in his/her scientific work. At its positivist high point in J. S. Mill, this obvious

artificiality of the philosophy of science even extended to him holding that $2 + 2 = 4$ and all other arithmetical and geometric propositions are only approximations derived from experience. Then, when his godson Bertrand Russell helped develop the new mathematical logic its object was emptied of all “truth-value” by being reduced to a logic that was nothing but a collection of tautologies. Fortuitously, this led to the application of a mechanically conceived arithmetic to the physics of electricity that produced the computer, proof only that everything in bodily nature is subject to the necessary conditions of matter and quantity.

The third and highest level of theoretical science, called Metaphysics, enables us to transcend the material limits of beings altogether, if this has to be first found in the fact that the immediate objects of our understanding still come from the physical world presented to us through our senses. For reality as material or physical does not exhaust the object and power of our understanding as the very expression shows. Material beings, or bodies, are obviously not the only things that can be, for material and physical are but adjectives that qualify the noun, which designates the object being itself.

So it is that both Aristotle and St. Thomas say that in our most fundamental understanding of things we separate the object from all dependence upon matter, so that we consider cows, for instance, not as cows, nor as mammals, nor as bodies, but simply as beings. Existence, like life, can be taken according to its lowest signification, so that to exist, like to live, is said as prescinding from the higher levels of existence or being, like to live merely prescinds from the life of knowledge of animals. But that is an exercise that serves rather the logical processes of the mind ordered to reasoning than our metaphysical insight into reality itself.

There is another richer meaning of “to live”, which integrates the higher forms of things into the concept of life, so that we can say that there is more in the notion of life that applies to animals than to plants. So too the being of human beings is of a much more exalted character than the being of a mineral. Thus, in respect of the object of Metaphysics both Aristotle and St. Thomas say that being is not a genus. It transcends all the categories of being, even substance. It is also in this richest of senses that St. Thomas speaks of God as beyond being conceived as limited by some potentiality of essence; God is pure existence (*esse*) in all its fullness.

What happened to the modern understanding of theoretical science was in a way parallel to what happened to practical science. For, truth is to Metaphysics what goodness is to Morality. Losing any belief in the good *per se*, practical science was reduced to having to deal with good *secundum quid*, which is what the technical sciences have to be deal with. One can be a good and even an excellent surgeon committed to murder, as in the Nazis. Rejecting any belief in truth itself, modern theoretical science has been reduced to having to deal with objects at the level of Mathematics and Physics, which are limited to the being and truth of the material world only. Without a basis in the wisdom of Metaphysics these particular theoretical sciences come to be undermined by a philosophical skepticism.

Without a foundation in the practical wisdom of natural morality the technical sciences and arts are bound to serve immoral ends, and consequently to cause untold misery in the population. This is particularly evident in the practice of medicine, which properly is but an art, but where morality is sidelined in the pursuit of physical and psychological

health. An amoral conception of medicine can readily be made to serve the immoral political ends of ruling ideologies (not just Nazism), with the aim of achieving a perverted notion of improved general health and national fitness in the population through such programs as sterilization, birth control and euthanasia. At first this may be simply socially encouraged but inevitably it becomes legally enforced, directly (as in Nazism) or indirectly (as in the withholding of public payments/benefits in the West today).

With the rejection of the wisdom of Metaphysics, the particular sciences of mathematics, physics and physico-mathematics flounder in the intellectually depressing depths of philosophical skepticism. It is no wonder that there is an epidemic of depression in those politically compelled to submit to such basically meaningless indoctrination that is modern “education” in science. The combination of modern “Science and Technology”, as the only valid human knowledge, puts human society on an intellectually suicidal path, now being acted out before our very eyes.

It is a feature of such foolishness that the victims are deceived into believing that they can become “as gods” and have no need of religion. That is one reason why the young of today are subtly led to turn away from religion in the name of science. Then, on account of the turning away from respect for the moral law, society becomes inevitably swamped in an ever-increasing round of political corruption, social violence and sexual debauchery.

Despite the overwhelming evidence of this, flowing directly from the failed state of education under the present social, political and economic system, politicians and even religious leaders, and the people generally, duped by journalists, sociologists, economists and other self-styled “experts”, blindly rush like lemmings to the precipice of the abyss, arrogantly proclaiming that what is occurring is the “progressive” march to individual freedom and social well being.

That such a “confidence-trick” is so successful can only be explained by the influence of the one who is the father of lies and a murderer from the beginning. Who else could have more interest in fooling us into believing in our hearts that there is no God?

Part II: The Theory of Evolution and the Three Missing Links

Just as Karl Popper, as a convinced empiricist philosopher and thus having a materialist conception of science, was constrained to try to integrate the basically random nature of such thinking by positing a unifying principle, so generally in the history of modern science there have been various futile attempts to supply an overarching scientific law or principle (Gk. *arche*) that will comfort the modern mind in its loss of same.

This applies not just to the question of method, or in the mental world of Logic, with which Popper was primarily concerned, but also so far as subject matter is concerned, or in the real world outside the mind, whose objectivity relative to the human mind, as noted above, is divided into three levels, from the lowest, the physical, through the mathematical to the highest, the metaphysical.

In ancient times, before the Greek mind had managed to climb above the particular level of the physical there were attempts at positing a unifying principle in the real purely in physical terms, as with water in Thales, air in Anaximenes and fire in Heraclitus. As Aristotle noted, earth being too grossly material in nature was not so posited. Then Pythagoras sought to posit a mathematical basis for the natural world, but was constrained to put it in more than one principle. His *archai*, first principles, were numbers and proportions.

Plato did not escape the appeal of explaining the world in terms of mathematical principles but he managed to break free of the hold of the senses and imagination on human knowledge and was the first to reach the true level of human wisdom and metaphysics with his positing of a world entirely free of the bodily limitations of matter. Unfortunately he felt compelled to disconnect the objects of our understanding from the world we live in and it was left to Aristotle to remedy this rupture with his positing of an intellectual power of abstraction.

Thus, our understanding of the natural world of bodies, of which we clearly constitute a part, was able to be achieved by an intellectual process of penetrating into its being in three stages, the first two, the physical and mathematical, retaining something of matter, and the third reaching to the very form of being within the natural order of bodily reality. It is to be noted that thereby the formal part of things was by degrees freed from the limiting conditions of matter only in the consideration within the mind. It did not mean that the things known existed in that way. It was the same bodily thing, e.g. cow, that could be the object of consideration of the human intellect at all three levels of understanding.

Quite obviously, the fundamental principle of all our understanding has to be at this metaphysical level. And that is where Aristotle posited it, both in terms of our concepts, with the concept of being, and in terms of our propositions, with the absolutely first principle of non-contradiction. From such first concepts and principles Aristotle developed his metaphysics in the book of the same name. It was this exalted level of human wisdom that St. Thomas used as a springboard to the study of the supernatural level of Sacred Theology, without neglecting the lower levels of understanding which needed to be stepping stones to the better understanding of Metaphysics.

Grounded in a sound metaphysics Aristotle was also able to posit first concepts and principles for physical nature that unified and integrated the objects of our understanding. With regard to the particular sciences of physics and mathematics he distinguished between common and proper principles. The common principles, such as that the whole is greater than any of its parts, apply universally or are metaphysical, but they are used by a particular science, e.g. geometry, as contracted to its proper object, continuous quantity or figure. The proper principles in geometry, on the other hand, are such as to do with notions and propositions that pertain only to geometry, such as lines and angles.

When we come to natural science, the primary concept is being as mobile or changeable and the first principles are about the nature of change or motion, that mobile being, or body, besides its natural substantial form requires an intrinsic principle of change or movement, which Aristotle called primary matter. But here too we have metaphysically common concepts, such as potency and act, contracted and applied to physical reality, in the notions of matter and form, and also in that of motion as distinguished from action.

Another principle in natural science is that, if something in potency becomes actual, it cannot have brought itself to actuality. Put in contracted form this is the familiar principle that whatever moves is moved by another. When this is applied to living bodily activity, which is distinctive in its activity, being immanent not transitive, this leads to the necessity for living bodies to be systems of organization of parts, whereby the whole plant or animal moves itself. Thereby the principle of motion indicated is saved.

Now, none of these primary concepts and principles is made use of in modern empirical science precisely because of its basic empiricism. There is no unity in the objects of study, there are only individual instances whose common nature has to be held inexplicable “on principle”, outside the “evidence” of science. The simple reason for this is that formal reasons, which are the reasons for the unity and commonness found, are not allowed, not being detectable as distinct by sense observation, but necessarily intelligible only.

Nonetheless, such formal reasons, which are recognizable in our understanding by their universality and necessity, are relied upon continually at the level of more particular laws in the practice of modern science, such as in regard to the invariable production of hydrogen and oxygen from water, and vice versa. Without such rational reliance on formal causality there would be no science in an adequate form. However, philosophically, the aversion to the explicative value of forms (formal causes) and ends (final causes) was total right from the start of the modern era. It was suspended only so far as the forms of quantity were concerned, where mathematics became part of the notion of science.

Though this aversion to form became more intense the more the need for unity of scientific knowledge was demanded at more universal levels, and most intense at the level of metaphysics, the mental necessity for having to have some overarching unifying principle in one’s scientific endeavours has come through despite the contradiction involved in positing such upon empiricist premises.

So far as a unifying principle for scientific subject matter is concerned, the empiricist formulations are tantamount to asserting formlessness as a principle of thought. That is to say that the “form” of material being is matter only. The determining principle of bodies is their determinability. Things turn out the way they do because they can. The potential, contrary to its essential meaning, brings itself into act. The explanation, however, simplistic so far as the constitution of things is concerned, cannot explain the fact of change. As if conscious of the absurdity of this “position” (anti-position), and sensing also the need to admit a certain contrariety in nature, as Aristotle noted, the materialist/empiricist is constrained to allow for another principle, an active extrinsic cause, force or energy, as opposed to the basic inertia in things that matter implies.

But, this active principle cannot be given any determinate form, and so it is necessarily interpreted in a materialist, multiple, fashion, deprived of any unity. One of the most prominent materialists/naturalists of classical Greek philosophy was Empedocles. To him physical bodies happened to have arms and legs, ears and eyes, purely by chance. There was no principle of unity, form or soul, within. However, contrariety appeared in his positing of two opposed extrinsic “forces”, love and strife. Though the interpretation of ancient thinkers is still a matter of some conjecture, it is probable that Empedocles put a materialist sense upon these two extrinsic principles, as nothing more than forces of attraction and repulsion.

These extrinsic factors or causes are then also interpreted in a materialistic way, as an uncoordinated collection of multiple influences, or chance happenings. So the agency that is posited to account for change in material bodies, though given a single name, such as energy or force, is emptied of any unity and represented as a chance collision of a multitude of accidental forces.

In later modern times, this intrinsic/extrinsic, materialist/dualist, explanation of things has been revived in the Darwinian theory of evolution. Empedocles is considered by some to be an early proponent of evolution. Darwin was struck by the randomness in the apparent variation of species in living nature. But here again his reaction was rather against an overly formalistic interpretation of specific differences in nature below man.

It is true that according to Aristotle differences of specific forms are like differences of numbers. But one has to remember that the forms or natures of bodies in the natural sciences are not to be equated with those in mathematics. Certainly, once a specific form is identified it cannot change into another; 2 does not evolve into 3. But, as St. Thomas points out, apart from the specific human form we cannot know for certain the ultimate specific differences between any bodily entities, whether they are animal, plant, or mineral.

All our natural knowledge in this regard has to be in terms of accidental features. We can know the generic differences, as between mineral, plant and animal, but in regard to what differentiates gold from lead, a rosebush from an oak tree, an elephant from a giraffe, we have to depend upon external features. That is to say ultimately we cannot tell whether the differences so discerned flow from the intrinsic form or from the matter, are substantial or accidental. What is of the essential or substantial form cannot be changed. But what does not can, and in the final analysis we cannot tell the difference so far as specific difference in natural bodies other than man is concerned.

That leaves a huge scope for the possibility of change in regard to a particular thing identified scientifically as a natural species, even if it has been fixed over a long time. It means too that one ought not be surprised at seemingly specific differences according to differences in geographical location. It even allows great scope for the evolution of one “species” into another over time. For the “scientific” identification of species is totally dependent upon externally appearing features. Associating a quasi-mathematical fixed notion of natural species with creation also undoubtedly played a part in Darwin’s reaction against his Protestant religious upbringing.

But what are we to make of his conclusions? The accidental and even chance changes resulting in what may be regarded as the origin of new species from a descriptive/scientific point of view may readily be allowed, and there is wide scope for this being observed. But this cannot be intelligently allowed to lead to a new species from a definitive/philosophic point of view. For the former accidental changes cannot account for a change in the substantial forms that belong to some thing, in which respect they are like numbers; they can only be cases of treating as new species what are in reality only variations, even if wide within the one philosophical species. Still less can such variations/changes lead to a generic change as say from plant to animal.

Thus, there is nothing of any philosophical consequence in viewing in a way limited as indicated the origin of new species in such scientific terms. Indeed, one can say that it is happening all the time, even with certain species becoming extinct and others newly appearing. Nor is there any philosophical objection to this occurring to some extent broadly within the orders of plants and of animals below man. For, it is only when we can be certain about the substantial form that we must disallow any formal change.

That does not mean that some natural thing of one form cannot give way to another through the matter of the substance taking on a new substantial form. This happens when a horse eats hay. For that is the very property of primary matter. But the intrinsic principle of the change within the body concerned has always to be the material principle not the formal principle. It is precisely the ignoring of this distinction that is at the root of the error in the theory as it is presented. As well as that it has to be held that a thing of one form has the power to produce its form in another, or reproduce itself, but only of one like itself. So it is absurd to suggest that a being of one species or genus can of itself produce or reproduce a being of another species or genus, let alone of a higher form of being.

Now the theory is used to posit the possibility of lower species evolving into what are evidently to be regarded as higher, going right up to the human species. There is, however, a special philosophical reason for excluding the human form or soul from any materialist theory of evolution in that it can be shown philosophically that the human soul is spiritual (Aristotle has done it), and therefore, though put in matter, has not been educed out of it, but has to be specially created.

But, generally, it is absurd to assert that a being of an essentially more perfect nature can be educed from one of a less perfect nature, such as animal from plant, without the intervention of an agent that has power to bring into existence the higher form involved. For nothing can give what it does not have. We have seen this in the fact that a being of a certain nature or substantial essence or form can only produce what it has, say fire with heat, or reproduce what it is, say horse with a foal.

But, here again, we do not need to exclude this “vertical” evolution appearing to take place in material nature below man provided it is understood to be under the influence of a supernatural cause. The upward process of evolution may be possible if it is understood to be a means whereby the author of nature, even in the beginning, included among the inclinations in a number of created species of things of a lower order an inclination for individuals to so change as to move from within their species to be closer in perfection to a species of a higher order (supposed as not yet created) so as to be a preparation for the coming into existence of individuals of that higher species.

The lower species never changes from its original nature (it can continue to exist with the “origin” of the new species) but its matter in individuals of the species may be seen as more suitable to take on a higher form than the matter in something even lower (though the creator would not be limited in his operation on account of this). That way it is possible to conceive of new and higher species appearing over time. In this case it would nevertheless be necessary for a series of special creations of forms over the course of the history of the material universe. For an entirely new natural form can only be created, not produced by another creature. However, as this special creation already happens in regard to the human form of each new individual, that creative “intervention” may not be so extraordinary.

Such a theory of divinely directed evolution does not involve the contradiction that applies to the exclusively materialist one. It is not quite the same as St. Augustine’s positing of *rationes seminales* inserted into the natural world at creation, but some additional formal cause or reason has to be inserted within nature to explain directedness towards the appearance of new species. Such a movement or evolution cannot be explained by ordinary natural formal causes, let alone by material causes. They need to be understood after the fashion of instrumental causes inserted within nature that presupposes the continuing action of the Creator distinct from the action of creating the new specific forms themselves.

In fact, Darwin’s theory, though taken as excluding any necessary divine influence, is not all that different from one allowing for the instrumental/transitional divine or supernatural direction described, in that he puts into existing nature a principle of “natural selection” that does the same job. This is needed to give the directedness that is inherent in the theory, especially its upward movement. This notion implies the activity of an extrinsic agent, and an intelligent one at that. Darwin is evidently using it as a substitute for divine “intervention”, or at least he has been taken that way.

But, it is not necessary to have it “either/or”; the fact is that the intelligent selection can be in both, in God as the primary or principal agent and in natures as the secondary and instrumental agents. That an arrow (a dead stick) travels and hits a target does not mean that it has selected it and so the archer has not; nor, that the archer has selected it and the arrow has not. Both have, in two ways one subordinated to the other. If the selection of the right direction is not in the arrow in some way, how would it “find” the target? So, satisfied that what he had observed with regard to “scientific species” (which as we have noted can to a certain extent have an explanation in material/accidental terms) could be extrapolated generally in the biological order, Darwin proposed an internal natural principle which makes the theory of evolution seemingly intelligible, but this is so precisely because it presupposes an extrinsic/efficient intelligent cause.

To admit a process of selection is to put into one’s theory of evolution a faculty of choosing means to some end. This cannot be done without knowledge, for the end has to be seen as good prior to the process. Indeed, it cannot be done without free will, for it is about selecting means. Free will is philosophically defined as: “power elective of means the maintenance of the due end being maintained”. Obviously of themselves plants and things below them do not have any knowledge of ends, and animals do not have any choice of means. But nothing prevents them acting in subordination to the author of nature who is supremely intelligent and capable of ordering means to ends.

There are natural inclinations that are without knowledge in the natural thing. But, as St. Thomas shows, even such inclinations in natural things suppose the work of intelligence. No amount of physical examination of the arrow will find this inclination, for it exists only by reason of the action of the intelligent agent. So too the intelligence directing the manifestly marvellous ordered activities of natural things will not be observable to sense, but will be readily understood by an intelligence. In fact, to use the word “selection” in a sense excluding intelligence is an abuse of language, to speak metaphorically in a scientific matter.

Whatever Darwin’s understanding of the matter, unfortunately it was the anti-theist aspect of his theory that was run with, thinking that “natural selection” dispensed with intelligent selection. It did not take long for the anti-religious bent in the modern mind to use the shock to a fundamentalist religious belief to enshrine the theory of Evolution as the best unified explanation of the subject matter of science. But, so interpreted, Evolution is a principle that is understood as purely materially based. Hence, in so far as it attests to some truth about natural change, it only explains natural things through the material conditions and accidental features in them. And one cannot get a unifying principle out of purely material/accidental explanation. Moreover, as soon as it attempts to become universal, as a total explanation of reality, it falls into total absurdity.

The fact that it is inherently absurd, as proposing that what is purely potential, material, can do the work of what is actual, formal, and that what are many can operate as one, does not seem to be a worry. For one thing, the physical principles, intrinsic and extrinsic, are recognised as if applying only to their material and accidental aspects and operations, and, for another thing, the principle of non-contradiction is ignored. Materialism necessarily engenders scepticism.

The name “Evolution” then comes to be taken to signify simply the fact that things “turn out” (from Lat. *ex volvere*) the way they do because they turn out the way they do. Deep down, it is not an explanation: it is the refusal to give an explanation. It fits perfectly Aristotle’s description of the Sophists: wanting not to be wise but only to appear to be.

The absurdity, it is to be noted, comes from the total reliance on a principle of potentiality, or material causality, which in created nature cannot be a sole causal explanation of anything, but may be, and necessarily is, in physical things, or bodies, a partial cause. There is nothing against something newly coming into existence, a new form of being, even higher, out of the matter in another. But, the form of being has to be also from a cause that actually or virtually (in its active power – which means of a higher form) has the same kind of form as that arising anew, as the form of heat arises in water, from potency within, indeed, but not solely. One does not fail to put the water over a heating element if one wants a cup of hot tea.

The scientific theory of evolution, which bases causal influence on material cause, adding an extrinsic force, or rather forces, materialistically understood, has one glaring missing link, the causal influence of a formal cause. But, this is only the deficiency that immediately appears. For, as Aristotle clearly showed, and even the materialist evolutionists have to allow for, the existence of an intrinsic form arising in natural things, or bodies, presupposes the causal influence of an extrinsic cause (efficient

agency). But this has to be more fully understood as involving three extrinsic lines of causality, intelligent agency, exemplary cause (*idea*), and final cause or end (*telos*). Neglect to include any one of these three and nothing will happen, let alone be fully explained.

Since art imitates nature, we can illustrate the distinct lines of causal influence from a consideration of what happens in human productions. Suppose we find that a house has newly come into existence, what do we look for to explain it? None other than Aristotle's four causes, two intrinsic, form and matter, and two extrinsic, agency and end. What had to be in mind before its construction? This is the formal cause, or plan, as existing in the mind of an independent person (architect) or at least in the builder's mind. The builder is the efficient cause (working alone or with a team subordinated to his direction).

The builder having in mind the idea or plan of the building arranges the building materials according to the form had in mind. But nothing even begins to happen unless there is a final cause. What moves the builder to start building? It is the desire of someone to make use of the building for shelter. Without the desire for this purposed end the work is not even embarked upon. The three extrinsic causes can exist in the one person; the same person can be the motivator, planner and constructor. But in an organised civilized society these different roles will be clearly had in three different persons acting cooperatively through a market system.

However, the three causalities have to come together in the one agent, in this order, the motivating, the planning and the making, the first two quite evidently having to belong to an agent with an intellect and will. Aristotle's four causes can thus be seen as five, two intrinsic and three extrinsic, for the formal cause has to be had both extrinsically (as exemplar or *idea*) and intrinsically (as essence or form). It is only in material things, or bodies, that there has to be a material cause that is really distinct from the intrinsic formal cause.

The four main influences on the coming into existence of anything, then, are one intrinsic, where the form is the essence, and the three extrinsic causes. There is no complete explanation of the appearance of a new being without all these four. Try and think of something coming to be without one of them.

What does the scientific/materialist theory of evolution, as proposed, attempt to do? It tries to explain the existence of things in the physical universe, the material world, by leaving out the intrinsic formal cause, and taking the efficient cause without the two others. Imagine a builder on a site with all the necessary building materials, but without a motive to build and a plan of how to go about it. Moreover, it is suggested by evolutionary theorists that he could wait for chance unintelligent forces such as wind and weather to blow and so affect the building materials and over (admittedly a long) time it is conceivable that they will arrange themselves into a fully formed building.

After all, then, not even the builder is needed in the theory. He might as well go home and leave the construction to the "work" of the wind and weather on the materials. So the agency that the scientific evolutionist has in mind is not one substantial entity but many accidental factors. The evolutionist appeals to experience to shore up his theory. But what does experience tell us? It soon shows that, rather than the external factors

such as the wind and weather making the materials more fit to take on the requisite form, they deteriorate rapidly and become less fit for building. Not only does the theory offend the very notion of science, it goes against common sense. What can be the motive for proposing it?

Let us make a preliminary assessment. With the positing of a formal cause intrinsic to the new thing it becomes obvious that the extrinsic cause needed to explain change in the thing has to possess in some way beforehand the same form as a pattern or “template”. Thus, before heat can arise in water there has to be the form of heat in something extrinsic that draws it out of the matter/potential for it in the water. But the water and say fire already exist. The change of form with regard to heat is only accidental. How do we explain the first appearances of fire and water in the physical world? Let us suppose we explain water’s by reference to other forms of matter, hydrogen and oxygen. But that only puts the question back a step.

There has to be some elemental or original form of matter whose coming into existence needs to be referred to some extrinsic cause. Unless, that is, we say that it did not need to come into existence because it always existed unchangeably. But that goes against the very nature of material things. They are changeable by their very nature.

We need to go a little bit deeper into the question. Water, or whatever elementary form of matter there is, is some substance or other. What is substantial change? It is when something like water loses the substantial form of water and takes on another substantial form such as hydrogen. It is a change of form. But something of the water remains in the change – it is not annihilation and creation. This is Aristotle’s concept of primary matter. So we can allow for something underlying the transformation of things that itself seemingly does not need to come into existence in natural changes, yet is part of the explanation for the coming into existence of all forms of material things. Now comes the critical part of the argument. If that matter were the only thing we needed to consider we would not need to be concerned about forms or formal causality whether intrinsic or extrinsic. Nor would we need to wonder where the material substances came from if the changes were in accidental forms like heat and hardness. The matter would be seen as remaining the same essentially or substantially.

But this is to misconceive the nature of primary matter. It does not exist except under some particular natural form, such as water, fire, tree or horse. Of itself, it does not and cannot have any form, for it is but the potential for forms; it is needed to explain substantial changes, which consists in it underlying all particular substantial forms. The changes concerned are from the form of water, or some elementary bodily thing to the form of another element, such as hydrogen, or more obviously, from the form of horse when it dies and the new form that arises in matter as it takes on a new form of substance - not from cold to hot.

Primary matter has no actual form but is the potential for all and any. It is not to be thought of as something of indefinite form that takes on a definite form – that is how a genus is understood logically. But the real potential principle in physical bodies is not to be equated with a genus, even though, as Aristotle explains, it is that outside the mind that is the basis for our forming generic concepts, which only exist in the mind.

Primary matter has to be understood as not only that in which a physical form needs to exist, but also that out of which a new form can arise on the reduction of the old form back into matter.

It is evident that, because he deals *per force* in external accidents in order to understand the differences between material bodies, the materialist scientist thinks of a change of substantial form in such a way as to treat matter as a generic thing unchanging under the multitude of accidental changes. Aristotle noted this about the ancient natural philosophers. That would be to revert to the mistake of the original natural philosophers, thinking that everything is but a mode of water, or air or some kind of elemental body. That necessarily makes such elements substantially unchangeable, which is contrary to the most elementary experience. It comes from treating particular formed matter in a generic way, as if it existed without any specific form. But not only is every material thing of a specific form it is also of this particular form. Every existing horse is this horse. Every existing particle is this particle.

It does not matter how small we make the elementary bodies. Even the smallest particle has to be changeable and thus made up of matter and form. To be matter only means something that cannot by itself exist, that only can exist under some form. Existence comes to things through natural (substantial) forms. At this point we may point to another tendency in modern physical science, namely, to revert to giving a mathematical explanation of the primary “units” of matter. That heavily influences thinking in modern physico-mathematics, miscalled physics. But, let us stick with the attempt at a physical explanation.

To so treat the notion of primary matter universally (as “second matter”) is to mix up the logical and real orders. The only real matter existing outside the mind is in an individual body of this individual form. To put the individual existing things into a species is but a necessary way we have to understand individual material things (bodies). We have to be careful to note that, though the same form of horse as understood universally belongs to this individual horse, the universality, and hence a horse considered generically (as animal) and as a species (as horse-ness), are logical properties in mind, not real features of the individual things. The evolutionists spend too much time in their minds without looking upon what happens in the real world.

This is evidently what is happening in the minds of the theorists of evolution. There is this image of a lump or mass of amorphous “matter” existing at the beginning, whose coming into existence does not need to be explained, for its “form” is unchangeable (as a generic concept does not change). Out of this comes to exist, over aeons of time, the multitude of things of different forms, as a genus is understood to become more and more definite until we arrive at the last species whereby we classify individual existing bodies.

This is a nice logical genealogy of creatures. The problem with it is that it is all in the mind and bears no relation to reality. For the original elementary “matter” has to exist under some individual form in order to exist in the first place. It has to be water, or something else of definite physical substance. It cannot therefore be unchanging. It needs an extrinsic explanation like anything else for its coming to be and being able to lose its form and give way to another. The ideas of the ancient natural philosophers may

have been somewhat gross in their attempts at the explanation of things but they had more sense of reality than the modern evolutionists.

So the original matter of the physical universe has to be conceived as some particular body made up of primary matter and some elementary form of being. It is impossible even for God to make matter, so understood as purely potential to forms (of water or whatever physical kind of thing), to exist except under one or other natural form. That is to say that every natural body, and its most minute integral parts, are necessarily composed of form and matter.

Now that elemental form cannot have arisen in that matter without the “intervention” of an extrinsic agent that had the same form or had the power to produce it. Since we suppose that the elemental body is absolutely original to the physical universe it has to be that the extrinsic agent is not a being of the same (material) form. Hence, it must be that the extrinsic agent is of a higher form of non-material or spiritual being that has the power to produce a natural form in matter.

Indeed, bringing in the other necessary causal influences in any coming to existence of forms (whether in matter or not) it must needs be that the elemental form existed as an idea in the intellect of this higher being with some end or motive for its production also in the will of that higher being. But not only must this higher being produce the new (elemental) form but it must also produce together with it the matter in which it comes to exist. For not only is it a fact that the form of a physical thing can only exist in matter but also matter can only exist under a particular individual form. So the higher being has had to produce the whole composite being, matter and form, and give the composite its existence.

This obviously is something that only a being that transcends every form of being, and whose own “form”, as St. Thomas explains, is simply to be (*esse*) without any potentiality even to existence (as is the notion of essence), and accordingly has to be supremely one. That is God. Creatures are explicable as beings whose existence (*esse*) comes from this extrinsic cause, which has this “form of forms”, act of acts, without limit, but which in creatures is necessarily received in a limited way, according to a potential for existence, called essence or form, but again which in the case of material beings is according to an essence composed of form and matter, the latter being the purest of potencies for forms themselves.

The materialist theory of evolution is an effort to explain the existence of, and evident process of change (“evolution”) within, the physical universe, indeed conceived as all there is, by reliance only on matter as the intrinsic “form” of material things, changes in which are explained by an extrinsic cause consisting of accidental forces, conceived without any unifying form, reducible to pure chance. The evident motive for this is to exclude any argument for the need of a creator. The whole idea is to do without any “idea” except pure potency.

And so it does follow that, if the theory is true, we cannot prove that God exists. But, unless it allows for the influence of a higher being, as creator, it is not just false, it is absurd. Superficially, matter as pure potency seems to be able to be made the “ground” of physical existence, and the unchanging basis of all change and evolution; a possible rival to a supreme being? But, in truth, it is the weakest kind of being, next to nothing,

at the very opposite pole to God as pure act. It is a cause of limitation of forms and only by that a cause of multiplication of individuals having the same form of being, and the beginning state (powerful only with form) of their necessary development to realise as best they can the perfection of the form within them.

What then is missing in the theory as an ultimate explanation of things? Most obviously it is an explanation of actuality. For material reality, this has to be first found in an intrinsic form which “makes” the thing be what it is, a mineral, a plant or an animal, not something generally (least of all a notion of formless matter), nor even specifically so taken, but individually, however small we have to break it down to.

Then, as even the evolution theorists are constrained to do, we have to find an actual extrinsic cause. This is posited as some sort of energy or force, but the materialist scientists not knowing any but accidental manifestations, this extrinsic cause is seen as devoid of any substantial form which gives it unity. Indeed, the extrinsic activity ends up being without form just as much as the “matter” upon which it acts, and hence is presented as a multitude of uncoordinated, i.e. chance, activities.

But, as we have demonstrated, in order to account for the first appearance of some form in matter, the extrinsic cause has to be of a higher spiritual form, and indeed one to which existence belongs independently, or uncaused. It is to such an extrinsic cause, all powerful, omniscient and perfectly free, that the ultimate explanation of all other things must be attributed. From Reason, we can understand that this is the one God.

From Revelation, however, we can gain some small insight even now into the ultimate reason for the threefold lines of explanation that are evident in the nature of such a divinely unified cause. For, in the absolutely one Being, there are by a mysterious kind of relationships three divine persons, Father, Son and Holy Spirit, to whom we appropriate specially, without denying them of the other two divine persons, infinite power, intelligence and love.

The missing links in the scientific theory of evolution, then, already seen by reason as in God’s almighty power, infinite wisdom and overflowing love, may be recognised by Faith as God the Father, Son and Holy Spirit.

Postscript

So, let us come back to our previous question of what can have been the motive for the promotion of a theory so scientifically impossible and philosophically absurd. This does not really bear upon the question of whether it is true or not. We have already dealt with that. It is a question in the study of history and social psychology. It is needed, not for its own sake, but to counter the “official” history and the given reason for the rise of modern science which, as we have pointed out elsewhere, are very much exercises in political propaganda to support the dominant political and economic systems of modern times and their ideologies.

As is well known the modern era began with a series of profound revolutions. The revolution that created modern science was at the heart of things but it was rather a consequence of a more profound twofold revolution that had to do with will rather than reason. These revolts were religious and moral, in the areas of Faith and Morals. The

Faith concerned was that of the Catholic Church and the Morals was the Natural Moral Law, which is not to be thought of as limited to personal behaviour only but to include human behaviour in relation to social political and economic life.

The two, Faith and Morals, are integrally united in the Catholic Church, so much so that one cannot have a living Faith if one is not a good person morally (i.e. if one is in mortal sin); and, on the other hand, one cannot be a good person morally if one does not have a living Faith (i.e. with Charity). How this relates to being a member of the Catholic Church we will not enter into here. But what it means is that an attack on the Catholic Church inevitably involves an attack on natural morality, and vice versa.

Now, it is quite clear that the modern era began with an attack on the Catholic Church. What is not so clearly brought out is that as an immediate consequence of this the morals of modern society began to be undermined, not so much in regard to personal ethics at first but socially, with which we should associate politics and economics. The change in the view of modern science was relevant to this. For, human social affairs in the fields of politics and economics changed from being practical moral studies to being theoretical sciences of political and economic “reality”.

The modern sciences are not particularly interested to know the right order of things political and economic in terms of justice but the “scientific” laws of political and economic phenomena. It is only the latter that can be observed and measured and so can qualify as science. What is not understood (and which understanding is positively discouraged) in such a morally neutral view of politics and economics is the fact that it serves very well the interests of those who profit from bad laws and institutional injustice in actual societies – which sadly is more the rule than the exception. Thus, in the modern West, to criticise the status quo is treated by those in power as tantamount to arguing against the facts.

Hence it is that what is most feared by the ones who profit from the injustices in modern political and economic systems, and others who wish to “enjoy” the freedom of licentiousness, is the influence of religion, or more particularly of the Catholic Church. For, that would revive the question of morality and justice. It is fundamentally for this reason that science is opposed to religion.

Though the theory of evolution does not belong to the practical/moral side of science but to the theoretical/natural, its ideological importance lies in shoring up the exclusion of religion and morals. For, as already noted, the modern human and social sciences have become subjected to the same scientific method as the natural (or rather physico-mathematical) sciences. The overarching unifying principle of Evolution, taken purely materialistically, thus provides to the immoral in behaviour and the unjust in power a solid basis for arguing that Science and Religion are not only opposed in the practical well being of men and women in society, but are fundamentally incompatible as explanations of reality.

Indeed, the Catholic Church can then be presented as the enemy of science and society. In the eyes of the unwise, irrationality is a small price to pay for such a powerful protection of the privileged political and economic position of the few and the general freedom from morality of the many that defines the secularist culture of the modern world.

