ON ASSUMPTIONS AND THEIR RELATION TO SCIENCE

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The fact that everyone has a set of "accepted assumptions" is emphasized and its relevance to science dealing with origins is explored. It is suggested that the failure to recognize incompatible sets of "accepted assumptions" results in much futile discussion of purported "evidence" for a particular view. Ample evidence is cited showing that confirmed evolutionists are so on philosophical grounds. No conceivable theoretical difficulties in biology will convince them otherwise! An implicit plea is made that everyone repudiate the thought that his personal view is the only possible rational one! To paraphrase Sydney Smith, the primary object of this paper is not to tell men things they don't know, but to remind them of what they are constantly forgetting!

Introduction

Over the years, men have come to recognize several sources of knowledge. These include sense perception, reason, testimony (including revelation) and intuition. These sources are by no means mutually exclusive. This paper deals primarily with the bearing of certain "accepted assumptions" (hereafter designated AA) on scientific inquiry relating to past events.[1] These AA strongly influence one's view of the nature and meaning of reality.

Examples of AA are the validity of reasoning,[2] causality, time and space invariance, absolute time and space, and an "orderly" universe. AA might also underlie such ideas as: "the whole is equal to the sum of its parts"; the only useful method of scientific inquiry involves quantitative modeling[3]; and "the present is the key to the past."

Some AA are so universally accepted that their intuitive basis is not apparent. Most AA have, to some extent, other sources of knowledge to corroborate their acceptance. Some can be easily mistaken for facts. Again, each man will have his own personal collection. David Bohm emphasizes this point by saying:

> It seems clear that everybody has got some kind of metaphysics, even if he thinks he hasn't got any. Indeed, the practical "hard-headed" individual who "only goes by what he sees" generally has a very dangerous kind of metaphysics, i.e. the kind of which he is unaware (e.g. "You can never change human nature"; "There must always be wars," etc.) Such metaphysics is dangerous because, in it, assumptions and inferences are being mistaken for directly observed facts, with the result that they are effectively riveted in an almost unchangeable way into the structure of thought. What is called for is therefore that each one of us be aware of his metaphysical assumptions, to the extent that this is possible.[4]

If in the course of argument, a proponent of a particular idea is clever enough to conceal his conclusion until the last, it is often possible to proceed unchallenged. Moreover, in many cases, overt agreement may be gained on points made.

However, if a conclusion does not agree with a listener's AA, strong exception will be taken often, not on the basis of errors in the argument, but because the conclusion is unacceptable for philosophic reasons. It is not uncommon for such objections to be manifestly illogical as presented. The objector may be unable to pinpoint the implicit assumptions which result in this position of conflict, but generally prefers to appear unreasonable rather than surrender his AA.

The "theory of theories" is based to some extent on AA. The qualifications of a "good" theory are generally thought to include such things as beauty, elegance, and simplicity. It is understandably difficult to agree on criteria for testing the extent to which theories exhibit these characteristics.

Theories "should" also contain elements of a more concrete nature such as internal consistency, generality, and falsifiability. For example, a theory that is so constructed that no experiments can be conceived that could refute it has little predictive value; at best it may be useful as a classification scheme. (The Ptolemaic theory of the solar system which allowed for an arbitrary number of epicycles was of this type, and partly for this reason was accepted for a rather long time.)

If a theory is refutable, it is not immediately discarded when a "refutation" is produced, but a careful analysis is made to develop possible ways of explaining the contradictory data. The contradiction may turn out to be only apparent. Reinterpretation of the data and/or modifications of the theory may remove the problem. Even if none of these avenues prove profitable, there is a possibility that future work will clear up the difficulties.[5]

A judgment must be made as to whether the usefulness of the theory outweighs its inadequacies. In many cases, it is retained because it is thought to be better than any alternatives. In actuality, a strong adherence to such a theory may render it worse than no theory! It may so bias current investigation that the achievement

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of a fundamental understanding of the subject is greatly hampered or postponed.[6]

The search for knowledge contains inferences, abstractions, plausibility arguments, interpolations, extrapolations, oversimplifications, generalizations, and analogies. These are also clearly dependent on AA. The so-called "scientific method" involves observation and interpretation. Obviously, interpretation is a function of AA.

Furthermore, observation is theory-laden.[7] The idea that science is mainly done by "simple" observation—"Just look, and see what happened!"—is an oversimplification. We are *not* born seeing. We are born with the capacity to see. What we see is a function of what we are looking for, which in turn depends on our previous experiences.

Pure, objective science is itself an abstraction, an idealization, a fiction! Let us not overlook the obvious. Science is done by scientists—people with biases, beliefs, emotions, and a priority list headed by A.A. I agree that

> . . . all of us will think more clearly when we frankly and openly admit that a lot of "hard-headed common sense" and "factual science" is actually a kind of poetry, which is indispensable to our general mental functioning.[8]

Two Theories of Origins

With these general remarks, let us consider the two basic theories of origins—the evolutionary theory and creationism. Evolutionists believe "that the general progress of evolution has involved the development of new organ systems and increasing complexity."[9] Creationists hold that the basic "kinds" of plant and animal life were created (suddenly and miraculously), and do not have a common ancestry, but are the work of the same Designer. It is outside the scope of this paper to evaluate the relative merits of these beliefs.

Current evolutionary theory is definitely being examined more critically in recent years as seen by such symposia as the Wistar Institute Symposium in Philadelphia (1967) and the double sessions in 1966 and 1967 held under the auspices of the International Union of Biological Sciences. These symposia were attended by scientists from several disciplines such as physics, mathematics and philosophy as well as biology. Attention was given to the tendency to overstate one's case. For instance, H. H. Pattee, a physicist from Stanford stated

> It is now commonly asserted, not only that the secret of heredity is understood in terms of physics, but that "no paradoxes had been encountered, no 'other laws of physics' had turned up," and that ". . . up to the present time conventional, normal laws of physics and chemistry have been sufficient. . . ."[10]

He also mentioned that

> . . . to admit uncertainty about the basic nature of heredity, enzymes, or evolution is often regarded only as evidence that you have lost contact with modern biological knowledge. . . . [However] I am not even aware of any "loose" treatments of the physics of heredity by molecular biologists. Therefore I do not see any evidence that the physical basis of heredity has been worked out.[11]

This admission does not imply a tendency to reject the hypothesis of evolution. An indication of the strength of the underlying AA is clearly seen in the pollyanna attitude that *somehow* "Nature" has done it (The argument seems to go—"After all, we're here!"). Pattee has said:

> Even though we do not understand the mechanism, the only conclusion I have been able to justify is that living matter has distinguished ITSELF from nonliving matter by ITS ability to achieve greater reliability in its molecular hereditary storage and transmission processes than is obtainable in any thermodynamic or classical system.[12] (capitalization added)

One of the disappointing aspects of the symposia attempting to formulate a theoretical biology was the failure to examine carefully the most prevalent assumption in biology today, viz. that evolution has taken place. Most of the time was devoted to scrutinizing current theories of evolutionary mechanisms, with the basic underlying assumption receiving little more than a perfunctory glance.

Hidden AA Unrecognized

This failure to recognize (or admit) hidden AA is illustrated by a comment made by Ernst Mayr. Speaking of the evolutionary theory, he also displays an unwarranted faith in the scientific method when he asserts, "If a scientific theory is not correct, evidence will be found sooner or later that will permit us to 'falsify' (refute) such a theory."[13]

Such a statement is misleading for two reasons. The author fails to distinguish between science in the restricted sense, which depends on reproducibility of results and verification; and those areas of science which treat problems of origins—unique historical occurrences which are not subject to experimental techniques.

Furthermore, he includes a false assumption—that the results of experiments designed to test suggested mechanisms for evolution (i.e., natural selection or microevolution) have relevance in the testing of the more deep-seated assumption, viz. that evolution has taken place. This basic assumption is an AA, and is irrefutable.

> . . . There is a characteristic difficulty in finding evidence that could really refute a general

and basic set of metaphysical assumptions. It is generally admitted that each theory has its "failures." But only very rarely does one regard these failures as evidence tending to refute the metaphysics. Rather, one places the fault in particular failures to solve certain "problems" that arise within the framework of the theory. But if one is not fully aware of the metaphysical assumptions, he may not see that these problems could actually be inherently and basically insoluble, because his metaphysics makes assumptions whose meanings are confused when extended out of certain limited areas, where they may work fairly well.[14]

In spite of the fact that the hypothesis of *evolution* is not subject to direct experimental falsification or verification scientific "testability" is sometimes used as a criterion for rejecting the *creation* hypothesis.

Suppose, for example, that the difference between living and nonliving matter depended upon different initial conditions. From the point of view of the physicist we would have to call this a "special creation" which may be allowable as a highly unlikely event or miracle; but this would nevertheless be scientifically barren since it can be neither derived from any physical theory nor tested by any real experiment.[15]

It is unfortunate that the need for "real experiments" seems to take precedence over the more basic issue—what sequence of events did *(in fact)* transpire in the past? This point deserves further consideration.

The past is composed of a series of unique events (unique in the sense that things which did actually happen make up these events and things which did not happen were absent from the sequence of events). Thus, any argument after the events, concerning what might have happened, in no way changes what did transpire. It is readily seen that this state of affairs creates a serious problem for any study of origins.

Assume for the sake of argument that evolution is a possible means by which life can be explained. *If* the creation hypothesis is correct, all experiments which are used as support for the possibility of life arising by evolution are largely irrelevant (and an emphasis of these experimental results is misleading). In the long run, it appears that a theory consistent with what *did* happen would be the most fruitful. Therefore, evolutionists bias their search for origins by rejecting one theory on the basis of its irrefutability, failing to realize (or choosing to ignore) the fact that the evolutionary hypothesis is equally irrefutable.

Although many creationists feel that evolutionary theory is incompatible with certain scientific principles (e.g. the second law of thermodynamics) they would concede that the underlying reasons for not accepting the doctrine of evolution are philosophical—based on a particular view of the Bible as revelation.[16] Evolutionists would do well to admit that believing in evolution involves no less an act of faith—an adherence to a different set of AA. The beginning point of the evolutionist as well as that of the creationist rests on a strong **personal conviction!**

Two Approaches Involve Same Data

Neither creationists nor evolutionists reject the raw data uncovered by scientists, although it must be pointed out that the data which are used may reflect the theoretical biases. Of course, each school of thought can point to data which are difficult to fit into the other theory.

Scientists are well aware that the same data can often be fitted comfortably into different theories. J. Maynard Smith, a geneticist from Brighton, England, illustrates this point nicely when he says, ". . . the main task of any theory of evolution is to explain adaptive complexity, i.e. to explain the same set of facts which Paley used as evidence of a Creator."[17] Notwithstanding this awareness, at times it is conveniently forgotten as is seen in the following statement:

Even though the basic principles of the evolutionary theory have been confirmed by literally tens of thousands of scientific investigations, this does not mean that the evolutionary process is known in all of its details.[18]

Evolutionists have been confronted with some difficult questions, but clever men can generally, by plausibility arguments, escape any "corner." This is obvious from reading their writings.[19] For instance:

It does seem odd, therefore, that just when physics is thus moving away from mechanism, biology and psychology are moving closer to it. If this trend continues, it may well be that scientists will be regarding living and intelligent beings as mechanical, while they suppose that inanimate matter is too complex and subtle to fit into the limited categories of mechanism. But of course, in the long run, such a point of view cannot stand up to critical analysis. For since DNA and other molecules studied by the biologist are constituted of electrons, protons, neutrons, etc., it follows that they too are capable of behaving in a far more complex and subtle way than can be described in terms of the mechanical concepts.[20]

. . . If there is a crucial distinction between living and lifeless hereditary machinery, and if it cannot be explained classically, then the physicist will not only have a very strong point but also a profound problem. The point

> is that the secret of life is neither simple nor understandable by classical models; the problem is to express hereditary rules in the language of quantum mechanics, that is, to describe how an exceptionally reliable nonholonomic constraint can arise in a single molecule. This is not primarily a problem arising from the complexity of enzymes or our inability to calculate solutions to certain equations. It is of the same nature as the problem of interpreting the measurement process in quantum mechanics where we must use both reversible (deterministic) and irreversible (statistical) descriptions for a single physical situation. But in case of molecular hereditary processes it is even less clear where to apply each type of description.[21]

I am willing to call the general evolutionary theory plausible in that some very intelligent men subscribe to it. In fact, if one makes certain assumptions, evolution is reasonable.

Dogmatism has traditionally been identified with religion (particularly by those not religiously inclined). That it is not confined to "religion" but is also present in "science" can best be illustrated by quoting a reply to a creationist's attack upon the evolutionary theory.

> Frankly, I do not know of a single well-informed person who questions the factuality of evolution. . . . Nor is there any longer any question as to the mechanisms of evolution. . . .[22]

It is too bad that people learn so little from history. The above statement is strangely reminiscent of words spoken by A. A. Michelson, a prominent physicist, at a laboratory dedication in 1894:

> The more important fundamental laws and facts of physical science have all been discovered, and these are now so firmly established that the possibility of their ever being supplanted in consequence of new discoveries is exceedingly remote. . . . Future discoveries must be looked for in the sixth place of decimals.[23]

Dr. Michelson was a much better experimentalist than prophet! Less than thirty years later, the physicist's picture of the principles and laws governing nature were fundamentally different, incorporating the revolutionary concepts of quantum theory and relativity theory. Both theories involved drastic changes in previous AA. Ideas implicitly assumed true for centuries have been attacked.

Conclusion

It would be reassuring to be able to prove that one's personal AA are the "right" ones. Since some AA carry very much weight indeed, one cannot necessarily appeal to "known" laws to "prove" one's position. It is a natural tendency to "proselyte" for one's own view. However, many arguments between opposing viewpoints take place at a level which precludes agreement because of conflicting AA, and prevent an appreciation of valid points.

Perhaps the classic example of the strength of AA is that of Einstein. His debates with Bohr lasting over a period of years, and his rejection of the prevailing interpretation of quantum physics can be traced to his philosophic position —"God does not play dice with the Universe."

Let us admit that science involves interpretation; it cannot exist without it. It emphasizes experiments—controlled experiences! "What we learn from experience depends on the kind of philosophy we bring to experience,"[24] as C. S. Lewis has said.

Let creation scientists make their "accepted assumptions" clearly known and use them as a basis for the research and study of origins. At the same time, let us press the evolutionists to admit that they too have "accepted assumptions" and are basing their views largely on philosophical-religious presuppositions.

When these points are clearly recognized and understood, perhaps the debate between evolutionists and creationists can generate less heat and a little more light.

References

[1]The term "accepted assumptions" refers to premises which are taken as true (in many cases, on intuitional grounds). They may *in fact* be false. They may be unprovable (and hence unfalsifiable); they may be subject to proof but not yet proved; there may exist an alleged proof. In this connection, it is worth noting that what one person accepts as proof beyond a reasonable doubt will fail to convince another, so proof is a relative term.

[2]Lewis, C. S. 1970. Miracles. The MacMillan Co., New York, pp. 20-24. Here Lewis argues convincingly for the necessity of this assumption and gives some interesting observations on its implications for scientists whose philosophy excludes the supernatural.

[3]Blackburn, T. R. 1971. Sensuous intellectual complementarity in science. *Science*, 172 (3987): 1003. This reference recommends a broadening of the footnoted view.

[4]Bohm, David. 1969. Towards a theoretical biology, II. Edited by C. H. Waddington. Aldine Publishing Co., Chicago, p. 41.

[5]For example, the irregular orbital motion of Uranus about the sun seemed to be inconsistent with Newton's gravitational law. The conflict was resolved with the discovery of Neptune. In this case, Newton's law was used to help locate the planet causing the perturbation!

[6]Newton's corpuscular theory of light was generally accepted for more than one hundred years (mostly due to his prestige) until the "evidence" was rather overwhelming in favor of the wave theory.

[7]Cf. Margenau, H. 1950. The nature of physical reality. McGraw-Hill, New York.

[8]Bohm. *Op. cit.*, p. 42.

[9]Dodson, Edward. 1960. Evolution: process and product. Reinhold Publishing Corp., New York, p. 153.

[10]Pattee, H. H. 1969. Towards a theoretical biology, II. Edited by C. H. Waddington. Aldine Publishing Co., Chicago, p. 268.
[11]Pattee. *Ibid.*
[12]Pattee, H. H. 1968. Towards a theoretical biology, I. Edited by C. H. Waddington. Aldine Publishing Co., Chicago, p. 78.
[13]Mayr, Ernst. 1971. Letters to the editor, *The American Biology Teacher*, 33 (1): 50.
[14]Bohm. *Op. cit.*, p. 103.
[15]Pattee. *Op. cit.*, p. 72.
[16]Creationists feel that revelation is the only reliable means of determining past events. Testimony by "Someone" who was there should outweigh speculation.
[17]Smith, J. Maynard. 1969. Towards a theoretical biology, II. Edited by C. H. Waddington. Aldine Publishing Co., Chicago, p. 82.
[18]Mayr. *Op. cit.*, p. 50.
[19]Blum, Harold F. 1962. Time's arrow and evolution. Harper & Brothers, New York and Morowitz, Harold J. 1968. Energy flow in biological systems. Academic Press, New York.
[20]Bohm. *Op. cit.*, p. 34.
[21]Pattee. See reference 10. p. 279.
[22]Mayr. *Op. cit.*, p. 49.
[23]Quoted from Bartlett's familiar quotations.
[24]Lewis. *Op. cit.*, p. 7.

THE SMYRNA FIG REQUIRES GOD FOR ITS PRODUCTION

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Small wasps, male and female, are hatched in a caprifig in closed cells. The male wasp gnaws out of his cell. He then gnaws a hole in the cell of the female and fertilizes her whom he has never seen. The female emerges from her cell and in leaving the fig to accomplish her mission in life she becomes covered with pollen. She enters the fruit fig attempting to lay her eggs, but the fruit fig is built so she cannot lay her eggs, but in exploring the fig she pollinates the fruit-producing fig.

A young wasp lies dormant in a caprifig all winter, but hatches at the exact time to lay her eggs in the summer crop of caprifigs which is necessary to pollinate the fruit. This all requires exact timing which means God controls it.

Introduction

The peoples of the world are in more confusion of mind than at any other time in recorded history. This condition has been mostly caused by the disbelief in the reality of God. Fundamentally, the evolution theory is the principal cause for this lack of belief in God.

One probably cannot restore confidence in God by arguments against evolution alone. However, these arguments are necessary. Possibly the most effective arguments are those that point out in reality those things that cannot be explained by any other presupposition than God.

Naturalistic explanations of the origins of living things take most of the processes for granted. For example, if there had been a satisfactorily complete evolutionary history of other figs, this history would have broken down in the case of the Smyrna Fig. This is illustrated by the difficulties of getting Smyrna figs to bear fruit in California under the new name of Calimyrna Fig.

The Smyrna fig either fresh or dried has about the most delicious flavor of all the figs. For over a century, California had been blessed with the Black Mission Fig and the Adriatic Fig. In the San Joaquin Valley these two kinds of figs were in commercial production and very profitable.

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Early History of Smyrna Figs in California

George C. Roeding, the large nurseryman of Fresno, was very anxious to get the Smyrna fig in production in the San Joaquin Valley. He found, however, that many others had brought cuttings of the Smyrna fig into California on numerous occasions. Although the cuttings grew very well the resulting trees would not bear fruit. The young figs when about the size of a walnut dried up and fell off.

In 1880-1882 G. P. Rixford, a publisher in San Francisco, imported 14,000 cuttings of Smyrna figs and gave them away to subscribers as gifts. These cuttings grew rapidly but the mature trees bore no fruit. Numerous other individuals imported cuttings with similar results.

All kinds of theories were advanced to explain why the Smyrna figs would not bear fruit in California. Some thought it was the soil, and others the climate. Roeding did not believe the answer was as simple as that. He learned that in Smyrna when the fruiting fig was beginning to develop fruit, the growers went out into the hills, cut limbs off the wildfig and brought them in to hang in the bearing fruit trees.

This suggested strongly that there must be some insect that is needed to pollinate the fruit fig. About 1890 Roeding had some of the fruit of the wild trees, which now had been named