Letters

PHILOSOPHY, LOGIC AND SCIENCE

Dear Editor,

Hume's problem of induction was not an attack on science. Hume found an apparent clash between the **principle of the invalidity of induction** and the **principle** of **empiricism.** In the end he *'dissolved the "clash " by giving up rationalism'*.[1] The principle of invalidity of induction says that

> *'there can be no valid reasoning from singular observation statements to universal laws of nature, and thus to scientific theories'*.[1]

Popper explains why this is so, clearly and rigorously, in **The Logic of Scientific Discovery.** This principle is consistent with Malcolm's third limitation of science: science only deals with observations.[2] Science only deals with observations because it cannot transcend those observations by any logically valid methodology. Neither Russell nor Kant nor anyone else has ever succeeded in showing that induction was a valid or justifiable process. Malcolm is mistaken that Popper's characterisation of induction as being invalid means that induction is therefore false. Validity is not an indicator of truth or falsity. Validity is akin to the soundness of an argument and is not directly related to the truth.[3]

Popper agreed with Hume that there was no valid inductive method, but unlike Hume he did not abandon rationality, and unlike Russell he found a solution which made the principle of the invalidity of induction and the principle of empiricism compatible. In brief, Popper's solution to the problem of induction was this:

(1) Theories are of ultimate importance, but there is no inductive method of discovering a scientific theory. Theories are generated by leaps of insight.

(2) The invalidity of induction dashes any hope that we can verify our theories with positive reasons. However, this invalidity does not prevent us from testing our theories by trying to refute them. There is also no method of determining whether a theory is even probable.

(3) Scientific theories are temporarily and tentatively rejected or accepted based upon the results of empirical tests.

(4) Scientific theories are temporarily and tentatively rejected or accepted as being better or worse than any other competitors based upon the results of rational criticism.[4]

> *'Rational criticism is criticism of the claim of a theory to be true, and able to solve the problem it was designed to solve'*.[5]

Popper considered the notion that scientists proceeded from indiscriminate observations (that is, observations made without any theory in mind) to the creation of a theory via some valid inductive methodology to be myth. He believed that theories generated by man were leaps of insight which were always tentative. And observations were always made in the light of a theory.

Malcolm did not support his claim that the Word of God provided proof of the validity of induction, and I am ignorant of any such Biblical proof. Instead I would contend that Popper's suggestion that conjectures are 'leaps of insight' by man is supported. The fact that we are created in God's image means, among other things, that one of God's gifts to man was a tremendous creativity, and ingenuity from which I believe leaps of insight could indeed spring forth. One cannot call these leaps of insight 'induction', at least not in the sense that logicians use that word.

Some scientists proclaim that *'Science cannot deal with miracles'* or that it rules out the possibility of the supernatural.[6] I doubt that a defensible argument can be offered which draws this conclusion. Science is a growing repository of objective empirical (but tentative) knowledge, and a 'toolbox' of naturalistic methodologies which man uses to develop and test his conjectures about the world. As a result 'science' is completely silent about miracles and the supernatural. A **scientist** may attempt to rule out miracles and the supernatural using science, but 'science' standing alone is incapable of such an attempt. In fact, the claim that 'science' rules out the possibility of the supernatural is a little like saying that my automotive maintenance manual and my screwdriver rules out the possibility of a mechanic. On the other hand, creation scientists have been capable in determining the empirical implications of special acts of God and testing for those implications using science.

While secular scientists may have abandoned the Christian historical basis for Wise's eight presuppositions of science,[6] I find it hard to see how the new ninth secular presupposition (science rules out the possibility of the supernatural) would cause a secular scientist to question the validity of the first eight. In order to search for universal laws scientists frequently presuppose the existence of other laws (like Wise's eight presuppositions) without positive verification. The real inadequacy of the new philosophical basis of the 'uniformity of natural causes in a closed system' is that it excludes God and it is incapable of offering any explanation for, or insight into, the creation of such a closed system and the matter it contains.

Malcolm's belief that Popper denies knowledge is either a misunderstanding of Magee's presentation or Magee has done a poor job of characterising Popper's ideas. Popper did not knowingly reject real

knowledge by saying that it is conjectural or tentative. He has only contended that as humans we are unlikely to achieve 'the' ultimate truth in any attempt to find truthful explanations. Each conjecture is at best only an approximation to the truth. With each test to refute passed, and each challenge from a competing conjecture turned back, such a theory could be said to be moving closer to the truth. Unfortunately there is no way to predict how long any particular conjecture will continue to pass such tests or whether a better competitor will appear. If our theories are this tenuous, why would one believe that the objective knowledge which comes from such pursuits will be any less tenuous? Popper wrote:

> *As we learn from our mistakes our knowledge grows, even though we may never know — that is, know for certain. Since our knowledge can grow, there can be no reason here for despair of reason. And since we can never know for certain, there can be no authority here for any claim to authority, for conceit over knowledge, or for smugness.'*[1]

There is no denial of knowledge by Popper, but with humility he recognises the tentative, fallible nature of man's knowledge and the lack of man's authority over the truth.

It may seem intuitive that corroborations can verify a theory, but I believe this is illusory. One of the problems with the search for positive verifications is that such searches are performed in the light of a theory, and as a result most observations will appear to be supportive. Counter examples will often be characterised as simply non-corroborative. Next, there is no function which relates the number or quality of corroborations to some measure of truthfulness of a theory or even to some probability that a theory is some measure of closeness to the truth. Newton's theory was one of the most corroborated theories of all time, but was refuted by Einstein's.

Perhaps I'm quibbling, but I think that Malcolm is wrong when he claims that Popper defines science by his criteria of falsifiability. Falsifiability is a criterion applied to conjectures to distinguish the **empirically** testable ones from the untestable ones. In the end Malcolm will find himself having to conclude that the corroborative evidence produced by evolutionists verifies the theory of evolution. In order to be consistent he will have to accept the theory of evolution as being increasingly verified with its ever increasing list of supportive evidence. Popper's philosophy of science says that no amount of verifications can justify a theory.

One might argue that corroborative evidence can in some sense justify a theory as 'best available', but even if this was true we are no better off because there is no relationship between 'best available' and 'truth'. On the other hand, Popper contends that trial and error guided by empirical tests to refute and rational criticism can more often than not move man's conjectures towards the truth. Verificationists cannot make a similar claim.

Anthony R. Pagano,
Bethlehem, Pennsylvania,
UNITED STATES OF AMERICA.

REFERENCES

1. Popper, K. R., 1983. **Realism and the Aim of Science,** W. W. Bartley III (ed.), Routledge, London and New York. p. 32.
2. Malcolm, D., 1997. A philosophical attempt to define science. CEN Teeh. J.. 11(2): 178.
3. Black. M., 1946 **Critical Thinking.** A. E. Murphy (ed.), Prentice-Hall. New York, p. 37.
4. Popper. Ref. 1. pp. 6. 32.
5. Popper. Ref. 1. p. 25.
6. Malcolm, Ref. 2. p. 173.
7. Popper, K. R.. 1989 Conjectures and Refutations. Routledge and Kegan Paul New York, p. **vii.**

The Author Responds . . .

The Letter to the Editor from Anthony Pagano is very well written. I will attempt to be as thorough in my reply. He raises many points though, on which we disagree. I will try to deal with most of these issues here, though in a different order.

In his fifth paragraph, first of all, Pagano says that science is unable to rule out miracles. It seems that his definition of science is similar to mine, in that respect; but not everybody agrees with us. Those of us who have been in debates, taking the creation side, are often challenged with the idea that to even consider the possibility of miracles is to be unscientific (by definition). Those who are not in the forefront of the creation-evolution debate may not realise how well entrenched this idea is amongst university-trained people. One of the thrusts of my paper was to show that a definition of science along those lines is certainly not inevitable, and is actually inferior to Ken Ham's definition of science.

Then in his sixth paragraph, Pagano maintains that few, if any, scientists are going to reject any of the eight presuppositions of science, just because they have no proof for them. Certainly not, for several reasons:-

(1) Good scientists spend little or no time thinking about the philosophy of science. Nor should they, as C. S. Lewis has said in my concluding quote. Truncated thought is the right attitude when we are seeking to master nature.

(2) It is only people who deal with philosophy, such as Bertrand Russell, who will even notice the chinks appearing in science as we understand it. But if he has noticed them, there is the possibility that others may as well.

(3) People are not logical. We all go around with a head full of contradictory beliefs. As Christians, we should pray 'Lord, unite my heart to fear Thy Name'.

(4) It is much easier to believe what we have been taught by our teachers and professors, than to think for ourselves; and there is a good theological reason too: I am a sinner, why should I trust my own ideas?

(5) Our educational institutions only teach people what to think, and not how to think.

In his fourth paragraph, Pagano draws a distinction between induction and man's 'leaps of insight', which he explains very capably. I am quite happy with either terminology. What we are talking about though, is our ability to agree with the truth of Newton's postulates that force is equal to the product of mass and acceleration; or that the force of attraction between two bodies is proportional to their masses, and inversely proportional to the square of the distance between them. I am quite happy to allow 'induction' or a 'leap of insight' to lead us to such truths, but as an engineer I need to be assured by the scientist that he is indeed dealing with truth.

Which brings me to the question of Popper's particular contributions. Please note that I have made it clear that I am prepared to be corrected if my views on Popper are wrong.

One thing Pagano takes strong exception to is found in my quote:

> '. . . *induction is a procedure which is logically invalid and rationally unjustifiable'.*[1]

Hume and Russell have said already that induction is rationally unjustifiable, and I have no disagreement with that. However, Popper has added *'logically invalid'*. Perhaps this wording could be taken to mean exactly the same as *'rationally unjustifiable'* as Pagano maintains, but there is an *'and'* in Popper's sentence (as quoted above), not 'or in other words', so that interpretation may not be correct.

In his ninth paragraph, Pagano maintains Popper is not offering falsifiability as a definition of science. But Magee says it is.[2] Also in his seventh paragraph, Pagano suggests I have either misunderstood Popper, or Magee has not represented him correctly. But the cover of the book says that Popper himself has authorised this particular account.[3]

There seems to be much in Popper's writings with which Pagano and I would agree (as well as other Christians), but the real problem with Popper, as Stove maintains, is that he is irrational. In other words, he contradicts himself on important issues. If this objection can be maintained, then it could be the case that anybody (of whatever persuasion) could quote something from Popper to agree with his own views.

Finally, I'm sorry, but I don't see how Pagano gets the idea that my approach will have to conclude that the corroborative evidence produced by evolutionists verifies the theory of evolution. I think I have set out well the positive aspects of Popper's ideas about falsification under my heading 'Popper and Falsification'. It is not a matter of being either a falsificationist or a verificationist. And Table 6 quotes Popper's own testimony that *'Darwinism is not a testable scientific theory'*.

In the final analysis, Popper is not really central to the article. But the book by C. S. Lewis is a different matter, and I would hate to think that any readers take a hostile stand towards the main thrust of my article for any reason. It is Lewis' book **Miracles** which provided the main source of material. He was aware of the Biblical foundation of science, and presented a convincing case for the existence of miracles alongside having 'laws' of science. I sought to do honour to Lewis' material while backing up his thoughts from secular philosophy. I would beg Mr Pagano to read **Miracles,** and consider it in preference to my thoughts. If readers take exception to my views about Popper, I'm not going to lose any sleep over it, but if people take a negative view towards C. S. Lewis on account of my article, I would be devastated.

David Malcolm,
Maryland, New South Wales,
AUSTRALIA.

REFERENCES

1. Popper, K. R., 1972. Science: conjectures and refutations. *In:* **Challenges to Empiricism,** H. Morick (ed.), Wadsworth Publishing Company, California, p. 141.
2. Magee, B., 1985. **Philosophy and the Real World (An Introduction to Karl Popper),** Open Court Publishing Company, La Salle, Illinois, p. 41.
3. Magee, Ref. 3, back cover.

THE DAYS OF GENESIS 1

Dear Editor,

In response to Dr Otto Helweg's reply,[1] I wish to emphasise my appreciation for Dr Helweg's statements concerning his high view of Scripture. I believe he is right on target when he says,

> *'I believe that we should look to the Bible as much as possible to see how it interprets itself.*

This common ground allows very helpful dialogue on these important issues. More about this later.

While space prohibits a response to all of Dr Helweg's points, there are two or three on which I would like to comment. It is clear that our approaches differ. Dr Helweg says,

> *'The Bible is the book of God's Word and the universe is the book of God's works. Both of these have the same author and do not contradict each other'.*

He further says that,

> *'The Bible itself hints at the possibility of creation interpreting the Word in Psalm 19:1 and Romans 1:20'.*

First, those wonderful verses surely proclaim that the created cosmos demonstrates what God did and declare His glory I disagree that they provide a hermeneutical approach to the Bible. Romans 1:20 simply means that the created world demonstrates the existence of God and may reveal the invisible attributes of God, not **how** the world was created. As far as Psalm 19:1 is concerned, the heavens declaring the glory of God has nothing to do with how those heavens were created.

Dr Helweg's suggestion that we interpret the written word by the created world is inadequate for several reasons. First, studying the created world will not tell us precisely how that world was created, any more than