

# IN SCIENCE AND RELIGION ON GENERALIZATION

WILLIAM J. STROUD

One of the more difficult tasks of man's rational and scientific life is to gain an over-view of various relationships between observable and discernable entities. Observation and experimentation in science proceed by means of principles well-established and empirical in nature. Discovering a connectedness between events, especially events in which man himself is involved demands an immediate movement from the empirical to the mental.

It is only when an over-view is gained that individual events are given meaning. Without some category of priorities, based on some over-view, each event appears trivially the same. The scientist is tantamount to cataloger, making lists, observing all, but making no judgments. Significant research is begun from an external perspective. A goal is suggested, but it is a goal which goes beyond the facts. This goal operates as an orientation for research.

The classical division between pure and applied science does not dispute this claim. While, traditionally applied science was conceived along pragmatic lines (i.e. its goal was the achievement of technical results which were marketable pure science also has its goal: to provide theories which will predict and control, and spawn new theories (even replacement theories) toward the end of understanding.

Organizing theories, such as that of organic evolution or cosmic relativity may be only proximately true, but they are approached heteroscopically rather than epistemologically. Professor Bernhardt used the term heteroscopic to denote an approach to explanation consistent with science parallel to but not dependent on intuition and revelation. As such these heteroscopic ideas are used to gain over-views by means of which categories of meaning may be introduced.

Heteroscopic views are based on the logical extension of events and processes epistemologically verified. Heteroscopic views are not dogmatically correct answers, but may well be challenged by new and more encompassing over-views.

Theories bear analogies to maps, and are like maps, abstractions of the reality which they represent. If I am lost in New York City, and I am handed a road map of the United States, and told to find my way — I have been given no help — the map is too abstract. On the other hand if I am lost in the hills of West Virginia and someone hands

---

WILLIAM J. STROUD is Assistant Professor of Philosophy at Salem College, Salem, West Virginia.

me a map which is on the scale of one-inch to one-inch (i.e. it is identical in every way to the piece of real-estate on which I am standing) it is of no help to me. I am just as lost on the map as I am in reality. So it is with a theory. It is an abstraction, but not too abstract. The theory must bear a significant relationship to the facts and events of reality. Theories are designed to elucidate not obscure. That is why they must be relatively simple, and why the simpler theory is to be preferred — it is more manageable.

The process of abstraction from the scientific level to the heteroscopic level is significant, and perhaps the most difficult. Its difficulty is compounded by the fact that humans are frequently involved in what is to be explained. Human beings tend to shy away from what they are involved in. Special prejudices, indeed world-views and religious dogmas, prevent them from removing that upon which their security is based. But in order to explain some things it is important that we risk our security. This is especially true with respect to the two over-views of evolution and relativity mentioned above.

Two fantasies written three quarters of a century apart help discern our problem. The first of these is *Flatland*<sup>1</sup> by Abbott published late in the nineteenth century, concerning a two-dimensional world whose occupants are hard pressed to explain the occurrence of a phenomenon whose appearance seems to defy all the physical laws of the two-dimensional universe. The phenomenon is a visitor from the third dimension, a sphere, who appears as an ever increasing then ever diminishing circle in the plane of the two-dimensional world.

The second fantasy, *Sphereland*<sup>2</sup> by the Dutch mathematician Dionys Burger expands the theme of *Flatland* to include the concept of a two-dimensional world involved in a universe in which the theory of relativity is involved. Visitations from the third dimension are more tolerable now, and a third dimension is accepted by scientist, but it is heresy to suggest that the plane of the two-dimensional world may be in reality the surface of a sphere as suggested by non-Euclidian geometry.

In both of these writings heteroscopic observations are made without appeal to any metaphysical systems. In *Flatland*, the visiting sphere, having taken the "Square" on a tour of *Lineland* asks him to consider an analogy.

If a dot (in *Lineland*) moves Northward and leaving a trail this

---

<sup>1</sup>(Edwin A. Abbott), *Flatland, A Romance of Many Dimensions*, Oxford: Basil Blackwell, 1884.

<sup>2</sup>Dionys Burger, *Sphereland*, Trans. by Cornelie J. Rheinboldt, Apollo Editions, New York. Thomas Y. Crowell Co., 1965.

is called a line. Now the line moves eastward parallel to itself producing a square (in the two-dimensional world).

A square has four sides and four vertices. Now should the square move parallel to itself in a direction inconceivable in Flatland, a solid body having a border of six squares and eight vertices, and in Sphereland called a cube.<sup>3</sup>

The Square is asked to assume an over-view, to look at the world heteroscopically. Moreover, he is asked to do this on the basis of things that he can see in relation to an analogy referring to an experience to an occupant of a one dimensional world, to which his world would be heteroscopic.

*Flatland* ends without providing for a test of coherency, and *Sphereland* is written to show that coherency, and furthermore to illustrate non-Euclidean geometry. In this book a conversation between A Hexagon and his son illustrates the analogy of *Flatland*.

"Strangest of all, though"; my son continued, "is the fact that this cube's bordered by planes, squares, six in number, of which every point, even those inside the square, is located outside of the solid. We Flatlanders cannot imagine that a point inside a square can lie outside of a body — but that's how it is. A cube therefore has eight vertices, twelve edges, and six side planes of which all points including the inside ones are located on the outside of the cube." "Nothing wrong with that line of thinking"; I resumed, "but can you go on and tell me what sort of object is created if the cube is now moved in a fourth direction, perpendicular to the three other directions?"

"It would become a four dimensional body which we could call an over-cube" my son said. "Of course we cannot possibly visualize this".<sup>4</sup>

Whether there are over-cubes is not the point. The point is that there is a rational mapping device not dependent on a metaphysical structure in the usual sense. The mapping device is used in a manner which is analogous to the process of generalization in science, and is similar to that proposed in Professor Bernhardt's "Verifiable and non-verifiable God Concepts".<sup>5</sup> The movement from empirical facts to a God concept depends upon a proper formulation of the mapping procedure, just as much in religious epistemology as in science. Bernhardt's proposal may be open to criticism at this point.

---

<sup>3</sup>Abbott, *Flatland*, pp. 74-75.

<sup>4</sup>*Ibid.*, pp. 71-72.

<sup>5</sup>William H. Bernhardt, *The Cognitive Quest for God and Operational Theism*, "Verifiable and Non-Verifiable God Concepts", Denver; The Criterion Press, 1971.

Can we move from empirical evidence to a God-concept without making God dependent on our evidence? That is, can we avoid the risk of interpreting our evidence on the basis of the wish that there is a God, and thereby proving the existence of God by means of a closed deductive system? Circularities of deductive systems, repugnant to science, must be avoided at all costs, yet like all science we cannot desert reason as a tool in discovery. Bernhardt hints at this as he says: "It would appear preferable, if one is interested in precision of definition, not to extend the meaning of scientific object to include what we here designate as heteroscopic."<sup>6</sup> Neither Evolution nor Relativity are "scientific objects" in this sense, but rather are value categories in which the data of observation is gathered coherently. These theories are not closed to the data, but open to the inclusion of and modification by new data. These theoretical systems are not absolutely true, but projectably true — as should be the heteroscopic God-theory. Whitehead frequently noted that the ground of reason is irrational, and in this Bernhardt apparently concurs. The heteroscopic view does not lead necessarily to a notion of a God that is effete and limited as is found in the "empirical" speculation of J. S. Mill, nor does there necessarily result a personal deity, limited by the "Given" as was so popular in the Boston School. These kinds of limitations imply a dualistic world view, which is incomprehensible to the mind of the scientist.

Now, a new question emerges: if the only kind of God-concept which is verifiable is heteroscopic in nature, does that not suggest that God is only an organizing principle rather than a personal being? The question is a reminder of St. Anselm's attempt to posit existence of God as an attribute, and is logically open to the same kind of criticism to which St. Thomas subjected the ontological argument. At the same time, the heteroscopic concept of God is close to Whitehead's principle of concretion, and probably to St. Thomas' cosmological *principle*. The question would be asked by a person who would ask philosophy to prove *all* that he believes about God *is* the case, rather than by the vast majority of religious thinkers who are satisfied with a "common denominator" or, to use a phrase of Michael Scriven; "basic God". "God is normally conceived of as an extremely powerful Being (certainly more so than any man), and as extremely wise and good (certainly more so than any man)".<sup>7</sup> To show even this much is very difficult, to satisfy the all or none criterion is impossible.

The movement from observed data to a heteroscopic view of God without violating the principle of evidence is quite important.

<sup>6</sup>*Ibid.*, p. 121

<sup>7</sup>Michael Scriven, *Primary Philosophy*, New York: McGraw Hill Book Co., 1966, p. 89.

Our basic question is: Can God be projected from the evidence at hand, and, are we justified in calling our projection God? Projection is the weakest link in a heteroscopic argument, but we must notice that projection is also the weakest point when the heteroscopic approach to the life process in Biology is used. Whitehead consistently reminds us of unfruitful attempts to apply the theory of evolution too rigidly. I would suspect that an example of this is the folly of the search for the missing link between man and the ape. Rather the theory of evolution must now be adjusted to account for rather startling developmental jumps in the animal kingdom rather than looking for a smooth Hegelian flow of development. And biologists have shown their willingness to do this now by adopting as a possibility the Proteus, one-celled biological entities which are not to be considered either in the plant kingdom or the animal kingdom. Other adaptations in both nomenclature and theory will follow in years to come. All of this suggests that our basic question is answered partially in that as in Biology, in religion, verification ultimately comes from a test of coherence when the theory is turned back to explain the data, and now is open to modification by the data.

The other part of the first question "Can God be projected from the evidence at hand?" remains unanswered. This is essentially a problem of confirmation, as Nelson Goodman puts it "of defining a certain relationship between evidence or base cases on the one hand, and hypothesis, predictions or projections on the other".<sup>8</sup>

In order for a hypothesis to be *actually projected*, some preliminary observations need to be made. No hypothesis may be projected *ex nihilo*, even withstanding cries for objectivity. The reason for this is that hypothesis in order to be meaningful must be extensions of already known data. Objectivity comes in later, as one seeks to determine whether the hypothesis is projectable. The hypothesis could be true, but not necessarily so. At this stage it is sufficient that the hypothesis be more likely than alternative proposals. The hypothesis presented by Bernhardt from Morgan's *Emergent Evolution* is just such a hypothesis. For Morgan "one discovers that God as Nisus is an interpretation of many facts and interrelated theories".<sup>9</sup> Just so certain phenomena observed in Flatland were unverifiable in a two-dimensional world, but in Sphereland were commonplace. Russell, also suggests an analogy which his helpful.

Let us suppose further that while you were unconscious you were

---

<sup>8</sup>Nelson Goodman, *Fact, Fiction, Forecast*, Indianapolis, Ind.: The Bobbs-Merrill Company, 1965 p. 84.

<sup>9</sup>Bernhardt, "Verifiable and Non-Verifiable God Concepts", p. 120.

carried into a balloon, which, when you come to, is sailing with the wind on a dark night — you can see fireworks which are being set off from the ground, from trains, and from airplanes travelling in all directions, but you cannot see the ground or the trains or the airplanes because of the darkness. What sort of picture of the world will you form? You will think that nothing is permanent. . . obviously your geometry and your physics and your metaphysics will be quite different from those of ordinary mortals.<sup>10</sup>

But Russell notes, should Einstein visit you on your balloon he would comprehend your casual statements, while the earth-bound mortal would not. Relativity physics suggests 1) that there are different levels in meaning in physical science. This infers that the hypothesis of Morgan is tenable, although unproven. 2) Russell's story also suggests that common sense visual verification instead of being the best mode of verification is often misleading, and perhaps the sense most often leading to mistakes. (How often do we hear of aural "illusions" as compared to optical illusions?) It is possible, as Bernhardt observes, that heteroscopic objects "are presumably actual and existent non-perceptual realities whose presence is inferred from perceptual data."<sup>11</sup> To this observation, we shall return later.

A hypothesis can be projected until 1) it is violated, in which case the hypothesis must be altered and 2) it is exhausted, that is in which its fecundity has been severely limited. In the case a hypothesis is supported and is unviolated and still is fruitful it must only be "adopted" to be considered projected.<sup>12</sup> As far as I know accepted evidence to the contrary for an "over-structure" such as Morgan's Nisus has not been suggested. So the hypothesis appears to be projectable at this point.

One further point which Goodman makes will be helpful for our conclusion: "the roots of inductive validity are to be found in our language".<sup>13</sup> Observed regularities may be due to well-established linguistic habits rather than due to nature. This Humian suggestion serves to demonstrate that our inductive logical patterns are like deductive patterns subject to limitations. We may no more assure a correlative with a perceptual being inductively than was St. Anselm deductively! Here is where care must be exercised in speaking of verifiable God-concepts.

While the hypothesis about God is projectable in terms of a concept, a unifying principle, a process or an order of things, that God

<sup>10</sup>Bertrand Russell, *The ABC of Relativity*, New York: Mentor Books, 1959 pp. 10-11

<sup>11</sup>Bernhardt, "Verifiable and Non-Verifiable God Concepts", p. 120.

<sup>12</sup>Goodman, *Fact, Fiction, Forecast*, p. 107.

<sup>13</sup>*Ibid.*, p. 119.

*exists* is no more projectable now than it was for Anselm. Verification of the former means simply applying a test of coherence as the concept is turned back to interpret the evidence upon which it is based. Verification of the later pushes us to the very limits of reason. Bernhardt has said that "heteroscopic objects are presumably actual and existent non-perceptual realities whose presence is inferred from an analysis of perceptual data".<sup>14</sup> If Bernhardt means "actual" as does Whitehead in his phrase "actual occasions" I quite agree, but why say more about "existent non-perceptual realities"? Is the desire to use the words "existent non-perceptual realities" the result of a well-entrenched linguistic habit behind which is the hope that the use of these predicates will make the concept more concrete? Why must the concept be concrete? In light of all of this would it not be proper to suggest that the heteroscopic method only suggests a structure which gives meaning to other aspects of reality? Of course such a structure would be valuable to the religionist, and the structure would be an "object." The concept it turns out may be verifiable, while God is not. But, after all my own statement may be due to a well entrenched linguistic habit. Saying that the "concept" is verifiable, may well be all that is needed to show there is a God in the special sense indicated in this discussion.

---

<sup>14</sup>Bernhardt, "Verifiable and Non-Verifiable God Concepts", p. 120.

#### Copyright and Use:

**As an ATLAS user, you may print, download, or send articles for individual use according to fair use as defined by U.S. and international copyright law and as otherwise authorized under your respective ATLAS subscriber agreement.**

**No content may be copied or emailed to multiple sites or publicly posted without the copyright holder(s)' express written permission. Any use, decompiling, reproduction, or distribution of this journal in excess of fair use provisions may be a violation of copyright law.**

This journal is made available to you through the ATLAS collection with permission from the copyright holder(s). The copyright holder for an entire issue of a journal typically is the journal owner, who also may own the copyright in each article. However, for certain articles, the author of the article may maintain the copyright in the article. Please contact the copyright holder(s) to request permission to use an article or specific work for any use not covered by the fair use provisions of the copyright laws or covered by your respective ATLAS subscriber agreement. For information regarding the copyright holder(s), please refer to the copyright information in the journal, if available, or contact ATLA to request contact information for the copyright holder(s).

#### About ATLAS:

The ATLA Serials (ATLAS®) collection contains electronic versions of previously published religion and theology journals reproduced with permission. The ATLAS collection is owned and managed by the American Theological Library Association (ATLA) and received initial funding from Lilly Endowment Inc.

The design and final form of this electronic document is the property of the American Theological Library Association.