Subjectivity and Objectivity in Science and Religion

Labs, Lynn M.
Boston Theological Institute

http://hdl.handle.net/2144/4013
Boston University
Subjectivity and objectivity are interdependent in both science and religion. In each discipline, objectivity is based on subjectivity, then structured and communicated within paradigms developed by a community. Nonrational thought is vital to both disciplines, and each relies on non-provable assumptions. Thus, although religion and science investigate reality from different perspectives, their methods are fundamentally similar.

Science and religion coexist in an uneasy relationship. Although each one claims to be engaged in a search for truth, they rarely interact, and scientists and theologians conduct their work without regard for one another. Since it is commonly assumed that they use different methods and pursue different goals, their relationship is usually one of mutual toleration, although occasionally outright hostility erupts between them. A number of scientists and theologians and at least one mainline Christian denomination have recently called for conversation between the two disciplines. To begin this interdisciplinary dialogue, the methods and limitations of each discipline must be critically assessed by both groups so that points of contact, if not of agreement, can be noted. The lack of such interdisciplinary evaluation inevitably leads each discipline to misunderstand and misrepresent the other.

Fundamental to any scientific or theological method of inquiry is the interrelationship between objectivity and subjectivity. Both attitudes are essential in the encounter of the thinking individual with reality. They are frequently assumed to be irreconcilable opposites. Since the Enlightenment, the emphasis on reason in Western thought has been enormous. Objectivity in scientific investigation is assumed to lead to an accurate understanding of reality; subjectivity is thought to contaminate such investigation and lead to illusion. While logic and objectification, considered to be rational, are trusted and held in intellectual esteem, the nonrational subjectivity of emotion, intuition, and religious experience is denigrated and viewed with suspicion. The two are, however, intimately related, and their interdependence is foundational to both scientific and theological method.

The essence of the relationship between objectivity and subjectivity lies in the fact that reality must be subjectively experienced before it can be objectively described or communicated. There can be no objective consideration without prior experiential or existential encounter of some sort. This is true for both scientific investigations and religious thought. Associated with this subjective encounter is its unavoidable interpretation by the thinker. Experiences are always filtered, categorized, prioritized, and otherwise interpreted by the one who is experiencing them. Further, these interpretations are unique to the
thinker, because they are influenced by his or her prior experiences and interpretations. Thus, there is no pure objectivity of thought that can be completely separated from the subjectivity of the thinker. In many cases, objective thought is initiated by a completely subjective experience that occurs without identifiable external influence. Such experiences include intuitive insights, hunches, and experiences of what religious thinkers call transcendent reality. These experiences frequently lead to holistic understanding of a sort that is not a result of sequential, rational thought. The logic of such knowledge and its connections with other concepts are recognized only subsequent to the experience, after a time of rational reflection.

Physicist Paul Davies has claimed that belief results from a combination of objectivity, subjectivity, indoctrination, and intuition. There can be no objective consideration without prior experiential or existential encounter of some sort.

This is true in science no less than in religion. In both disciplines, objectivity is predicated on individual subjectivity and influenced by the subjectivity of the community that includes the thinker. Belief includes not only religious convictions, but also conclusions that have been derived from experimental or mathematical methods. The scientific method is commonly understood to lead to completely objective knowledge. Such knowledge is thought to be unrelated to subjective experiences, since it is the product of repeatable experimentation and logical thought. The scientific process is indeed designed to control subjectivity, relying as it does on experiments repeated within a large community of scientists over a long period of time. However, subjectivity is an essential part of the scientific process. Far from eliminating subjectivity, science structures it. Unstructured experiences may lead to erroneous conclusions. The drinking straw appears to have a bend in it when viewed through a transparent glass half-full of water. But the conclusion that it is not actually bent is not a result of pure objective thought. Instead, other experiences are structured using similar drinking glasses, water, straws, and light. On the basis of those structured experiences (experiments), the conclusion is reached that the light illuminating the straw is bent (refracted), while the straw remains straight. Subjective experience is not eliminated, but organized so that more accurate descriptions of reality are achieved. Experimental science does not in fact rely on pure objectivity, but on intersubjective objectivity that allows repeatability within a scientific community and thus objective descriptions of the experiences.

Subjectivity is necessary for the existence of science itself. Thomas Kuhn's pioneering thought concerning paradigms suggested that all science is performed within a dominant paradigm or perspective on reality. Each paradigm shares common problems, values, and presuppositions, and unites members of a particular scientific community in their work. The adoption of a paradigm within which one's work will be conducted is ultimately nonrational, based as it is on personal judgments as to its adequacy as a conceptual framework for the scientists using it. An element of peer pressure is also involved, since any given scientific community has already chosen a paradigm to guide their work, and because inexperienced scientists are always educated within a particular scientific community. Thus, the choice of a paradigm within which any series of investigations will proceed is highly subjective.

Data interpretation is permeated with subjectivity. Physicist and theologian Ian
Barbour cites wide support for the position that no data are uninterpreted. An interpretive framework guides even the experimental questions that are asked and the way in which the experiments are designed. Subjectivity is comprehensive, even insidious. Barbour has summarized the situation:

Man supplies the categories of interpretation, right from the start. The very language in which observations are reported is influenced by prior theories. The predicates we use in describing the world and the categories with which we classify events depend on the kind of regularities we anticipate. The presuppositions which the scientist brings to his enquiry are reflected in the way he formulates a problem, the kind of apparatus he builds, and the type of variable he considers important. The Theory... permeates observation.

Scientific progress is heavily dependent on nonrational thought. Physiologist Robert Root-Bernstein notes that subjective factors such as "intimacy," "a feeling for the organism," and "personal engagement" of the scientist are crucial if real discovery is to take place. A willingness to pay attention to the unexpected, together with a sense that one knows one’s system "from the inside" are part of the basis for the intuition that is so important to scientific discovery. Root-Bernstein quotes biochemist Albert Szent-Gyorgyi: "Discovery consists of seeing what everyone has seen and thinking what nobody has thought." The confines of objective logic are too limiting to allow "thinking what nobody else has thought." Subjective leaps outside the confines of rational thought are necessary if creative thought is to take place.

Finally, scientific investigation itself is based upon foundational presuppositions that must be subjectively accepted without objective investigation. Astronomer John Barrow lists nine assumptions concerning the nature of reality that must be made before the practice of science can proceed, including such axioms as "The world can be analyzed locally without destroying its essential structure," and "Nature possesses regularities, and these are predictable in some sense." He quotes Michael Polanyi:

The metaphysical presuppositions of science...are transcendental preconditions of methodological thinking, not explicit objects of such thinking; we think with them and not of them.

Although science relies on proof, these axioms cannot be proved within the system of thought that makes use of them. This seeming paradox rests on the work of mathematician Kurt Gödel, who showed that no complex axiomatic system can be complete: there must always exist propositions within the system that can not be verified or falsified from within that system. Thus, a subjective affirmation of the truth of a set of non-provable propositions is foundational to science itself. As Barrow wryly notes:

One would normally define a "religion" as a system of ideas that contains statements that cannot be logically or observationally demonstrated. Rather, it rests either wholly or partially upon some articles of faith. Such a definition has the amusing consequence of including all the sciences and systems of thought that we know; Gödel’s theorem not only demonstrates that mathematics is religion, but shows that mathematics is the only religion that can prove itself to be one!

The interrelationship of objectivity and subjectivity is foundational to religion as well, since every theological statement is based on a religious experience of some kind and influenced by the thinking of the faith community. Theology is the discipline that objectifies, organizes, and interprets these experiences in order that the transcendent reality or being (God) that caused them may be more fully understood. These experiences cannot be manipulated in the same way as can scientific experiments. The scientist controls experimental conditions to the end that particular variables are affected. This can be experienced (measured) by any other researcher who repeats the experiment. In religious experiences, in contrast, the divine influence upon the participant’s experience cannot be controlled, nor can divine influence be quantified. The objective structure of worship, how-
ever, can be manipulated. Sacred environment and liturgy affect the subjective experience of the worshipping community, and their experiences can then be discussed objectively.

The task of theology is to construct an objective framework for understanding the human encounter with the reality that is revealed in and by the Divine. The fullness of God in Godself, however, is beyond human ability to conceptualize and describe. Barbour suggests that constructing religious models is the best that can be done; they are “human constructs that help us interpret experience by imagining what cannot be observed.”

Any adequate theological method must admit that human objective, conceptual thought is limited and recognize that human subjectivity is the location of the divine-human encounter and is intimately entwined with all objective theological thought. Christian theologian Sallie McFague has suggested that theology functions most effectively when it uses metaphor to describe God and God’s interactions with humanity in lieu of objective statements that are meant to be understood literally. Metaphors use comparisons for God and God’s activity that are grounded in human experience. However, by its very nature, metaphor is an incomplete comparison, incorporating both elements of “is” and “is not” in the comparison. While metaphor invites comparison, it does not define the reality with which the human experience is compared. Metaphor encounters reality without objectifying it, recognizes human conceptual limitations, and acknowledges that subjectivity permeates human thought.

In the same way that paradigms guide scientific communities in framing questions and in interpreting observations, paradigms also influence communities of religious believers in structuring their worship and in developing their theological metaphors. The structure of worship then further influences their subjective experience; and subsequent theological discussion is organized around dominant metaphors of who human beings are in relation to the Divine and the human-divine interaction. In theology as in science, the subjectively accepted paradigms of both the believer and the entire faith community (what may be called their intersubjectivity) influences the way that personal experience is objectified and understood.

Some religious experiences appear to arise spontaneously and manifest as a feeling of transcendence to the one who experiences them. Their appearance is unpredictable; they seem to appear randomly. A variety of types of these transcendental experiences have been described. They have occurred in every time period, ethnic group, and culture; to children as well as to adults. Their content, quality, and intensity vary, making their objectification and thus their analysis extremely difficult. The frame of reference of the individual experiencing them is sometimes changed completely, as in the case of sudden conversion experiences. An overwhelming flash of intuition frequently results in a complete reorientation of thought. The intuitive leap may result in a holistic understanding that leads the thinker in a logical direction entirely different from the one that was followed prior to the intuitive event. Thus, while the thinking consequent to the religious or intuitive experience can be logical, the experience itself is not a result of logical thought.

Psychologist and Christian theologian James Loder has considered in depth those experiences that lead to a transformation of an individual’s pattern of thought or behavior. He calls them “transformational moments” and has identified five steps in their progress that he calls “transformational logic.” However, transformational logic is not formal logic at all, since its crux is a completely subjective leap or insight that reframes the subsequent thinking of the individual. It is similar to a Gestalt switch, in which a change of perception of the observer leads to a different observation, although the reality underlying the observation remains the same. He refutes the common idea that such moments indicate the instability of the thinker, arguing that such subjective leaps are necessary for all knowledge. In fact, he identifies an error that he names an “eikonic eclipse,” in which objec-

Any adequate theological method must admit that human objective, conceptual thought is limited and recognize that human subjectivity is the location of the divine-human encounter and is intimately entwined with all objective theological thought.

Experiments in quantum physics have called into question the very notion of an objective world that exists apart from the subjectivity of the observer. A variety of authors have noted these results and have speculated on their implications. For example, subatomic entities sometimes behave as waves and sometimes as particles. The act of measurement by the observer appears to be a factor by which the potential of the entities is actualized into either wave or particle. Something in the process of obtaining information at the quantum level influences the reality that is observed there. This is not objective reality as it has been described classically, static and independent of the observer. Instead, it is fluid, potential reality, its actualization depending in some sense on factors external to itself. Heisenberg’s uncertainty principle, stating that the momentum and the position of any subatomic entity cannot be determined simultaneously with precision, means that subatomic particles do not simultaneously possess both an objective momentum and an objective position. Astrophysicist John Gribbin quotes Heisenberg’s assessment of this situation: “We cannot know, as a matter of principle, the present in all its details.” At some quantum level, “objectivity” may not even exist; probability and potential appear to be the only objectifiable realities. Niels Bohr, one of the architects of quantum theory, maintained that it was meaningless to distinguish between reality and observed reality. The properties of a quantum system cannot be discussed without reference to the observer, because he or she is a part of the phenomenon described.

These quantum observations have led some thinkers to discount objective reality altogether. Bohr himself, however, argued not that an observer creates reality, but that she or he influences reality, thereby becoming a part of what is known. The phenomenon under observation can only be known through a relational interaction with the observer. In this model, the objectivity of the phenomenon intertwines with the subjectivity of the observer, and both are influenced as a result. This relationality of object and observer closely resembles some aspects of Christian theology that argue for the necessity of a relationship between human and Divine before an authentic encounter between the two can take place.

To summarize, the methods of science and Christian theology have a great deal in common. Subjectivity and objectivity are both necessary and interrelated in these disciplines in the following ways:

- Structured subjectivity is at the heart of both experimental science and communal worship.
- Paradigms guide both the organization and the interpretation of communal ex-
periences, and they influence experimental design, data interpretation, and theological reflection.

- Personal experiences are objectified so they can be discussed and interpreted within the community. These experiences include experimental observation, both quantifiable and nonquantifiable, as well as religious experience.

- Nonrational, transformational thought processes such as intuitive leaps or transcendent experiences are vital to both disciplines.

- A set of non-provable propositions concerning the nature of reality is foundational to each discipline. Science presupposes that the cosmos behaves in certain regular ways; religion presupposes the existence of a transcendent reality can be known.

- In quantum physics, the relationship between object and observer influences not only the observer’s subjectivity, but the act of observation also influences the object that is observed. Similarly, theology affirms that deity is experienced and understood within relationship.

Contemporary Western culture has tended to establish a false dichotomy between science and religion, based on the misunderstanding that science is objective while religion is subjective. As long as this error is perpetuated, conversation between the two disciplines will be hampered. Even worse, the nature of objective propositions in both science and religion has been widely distorted. Journalists for the popular media who are writing for a wide audience frequently have no training in either science or theology. Missing the subtleties of method, they naively pronounce scientific or theological propositions to be “fact” universally applicable, and authoritative. They have thereby set up an unavoidable conflict between the two disciplines, forcing a choice between their claims, since from this perspective both cannot be right. This perspective ignores the reality that all these statements, whether scientific or religious, are limited by the bias of the observer, which is informed by the paradigms of the community within which they were formulated. Further, neither scientific nor theological statements encompass reality in its fullness, as it exists independently. As quantum observations demonstrate, the most they can do is to approach limited aspects of reality under any particular set of circumstances.

Science and religion have important contributions to make to the understanding of human identity and the nature of human interaction with the cosmos. Their perspectives are different; each discipline can offer unique answers to the questions that we ask as human beings. It is crucial that dialogue between them be facilitated so that each discipline can inform and enrich the other. Both disciplines are and should be foundational to human life. Their methods must be understood so that mutual challenge, correction, enrichment, and enhancement can take place between them. Otherwise, the false perception that one must be chosen over the other will continue to impoverish people’s lives, as they are forced to ignore either their minds or their souls in the search for truth.
Works cited:


Endnotes:

1. For examples, see Barbour, *Religion and Science*; Polkinghorne; and The Presbyterian Church (USA).

2. Davies, p. 19.


5. Ibid., p. 95.


7. Ibid., p. 338.

8. Barrow, p. 25.


10. Ibid., p. 257.


12. McFague.


14. For example, Barbour, *Religion and Science*; Barrow; Gribbin; Polkinghorne.


17. Loder and Neidhardt.

Lynn Labs received her undergraduate training in Biological Sciences at Bowling Green State University (Ohio). She specialized in tissue culture while working at the University of Texas Medical Branch in Galveston, where she investigated patterns of microtubules in normal and cancerous cells. A lifelong Presbyterian, she is currently working toward a Master of Arts in Theological Studies at United Theological Seminary in Dayton, Ohio, with a specialty in Biblical Studies. She lives with her husband, two teen-aged daughter, and three dogs in Piqua, Ohio.

<LynnMLabs@hotmail.com>