

Role of Worldview in Program Evaluation

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Note. A superscript ^G indicates that the word is in the Glossary.

Research ^G and evaluation are always conducted within a worldview (evaluation is a form of applied research). Often the fundamental assumptions that define the evaluator's worldview are implicit. These assumptions should be made explicit as part of the journey toward truth. Making worldview assumptions explicit, however, is complicated by the fact that by definition one cannot simply set aside his or her worldview to examine it. The best we can do is to continually re-examine what makes sense to us with an attitude of openness to the possibility that we will discover something that does not quite fit, and that wondering about the misfit will lead to a reorganization of what makes sense.

This paper begins with some things to think about related to a science worldview. The discussion is designed to provoke further investigation according to your interests, for the topic is vast and your time is limited. I have chosen topics for which it took considerable time and effort work through apparent conflicts between a science worldview and a Christian worldview.

The first seven chapters of *The Gospel in a Pluralist Society* by Lesslie Newbigin (1989) provide a framework for developing a Christian approach to evaluation work. Studying the complete book will deepen your understanding of mission for a Christian community development agency. Studying the first seven chapters again and again will provoke thinking about evaluation approaches that are appropriate for enabling such work and other Christian work in the world.

Newbigin explicates the differences between the Christian worldview and the science worldview very well. All knowing ^G (acquisition of knowledge), including scientific knowing, begins with an act of faith ^G in the selection of criteria regarding the goodness of knowledge, and selection of tools that are legitimate for exploring knowledge. Doubt ^G and dogma ^G (in the original sense of authoritative knowledge) are both essential in any serious search for truth. Reason ^G and revelation ^G are both essential sources of knowledge.

My interpretation of the evaluation implications is expressed in a list of themes that follows the discussion of science worldview. Following the list of themes are more extended discussions of some of the themes (objectivity, causality, traditions) and a glossary of the key terms (in the text terms in the glossary are identified by superscript G; e.g., doubt ^G). Many of the illustrations are based on my experience as an evaluator of community development programs in a Christian relief and development agency, but I believe that they are broadly applicable to other applied research work.

Some Science Things to Think About

The Christian philosopher Moreland (1989) discusses various features of science to support his thesis that there is no clear demarcation between science and non-science. Four features are briefly described here as illustrations.

- The role of natural law in building a body of knowledge.
- The relationship between observable data and true propositions.
- The role of the falsifiability G criterion in developing a body of knowledge regarded as true knowledge.
- The role of measurement in science.

1. Science is guided by natural law, where “natural” refers to everything that is real apart from God and God’s direct intervention in the world. (Whether God created these things is not at issue here.) This includes things like carbon atoms, electromagnetic waves, laws of logic, the property of redness, and moral values⁶. Clearly science is not the only discipline that focuses on things in the natural world defined in this way. Philosophers study moral values and universal properties like redness, and logicians study laws of logic.

Things of the natural world, however, can have a more restricted definition that refers to things with physical properties, such as carbon atoms and electromagnetic waves. Psychologists, sociologists, anthropologists, biologists and others generally regarded as scientists do not study physical things in this sense. Philosophers, who are not scientists, do study physical things, although they ask different questions and use different methods than scientists use.

Thus, argues Moreland, focusing attention on natural law does not distinguish science from other disciplines.

2. Science deals with observable data to determine what is true about the world. Other types of data are not legitimate for this purpose.

One problem with this position is that the history of science shows that there can be alternative theories supported by the same observational data. When this happens, non-observational data are used to make judgments about which alternative theory is better.

Another problem is that contemporary science routinely deals with non-observable data. Sub-atomic particles cannot be observed directly; what is seen by the sub-atomic researcher is in part determined by the theory of measurement that is applied in the observation process, as well as by what the researcher expects to see. Many scientists now believe that observation independent of theory about what is being observed is not possible, contrary to the belief that observation could and should be independent of theoretical considerations that was a foundation of scientific investigation as it developed up to the twentieth century.

3. Scientific propositions are characterized as tentative, subject to be being disconfirmed by other research⁶ in the future. The term “hypothesis” is used to convey this feature. Although tentativeness or skepticism is often referenced as an essential characteristic of science, in most

situations researchers are not tentative or skeptical about their own work unless they are working in a new area. Tentativeness and skepticism become most important when there are anomalies that defy attempts to explain them.

Falsifiability, however, is an important criterion that is used to guide scientific investigation. The criterion is based on the nature of inductive inference, which involves making conclusions based on a large number of occurrences that show consistent results. But the next result may contradict the previous results. The logic of falsifiability emphasizes looking for results that will disconfirm a hypothesis rather than confirm it. The logic of statistical inference is based on rejecting, not accepting, the null hypothesis. Given contradictory evidence there is certainty in determining that a claim is false, but given non-contradictory evidence there is the uncertainty that contradictory evidence will be found in the next test.

Moreland (1989) points out a number of difficulties with the falsifiability criterion. One is that no hypothesis is tested in isolation. It is part of a cluster of hypotheses, even though the researcher's attention is focused on a specific item in the cluster. When contradictory evidence is found, it may not be clear what in the cluster is disconfirmed.

Falsifiability is used in disciplines other than science. Thus, it is not something that distinguishes science from other ways of producing knowledge.

4. The notion that science only studies things that can be measured is false. Numerous examples of scientific areas of study involve little or no measurement, and measurement is used in non-scientific areas of study.

Based on considerations like these, there is not a convincing case for treating science as a unique way of developing knowledge. It makes valuable contributions, but there are other approaches to knowing^G that make valuable contributions. The Christian evaluator that deepens his or her understanding of science will be a better evaluator, as long as he or she maintains a critical attitude toward its worldview assumptions.

Themes Based on Newbigin's Discussion

There are seven themes that I believe help a Christian evaluator to clarify worldview assumptions that affect planning and implementing program evaluation.

- Knowing^G, or building up a body of truthful knowledge, involves living in the tension between objectivity^G and subjectivity^G, mediated by plausibility structures^G and tacit knowledge^G.
- A skeptical attitude, which is essential for developing knowledge at deeper levels, is not incompatible with adhering to a creed that guides research^G activity. The assumption that doubt^G is more intellectually respectable than adherence to a creed is fundamentally flawed. Dogma^G guides the work of both the scientist and the theologian.

- Truth is a function of a tradition^G. There is no set of ultimate criteria outside a plausibility structure^G that can be used by an impartial referee to select one set of claims to truth over another set of claims.
- Learning within a community occurs as members of the community freely submit to a tradition^G as having authority over the way that they view living in the world. This free submission to a worldview is an exercise of autonomy, whether the worldview is Christianity or some form of science.
- Relationship with God is not separate from my work in the world. My work in the world is to accept the part in history that God has assigned to me in fulfilling God's purpose in the world. Although much of God's purpose in the world will remain a mystery throughout my lifetime, my assigned part will become clear.
- In the world reason^G and revelation^G are viewed as two sources of evidence for truth. Reason, however, is a faculty used in all traditions in search of truth, including the revelation tradition and the science tradition. These two traditions can be characterized as "God has spoken" versus "I have discovered."
- Popular misunderstandings of how scientists develop knowledge create unrealistic expectations for documenting results of relief and development work. They also create obstacles to believing in a holistic approach to evaluation. It is essential that we learn how to distinguish between science and scientism^G.

Objectivity, Subjectivity, Shared Knowledge and Personal Knowledge

This discussion is focused on these points:

- Being objective about an issue does not require having no emotions about the issue. The distinction between psychological objectivity and epistemological objective helps us avoid having a distorted view of objectivity.
- Bias control in evaluation involves striking a balance among credible biases, not eliminating bias.
- Impartial reasoning is an element of being objective about an issue.
- The concept of objectivity is evolving; the Christian evaluator that desires to be objective needs to explore this ongoing evolution and make appropriate adjustments in his or her evaluation practice.
- Personal knowledge can be either objective or subjective.

Objectivity and emotions

Moreland (1989) points out the difference between psychological objectivity and epistemological objectivity. Psychological objectivity refers to a person's commitment toward a given claim (Newbigin refers to this as faith^G). Epistemological objectivity, or rational objectivity, refers to public evidence that supports the rationality of some claim. A person can be passionately committed to the value^G of some claim (psychologically not objective), and still be open to examining public evidence to determine ways in which it supports and counters the rationality of the claim (epistemologically objective). Science is concerned with

epistemological/rational objectivity, although many people share the misconception that scientists are disinterested, dispassionate observers of reality.

From a psychological perspective:

- Objective knowledge is based on keeping myself at a distance from the object of knowledge. The information is impersonal; it is remote from my sense of being. In this sense it is superficial, for it has little or no influence on what matters most in my heart.
- Subjective knowledge is based on my interaction or engagement with the object of knowledge. It is the outcome of processing that direct experience to be able to describe it meaningfully to myself, and possibly to others. Knowledge that matters, that allows me to live in harmony with my purpose for being, is based on my direct experience with God as a human subject.

Bias control

For Michael Scriven (1991), philosopher and leading evaluation authority, objectivity means unbiased or unprejudiced (not prejudged). Having strong views is not the same as being unprejudiced. The key question is whether the views are justified. Having a strong conviction based on rigorous examination of relevant evidence is not an indicator of prejudice.

Scriven points out that being objective is not the same as being neutral. Being neutral means not supporting any of the disputing factions. Someone who does not support disputing factions is no more likely to be right than any of the factions; is more likely to be ignorant about the disputed issue; may or may not be more objective. Using program neutrality as a criterion for selecting an evaluator increases the chance that the findings will be biased toward program ignorance.

According to Scriven “bias” has two uses. In the evaluative sense, “bias” means much the same as “prejudice.” Terms that mean the opposite include “objectivity”, “fairness”, “impartiality”. The purpose of bias control in evaluation is to limit the influence of premature or irrelevant views, not to exclude the influence of definite views. The general principle of bias control is to balance program bias in a group of evaluators rather than trying to eliminate bias.

In the descriptive sense, “bias” means “strong preference.” The opposite sense is “disinterest”. This usage may be due to the desire not to decide who is in error, or the recognition that for purposes of deciding who is right one cannot suppose that the truth can be predetermined.

In social research ⁶ “bias” refers to systematic error, or error that will have adverse consequences to people. Such errors are often due to a tendency to prejudge issues based on emotions or beliefs that are wrong or irrelevant.

Impartial reason

The philosopher Rescher (1997) says that to behave objectively is to behave as another equally informed and equally intelligent person would behave in the same situation. Objectivity calls for proceeding, not in line with one’s own inclinations (whims, biases, prejudices, preferences),

but in line with the dictates of impartial reason⁶. Common pressures counter to objectivity include:

- prejudices and passions
- tendencies to conform to others
- personal affinity, loyalty, affective involvement
- ideological or political allegiances
- personal bias without regard for merit
- wishful thinking without regard for evidence and argument

Evolving notion of objectivity

From these different points of view we can explore the basic issue addressed by the notion of *objectivity*. This description of an evolving notion of objectivity is based on material throughout the papers in Guba (1990). Let's begin by stating the issue as:

Assuming that there is a reality that exists independently of what we know about that reality, how can we tell the difference between accurate descriptions of reality and biased or distorted descriptions?

In the various traditions⁶ of empirical research⁶ the issue was resolved by specifying procedures that were to be followed in obtaining descriptions of reality, and how they were to be followed properly. It was believed that this would protect descriptions from being influenced by the interests or values⁶ or intentions of the inquirer. People who worked within a particular discipline learned how to apply the acceptable procedures of inquiry properly, and then assumed that knowledge produced by following those procedures properly would be true. Challenges to the truthfulness of knowledge were based on criticisms of the way that acceptable procedures had been followed.

- Objectivity, then, was defined as proper use of accepted methods for inquiry.

Increasingly, however, scientists have concluded that this notion of objectivity is flawed. Decisions about what defines proper use of methods, and which methods are appropriate in a particular setting, are influenced by the inquirer's interests, values and intentions. Objectivity is more like an ideal that regulates inquiry decisions than a characteristic of the inquiry itself. The ideal is that an inquirer be precise, open and honest about inquiry procedures, and receptive to informed criticism about the inquirer's methodological decisions and actions. Objectivity in this sense is a social activity in which peers critique each other's work.

Viewing objectivity as an ideal to regulate inquiries about the physical world, where it is assumed that there is an independent reality, works well. But what about inquiry that is focused on the correspondence between what people believe to be true, and what is actually true when what is actually true is influenced by what people believe to be true? This is the situation we face in evaluating transformational development, where the beliefs of people influence the social dynamics which in turn influence the beliefs of people as they participate in those dynamics.

In this case the issue which is to be addressed by objectivity is:

How can we tell the difference between accurate interpretations of other people's interpretations of their reality, and biased or distorted interpretations of other people's interpretations?

The basic task is to separate the interpretations or meaning of something held by others from the significance of that interpretation or meaning to the inquirer. Within different disciplines different procedures have been devised to separate interpretation from significance, along with conventions for applying them properly. Objectivity still refers to proper use of methods, which is determined through criticism by qualified peers, but the range of acceptable methods is broadened considerably. Objectivity applies to the interpretation itself, while the significance of the interpretations is a subjective matter.

In summary, in the past *objective* knowledge has referred to properties of the world that could be discovered and verified, and that would not change over time or across investigations by different inquirers. Today, however, more inquirers describe the essence of *object-ivity* as making one's understanding available for critique, and then being willing to let one's understanding be influenced by the ensuing dialogue as shared meanings are discovered.

Personal knowledge

The essence of *subject-ivity* lies in clarifying what is important to oneself, regardless of how important it is viewed by others.

Now let us return to the distinction made between psychological objectivity and epistemological objectivity. Newbigin convincingly points out that our acting and deciding is guided by knowledge to which we are committed, or personal knowledge. Impersonal knowledge, or knowledge to which I have no commitment, does not guide my acting or deciding.

Personal knowledge can be either subjective or objective. Subjective personal knowledge is that knowledge to which I am committed that can be known only by myself; there can be no shared meaning. Objective personal knowledge is that knowledge to which I am committed that I open to scrutiny by others, along with my conviction.

There is no essential meaning for a word except within a particular body of discourse. Words take on different meanings as they are put into different contexts by people having different perspectives. Objectivity is always determined within a tradition⁶ by those who freely subscribe to that particular tradition. There is no absolute way of knowing⁶ anything objectively outside of a tradition. There are no criteria outside a tradition for separating objective knowledge from subjective knowledge.

Causality and Laws of Interaction

David Hume's analysis of causality is the foundation of the positivist approach to scientific explanation. In the mid-1700s Hume stated that three conditions needed to be present to attribute an effect to a cause.

- The presumed cause and effect had to appear together (condition of contiguity).
- The cause had to precede the effect in time (condition of temporal sequence).
- The cause had to be present whenever the effect was present (condition of constant or invariable conjunction).

The presence of these three conditions, however, supports inferring that a causal relationship exists when two observed phenomena are highly correlated. The logical flaw in this reasoning is that there can be other factors that are highly correlated with the presumed cause and a different set of factors that are highly correlated with the presumed effect. Changes in the two sets of factors could upset the inferred causal relationship. Scientists today generally reject the notion that high correlation is synonymous with causality.

John Stuart Mill extended Hume's analysis by stating that a causal inference was warranted only when other explanations had been eliminated. Hume's condition that the cause had to be present whenever the effect was present he called the Method of Agreement. Mill added the Method of Difference to the analysis, which states that whenever the cause is absent the effect must be absent also. Application of both methods to a phenomenon in a variety of circumstances Mill called the Method of Concomitant Variation. This is required to produce strong evidence for a cause-effect relationship. This approach is the logical basis for eliminating threats to valid inference, where a threat is some methodological factor.

The concept of causality has been fruitful in the physical sciences where certain research⁶ procedures are routinely employed to study the relationship between a cause and its effect.

- The phenomenon being studied can be isolated from conditions that could influence it.
- The variable that is considered the effect is inert. It does not change over time unless its presumed cause changes.
- There are explicit and precise theories about the relationship between the cause and effect which predict the exact change in an expected effect for a change in the cause.
- There are measurement instruments that can be calibrated and used at a more precise level than expected changes in the effect. Thus repeated tests can be made of the fit between predicted changes in the effect and observed changes in the effect.

Research procedures with these features generally are not available in the social sciences. Therefore investigation of causality is more complex in evaluation of social programs.

Robert Dubin (1978), social scientist who has sought to clarify the relationship between theory and empirical observation, favors language that avoids the expression, "cause and effect." Causality language is often used to persuade rather than inform. Donors to NGOs want to see visible results *caused* by projects funded by their contributions for a variety of reasons.

- Perhaps they want justify to themselves not having the visible alternatives they could have had by spending their money on goods and services rather than making a contribution.

- Perhaps they want concrete evidence that their giving makes a positive difference in other people's lives.

Regardless of the reasons, such usage muddies our thinking about what is happening in community development projects.

Dubin describes a law of interaction as a statement of relationship among at least two things. The scientific task is to account for the variation in values of one thing by linking it to variation in values of at least one other thing. For convenience in discussing this, let's call the first thing a dependent variable and the other things independent variables. The operation of accounting for variation involves predicting values of the dependent variable based on different combinations of values for the independent variables, and comparing the predicted values with actual observed values.

As the gap between predicted values and observed values narrows, there is a tendency to call the law of interaction a causal law. This implies a sense of certitude about predictions derived from this law of interaction, which may be countered by later events. Given the complexity of dynamics involved in community development, and the possibility that there are myriads of relevant variables yet unknown which should be included in laws of interaction, I agree with Dubin's position that causal language is not helpful in establishing laws of interaction for community development.

The philosopher Mackie (1993) suggests that we think of causes as an Insufficient but Necessary part of a condition which is itself Unnecessary but Sufficient to cause the result. (He refers to this as the INUS condition, where the acronym reminds us of the sequence of the key terms.) This can be understood by considering a dropped cigarette as the cause of a house fire. By itself a dropped cigarette will not set the house afire. But with other conditions present, such as combustible material and no attempt to extinguish the initial smolder, the house burns. The cigarette is necessary in that the fire would not have started if it had not been dropped alight into combustible material.

Causality is a complex concept that is used in everyday language rather simply. Claims about cause and effect in community development, however, require complex evidence to determine their validity. In many cases the best evidence that can be obtained will be inconclusive. Transformative evaluation principles must be consistent with scriptural principles. There is a gap in our ability to relate our theory of evaluation to scriptural principles. This gap is related to a dualistic view of science and religion that defines reality in terms of empirically verifiable causal relations, and regards divine intervention as something outside reason that cannot be included in descriptions of reality. Causality, however, is more complicated than we think it is. Knowledge produced by a transformative evaluation generally will not be in the form of causal relations.

Bridges must be built across this gap before meaningful approaches to evaluating transformational development programs can be devised. The post-positivist paradigm for

inquiry excludes essential data for understanding transformational development. A theory of transformative evaluation must be grounded in the Christian tradition.

Paradigms in Traditions^G of Inquiry

The influential evaluator Egon Guba (1990) uses paradigm to mean "a basic set of beliefs that guides action." A paradigm can be characterized by answers to three questions:

1. What is the nature of the knowable? What is the nature of reality? (This is the ontological question.)
2. What is the nature of the relationship between the knower, or the inquirer, and the knowable? (This is the epistemological question.)
3. How should the inquirer go about finding out knowledge? (This is the methodological question.)

To illustrate how different paradigms influence research^G approaches consider the following table that contrasts the post-positivist paradigm with the constructivist paradigm (based on Guba, 1990, pp. 20-27).

	Post-Positivist Paradigm	Constructivist Paradigm
Ontology	<p>Reality exists out there, but we can never fully apprehend it. Reality is driven by natural laws, but we cannot understand them completely due to our sensory and cognitive limitations.</p> <p>The business of science is to continually sharpen our approximate understanding of reality. The ultimate aim of science is to predict and control, given our limitations.</p> <p>Knowledge is expressed in qualified generalizations.</p>	<p>Facts^G are only facts within some theoretical framework. No theory can be fully tested because of the problem of induction.</p> <p>Realities are multiple mental constructions dependent for their form and content on the persons who hold them.</p>
Epistemology	<p>Objectivity^G is a regulatory ideal, but we can only approximate it.</p> <p>The inquirer gives special attention to the critical tradition^G and the critical community.</p>	<p>The inquirer and the subject of inquiry are fused into one entity.</p> <p>Findings are literally the creation of the process of interaction between the inquirer and the subject of inquiry. Interaction is the only way to gain access to mental constructions.</p>
Methodology	<p>The primary objective of methodology is to redress imbalances in the zeal for achieving objective inquiry.</p> <ul style="list-style-type: none"> • carry out inquiry in more natural settings • include qualitative methods to enrich descriptions • ground theory in local circumstances • put discovery back into the inquiry process <p>Compensate for flaws in individual inquirers by</p>	<p>Individual constructions are elicited and refined hermeneutically. The constructions are depicted as accurately as possible.</p> <p>Constructions are compared and contrasted dialectically.</p> <p>The purpose is to achieve consensus on one or a few constructions.</p>

	emphasizing as many sources of data, investigators, theories and methods as possible.	
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Within each paradigm very different research^G problems will be considered legitimate, very different research procedures will be applied, and very different types of knowledge will be produced. As you develop your own thinking about evaluation explore alternative paradigms for inquiry and alternative research traditions^G.

Avoid scientism and pseudoscience

Popular misunderstandings of how scientists develop knowledge create unrealistic expectations for documenting results of community development work. They also create obstacles to believing in a holistic approach to research and evaluation. It is essential that we learn how to distinguish between science, scientism and pseudoscience.

Per Strahler (1992) "scientism" has several meanings. Within the philosophy of science it refers to the position of logical positivists that science was the only method to discover reliable knowledge. Outside science, the term refers to the idolatry of science as the sole authority of truth and source of knowledge.

The term "scientism" is often used by persons who have a false view of science as defined by scientists. "Pseudoscience" is knowledge that is claimed to be science but does not meet the criteria for scientific knowledge. Organized skepticism, which is an essential feature of science, is not a characteristic of pseudoscience (see Sagan, 1996, for other ways in which pseudoscience does not meet scientific criteria).

Moreland and Craig (1989, pp. 346-350) describe the difference between strong scientism and weak scientism. Strong scientism posits that there are no truths other than scientific truths. Even if there were such truths there is no reason to believe them.

Weak scientism allows for truths other than scientific truths, and that they can have some minimal rationality. But non-scientific truths are inferior to scientific truths. Moreover, science can shed light in any field of knowledge, including theology. But other fields cannot shed light on science.

Various arguments are then put forth for rejecting either form of scientism.

Moreland and Craig describe various approaches to integrating science and theology, which is a core topic to be explored in transformative evaluation.

Final note to Christian program evaluators

I have organized this material to provide a platform for those Christians committed to serving the poor and God through community development. Simply applying professional evaluation practices without a thorough examination of how your worldview affects your evaluation work, and thereby affects the lives of community residents and agency staff, is fraught with peril. Scripture tells us, in a number of ways, that you cannot follow Jesus and the ways of the world. You can only follow Jesus by adhering to kingdom ways.

Stay in conversation with God about the themes I have discussed, and seek to follow the guidance of the Holy Spirit regardless of how it surprises you or confuses you. You will then be in a position to be used by God for transformation of persons and institutions in wondrous, even miraculous, ways.

Glossary

Unless otherwise noted, the content of the glossary is based on Newbigin (1989). Other resource materials are cited when I have relied on them to extend my understanding of Newbigin's themes.

Dogma

The original sense of "dogma" is a belief which has been accepted as true by a competent authority, and is worthy of being accepted as true by others who are not competent to assess its truth themselves. In fact, the truth of the belief cannot be demonstrated through reference to human experience in general. It is the light by which the reality of everything else is shown. It is the rock which is the foundation of all knowing^G and doing. Accepting dogma was necessary in the sincere search for truth.

Today the word has a negative connotation -- it refers to beliefs that are arrogantly promulgated without evidence, beliefs that are not to be questioned. Someone who coerces others into believing some message is a dogmatic person.

But every tradition of systematic thought, including science, has a set of assumptions treated as a foundational rock, unquestioned. What is essential for honest thinking is that the assumptions are stated explicitly. Furthermore, attempts to coerce others into accepting a message without creating opportunities for them to freely submit to relevant authority corrupts the message.

Doubt

Exercising doubt involves subjecting dogma^G to fearless criticism in the light of reason G and experience. In twentieth century Western culture exercising doubt is a mark of intellectual maturity. The belief that it is more desirable to exercise doubt than to adopt a creed is itself dogma -- it is destructive dogma.

Fact

A fact is a piece of information that we have to reckon with, whether we like it or not. It is a piece of information about our experience that is accepted as true within the tradition we have adopted.

The significance of a fact depends upon the story within which the fact is placed. The scientist calls the story theory, or the set of relationships among selected facts that describes or explains selected experiences in the world. The theologian calls the story theology, or the unfolding (unfinished) activity of God in the world.

Every story has a beginning that is accepted as the beginning. A theory has fundamental assumptions that influence the meaning given to a fact. A theology has fundamental assumptions that influence the meaning given to a fact.

Faith

All knowing^G begins with an act of faith. We accept the tools we are using to expand our knowledge -- that is an act of faith. We accept some set of assumptions as a starting point for discourse -- that is an act of faith. We accept guidance from those in the tradition we recognize as teachers or experts -- that is an act of faith.

Our acts of knowing are more useful when we rigorously identify and describe our starting points and the tools we are using. We make progress by doubting, then dialoguing with informed others, and then perhaps revising our beliefs.

Faith is just as essential to the scientist as it is to the theologian. The presence of faith is not what distinguishes between the two as they deepen their knowledge. Their differences are in the content of their faith.

Falsifiability

Falsifiability is an investigation strategy that seeks to find evidence that is contrary to the prediction of a hypothesis. When evidence is consistent with a prediction by the hypothesis, it is not certain that the next test of the hypothesis will yield consistent evidence. Falsifiability is an important strategy for increasing certainty within a tradition^G about the value of a hypothesis, but there are problems (see Moreland 1989).

Knowing

Knowing, or accumulating a body of knowledge, involves two primary modes of thinking. Believing is the primary mode, while doubting or critiquing is the secondary mode. The contemporary opinion that doubting is more honest than believing is a form of dogmatism that is destructive.

Objectivity

Many believe that only an outsider can provide objective information about community development. This is not the case. The essence of object-ivity is making one's understanding available for critique, and being willing to let that understanding be shaped by the ensuing dialogue as shared meanings are discovered.

- This involves disclosure of one's understanding to others, along with a rationale for how that understanding organizes experience more coherently, comprehensively, elegantly than other understandings.
- It involves active listening to the responses and views of others, and reformulation of ideas or connections among ideas.
- It involves reaching agreement with others on what some item of information means. Since agreement can usually be reached on starting points and rules for obtaining numerical calculations, many believe quantitative information is objective, while non-quantitative information is not objective. Not necessarily. Non-quantitative information

which is treated rigorously can be objective and yield meaning that cannot be achieved through quantitative means.

Plausibility structure

A plausibility structure is an accepted pattern of belief and practice in a society that determines which beliefs are not disputed by its members. Every society has plausibility structures, but they may change over time. Reasonableness of beliefs is determined by the plausibility structures in place at the time.

The usefulness of a plausibility structure is that it provides a means for avoiding errors in knowing⁶. Plausibility structures, however, can only be used within a tradition. What is regarded as an error in knowing in one tradition may not be so regarded in another tradition. Any critique of a plausibility structure is always done from within another plausibility structure.

A person working within a plausibility structure that encourages one to take risks to learn more about an unfolding truth makes three essential commitments.

- The person makes a personal commitment to explore, to be open to being surprised, even disoriented, by what is experienced.
- The person relies on the tools used to do the exploring. That is, the value of the tools is not questioned while they are being used. If one's attention is focused on the tool, one cannot learn anything about whatever is being probed by the tool.
- The person is ready to re-examine and change tools. Note that the re-examination itself involves relying on other tools that are used to do the re-examining.

The starting points for a Christian plausibility structure are the events in which God made God known to men and women in the world, which can be called the fact G of Christ.

Reason

Reason is not an independent source of information about reality. Reason is but one group of methods for interpreting information available to us as we seek to understand our world. Reasoning about something involves examining the relationships between fundamental assumptions and bits of information about something. The fundamental assumptions are treated as a solid rock, a starting point. Intellectual integrity involves making the assumptions explicit, not denying that they are assumptions.

Reason does not develop in a vacuum. Rationality in any society is determined by the traditions which have been passed from generation to generation. Evaluators are heavily influenced by the science tradition, while believers in Jesus are heavily influenced by the Christian tradition. A Christian evaluator must sort himself or herself out in both traditions before he or she can practice holistic evaluation. Plausibility structures⁶ in each tradition must be personally examined and clarified before sound decisions can be made about describing and practicing holistic evaluation.

Reason involves comparison of what is understood against the plausibility structures in place at the time. The more that plausibility structures are unexamined or unquestioned, the more emphatic the judgment is about whether something is reasonable or unreasonable.

Research, applied research (Cookingham's description)

The term "research" can be written re-search, which means to search again. Research is about searching again, again, and again for new knowledge. Applied research is about searching again, again, and again for new ways to apply existing knowledge. In either case the search is conducted in a disciplined manner, carefully, with diligence. That is, the methodological rules for generating and testing knowledge within the tradition are applied persistently with great care from a variety of perspectives.

Revelation

The fact ^G of Christ is the foundation for a holistic approach to evaluation. In the ministry, death and resurrection of Christ God has revealed his purpose of redemption for the world. Other facts that are not related to the fact of Christ have no meaning

Subjectivity

Many people believe that personal interests or commitments cannot be included in objective knowledge; they are unique to the knower (the human subject), or subjective, and therefore not valuable to anyone else. That is not the case.

The essence of subject-ivity is clarifying what is important to me, regardless of how it is important to others.

- All knowing ^G involves personal interests, personal commitments, to exercise the skills I have learned within a particular discipline or tradition to acquire knowledge. Within any tradition I take responsibility for my decisions about starting points.
- Knowing within any tradition involves personal commitment with the intention of finding shared meaning with others. That is, it involves moving back and forth between subjectivity and objectivity ^G.

Tacit knowledge

Tacit knowledge is best described by how one uses a tool to extend knowledge. As we use the tool our attention is not focused on the tool, it is focused on what we are exploring with the tool. During the exploration we are only tacitly aware of the tool. There is no doubting the value of the tool.

When learning to use a tool, however, the student must focus attention on it. This means that attention is not focused on whatever is being explored, which in turn means that there is little or no new knowledge discovered by the student until the tool becomes like an extension of the student's senses.

The concept of indwelling is essential to understanding tacit knowledge. While attention is focused on something being explored with a tool, there is no doubting the value of the tool. The researcher indwells the tool, trusting it as indispensable at the moment for extending

knowledge. It is like the tool has a force of its own that has been internalized by the researcher. At another time the researcher may set the tool aside, and reconsider its usefulness, but while he is using it he does not question its value.

Tools that we use to extend knowledge include words, language, concepts, and paradigms. As we use them to develop a point that we sense we know, or are on the way to knowing^G, but have not yet found a way to express, we are a-critical of words, language, concepts, and paradigms. Our attention is focused on the emerging point, not on the tools that we are using to uncover it or explore it. In our struggles to understand or express the point, we may become aware that our tools are somehow not working well. Then it is important to put them aside, examine them critically, knowing that to do so we must indwell other words, concepts, and language.

Tradition

A tradition is a body of knowledge that has accumulated as generations of people have explored related interests. During the explorations key questions have emerged, along with consensus on acceptable methods for answering those questions, and results of applying those methods.

Within a tradition new knowledge can be accepted only by the masters within the tradition. Masters are people in whom the tradition dwells and who themselves dwell in the tradition.

Two traditions of interest to the Christian evaluator are science, and the tradition built around the assumption that God is active in history. Indwelling the tools of both traditions, as difficult as it is, is essential for one who feels called to be both a Christian and an evaluator.

	Tradition	
Feature	God is active in history	Science
Interests	the unfolding of history	organizing our understanding of causal relationships in the universe
Key Questions	What is the ultimate meaning and purpose of human life and things?	What are the cause-effect relationships that explain the structure and operation of the cosmos?
Assumptions	The author and sustainer of the cosmos has personally revealed the author's purpose. God has acted to reveal and effect God's purpose for the world in the manner made known in the Bible. Relations are purposeful.	Contingency assumption: There is a set of causes related to every observable effect. Rationality assumption: Causal relationships can be ordered. A trained scientist can determine which problems are worth solving, and which facts are relevant for solving them. (These are acts of faith ^G .)

	Tradition	
Feature	God is active in history	Science
Rules of Reason	Indwell the story of history, tacitly aware that history shapes the way we understand things. Focus on the world that we live in so that we can more confidently understand it and have greater ability to cope with it meaningfully.	An effect has a cause when the presence of the cause is followed by the presence of the effect, and the presence of the effect does not occur without the presence of the cause.

Value

A value is a belief that I choose to hold dear. It is a belief that I use to guide my acting.

For Additional Information

Thomas D. Cook and Donald T. Campbell, *Quasi-Experimentation: Design & Analysis Issues for Field Settings*, Rand McNally, 1979.

Indispensable textbook for the serious community development program evaluator.

Robert Dubin, *Theory Building*, revised edition, Free Press, 1978.

See Chapter 5, Laws of Interaction, for a discussion of causality.

Egon G. Guba (Ed.), *The Paradigm Dialog*, Sage Publications, 1990.

Collection of papers and responses by educational researchers and evaluators on four paradigms for guiding inquiry – positivism, post-positivism, constructivism, and critical theory. Valuable resource book that allows the reader to explore different perspectives on important concepts that influence research work.

John L. Mackie, *Causes and Conditions*, in Sosa, Ernest and Michael Tooley (Eds.), *Causation*, Oxford University Press.

Important contribution to what we mean when we talk about something as a cause of something else.

J. P. Moreland, *Christianity and the Nature of Science*, Baker Book House, 1989.

Author has degrees in chemistry, theology and philosophy. Defends three theses: (a) There is no set of criteria that separates science from non-science. (b) The claim is unwarranted that science claims about truth should overrule claims by theology or philosophy. (c) Attempts to integrate science and theology should not assume a view of science known as scientific realism.

J. P. Moreland and William Lane Craig, *Philosophical Foundations for a Christian Worldview*, InterVarsity Press, 2003.

Essential text for a Christian program evaluator that seeks to be Christian first and evaluator second.

Lesslie Newbigin, *The Gospel in a Pluralist Society*, Wm. B. Eerdmans Publishing Co., 1989.

This book, more than any other, has helped me understand the importance of clarifying the differences between the science worldviews and the Christian worldviews.

Michael Polanyi, *The Tacit Dimension*, Anchor Books, 1966.

Defends the thesis that to know that a statement is true is to know more than the knower can tell. Understanding Polanyi's discussion is essential for understanding debates about the relevance of different inquiry paradigms in a search for truth.

Nicholas Rescher, *Objectivity: The Obligations of Impersonal Reason*, University of Notre Dame Press, 1997.

Defends the thesis that objectivity is the core of rationality. Critical scrutiny of relativistic thinking reveals flaws and fallacies in the deliberations of those who dismiss objectivity as obsolete and untenable. Discusses the role of objectivity in various applications such as measurement, communication, morals and values.

Carl Sagan, *The Demon-haunted World: Science as a Candle in the Dark*, Ballantine Books, 1996.

Explores the essence of science in everyday language and contrasts science with pseudoscience. Some Christians believe that pseudoscience is the way to resolve apparent conflicts between scientific propositions and Scripture. Christians that feel called to program evaluation must understand the flaws of pseudoscience to avoid inadvertently using poor evaluation practices in an attempt to be consistent with a Christian worldview.

Michael Scriven, *Evaluation Thesaurus* (4th edition), Sage Publications, 1991.

Scriven is a global pioneer and leader in developing evaluation as a discipline. His definitions and descriptions of nearly 1,000 terms across all major evaluation approaches is an essential part of the professional evaluator's library.

Arthur N. Strahler, *Understanding Science*, Prometheus Books, 1992.

Strahler, who is a geologist, wrote the book to make the philosophy of science accessible and intelligible to anyone with a liberal college education, especially science majors. Critically studying sections on the differences between science and religion as fields of knowledge will help you clarify your own worldview.