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Lett, James (1996) Scientific Anthropology. In *Encyclopedia of Cultural Anthropology*. David Levinson and Melvin Ember, eds. Pp. 1141-1148. New York: Henry Holt and Company.

Since its inception the discipline of cultural anthropology has had a dual identity, embracing simultaneously both the humanistic and scientific perspectives. While there have always been strong partisans for one side or the other...most anthropologists have taken a more eclectic approach and combined the two, leading to Eric Wolf's oft-quoted observation that "anthropology is both the most scientific of the humanities and the most humanistic of the sciences."

The humanistic and scientific perspectives, however, are fundamentally different, and it is not surprising that cultural anthropology has had difficulty integrating the two. Whereas humanistic anthropologists employ intuitive insight and empathic imagination in the attempt to evoke and interpret cultural variability, scientific anthropologists utilize logical analysis and empirical investigation in the effort to describe and explain cultural phenomena. The goal of humanistic inquiry is to produce contextual interpretations that are illuminating, while the goal of scientific inquiry is to produce causal explanations that are predictive. ...

Nevertheless, humanistic anthropology and scientific anthropology can be regarded as complementary rather than contradictory, at least as far as scientific anthropology is concerned. Scientific anthropology does not deny the legitimacy of the humanistic approach or the ability of humanistic anthropologists to produce moving evocations and meaningful interpretations of human affairs. It simply affirms that objective descriptions and testable explanations of cultural phenomena are both entirely achievable and eminently valuable. ...

### **SCIENCE DEFINED**

Science may be defined in a general sense as an objective and systematic method for acquiring factual knowledge. Science combines both deduction (reason) and induction (observation) in the pursuit of knowledge, alternating continually between the formation and the testing of hypotheses. Scientific ideas can come from any source, and any factual claim can be investigated using the scientific perspective. The scientific method is limited by a single restriction: whatever is claimed as scientific knowledge must be testable against publicly ascertainable evidence. ...

As a technique for acquiring factual knowledge, science incorporates a number of guidelines designed to distinguish true synthetic propositions from false ones. Salient among those guidelines is the requirement for objectivity. Scientific objectivity implies two things: first, that the truth or falsity of a given factual claim is independent of the claimant's hopes, fears, desires, or goals; and second, that no two conflicting accounts of a given phenomenon can both be correct. ...

...A synthetic proposition...is a statement that is either true or false based on the evidence of experience (e.g., the first hominids appeared in Africa). Synthetic propositions convey information about the world by telling us what evidence we will encounter if the statement is true and how that evidence will differ if the statement is false. (True synthetic propositions are called "facts"; false synthetic propositions might be called "errors.")...

Thus, when scientists speak of “objective knowledge,” they are referring to synthetic propositional knowledge that is both publicly verifiable and testable. To ensure that the claim to knowledge is publicly verifiable, scientists demand that the procedures employed in the collection of the evidence be replicable by independent observers. To ensure that the claim to knowledge is testable, scientists demand that the claim be falsifiable.

The test of falsifiability, which is most closely associated with the philosopher of science Karl Popper, is the single most important rule of science. It is the one standard that guarantees that all scientific statements are testable, and it is the outstanding feature that distinguishes science from other ways of knowing. In addition, it is the one standard by which scientific explanations are judged. A statement is said to be falsifiable if it is possible to conceive of evidence that would prove the statement false. If the statement were not falsifiable—if no conceivable evidence could possibly prove it false—then all possible evidence would be irrelevant, and the statement could not be tested against the evidence. If the statement were not testable, then it would not be a synthetic proposition, because the truth or falsity of a synthetic proposition can always be tested against the evidence. Hence, nonfalsifiable statements are propositionally meaningless. ...

The scientific search for knowledge proceeds on a well-defined systematic basis, constructing knowledge from the continual interaction of deduction (logical reasoning) and induction (empirical observation). Any claim to scientific knowledge must therefore be consistent with both the rules of logic (i.e., inferential validity and syllogistic soundness) and the totality of empirical evidence. In the broadest sense, the scientific method consists of an orderly sequence of five familiar steps: define the problem, review the literature, formulate the hypothesis, collect the data, and draw the conclusion. At every step along the way, scientists restrict themselves to publicly verifiable procedures replicable by independent observers. The goal of scientific investigation is to uncover observable regularities among phenomena and then to develop lawful theories that explain the causes of those regularities. ...

To summarize, then, science is an objective (i.e., publicly verifiable and testable) method for acquiring synthetic propositional knowledge based on the systematic application of logic and observation. More than anything else, science is a technique for acquiring knowledge based on unrelenting critical scrutiny. The crucial defining element of science is the requirement that all claims to scientific knowledge be falsifiable (i.e., vulnerable to evidential refutation). Thus, scientific knowledge is both tentative and self-correcting.

### **SCIENCE DEFENDED**

...at the same time that science recognizes the tentative nature of objective knowledge, science also denies that all approaches to knowledge are equally valid. When it comes to factual knowledge, science has a record of success that far outshines any of the accomplishments of theology or mysticism or any other epistemological system; sound logical reasoning and publicly verifiable observation are demonstrably and abundantly superior to faith, revelation, intuition, *consensus gentium*, and all other approaches to propositional knowledge.

Science does not claim to be a perfect approach to factual knowledge or to be free of subjective bias, error, untruth, or fraud. Instead, science claims to be a superior approach to factual knowledge that is better able to detect and correct subjective bias, error, untruth, and fraud than any other approach ever developed. ...

### **SCIENCE AND HUMANISM**

Scientific anthropology is often perceived as being irrelevant or even antithetical to the values and concerns of humanism. Nothing could be further from the truth. In the first place, science does not in any way object to the aesthetic values of humanism. There is nothing whatsoever inconsistent about declaring an

unwavering commitment to the pursuit of objective knowledge while at the same time affirming an appreciation for literature, music, painting, sculpture, and drama. The oppositional dichotomy between science and humanism is a false one. ... The instrumental and the affective are not mutually exclusive categories. Scientific anthropology can and should be emotionally satisfying and thoroughly ethical, just as humanistic anthropology can and should be explicitly rational and logically consistent.

In the second place, science is anything but opposed to the moral values of humanism. The humanistic values for individual liberty, including freedom of thought and expression, are hardly inconsistent with the epistemological principles of science. The humanistic values for basic human rights, including the rights to life, liberty, and the pursuit of happiness, are in no way threatened by the standards of evidential reasoning embodied in science. The humanistic value for developing a set of ethical principles derived from critical intelligence is entirely compatible with the pursuit of scientific knowledge.

Those who envision a conflict between science and humanism fail to understand the true nature of either. Central to the philosophy of humanism is the conviction that human beings are solely responsible for discerning and defining the meaning of human life and that they should do so through the exercise of skeptical reason while respecting the freedom and moral equality of all individuals. As such, science is absolutely indispensable to humanism, for the inescapable reason that normative conclusions are always founded upon existential premises. We cannot decide what ought to be the case until we know what is the case. Science is simply the best technique human beings have yet devised for discovering (or, at least, approximating as closely as possible) what truly is the case.