After reading the following passage (from *Syntactic Theory* by Emmon Bach, 1974:15-17), do the following:

(1) Summarize the passage in English (100-150 words), IN YOUR OWN WORDS. (60%)

(2) Explain and illustrate in English (200-250 words) Bach's criteria for a good hypothesis and why, as Bach put it, deduction plays a central role in linguistics. Be sure to use examples from your own observations and experience with linguistics to illustrate your point. (40%)

Something about Method

A scientific theory is a more or less coherent set of hypotheses that is intended to explain a range of phenomena. The tests of a theory are two: the extent to which the theory does explain the facts that it is supposed to explain; the extent to which it fits with other theories that deal with related facts. The methods used in a science must be judged according to whether they lead to results that meet these tests.

The last statement might seem to be a truism. But for a considerable period American linguistics was dominated by the converse idea that the methods should determine the types of theories and explanations that are allowable. The reasons for this situation are understandable. Modern linguistics has grown out of the humanities and social sciences. Once the idea that linguistics is a "science" and not the art of speaking or writing well was accepted, it was natural for linguists (like many of their colleagues in other disciplines that deal with areas formerly considered outside the pale of science) to ask for a definition of "scientific method" that would guide them in their work, and to expect that following such a method would ensure the truth and reliability of their results. Because people have speculated from time immemorial about language, often with no basis in fact, it was natural that linguists would be suspicious of premature generalizations, empty claims, and dubious explanations. Nevertheless, I think it must be admitted that the whole program was misconceived.

The view of linguistic method that was held by many workers was similar to a view of scientific method, which is unfortunately propagated by much teaching of science in the schools and in popular accounts of science. According to this view, the scientist must begin by collecting observations

about happenings in the real world. After he has made a large number of such observations or experiments, he proceeds to a "generalization" about these happenings that can be verified by referring to the original observations. After he has repeatedly carried out this process to arrive at a number of such generalizations, he may go on to make a secondary generalization that is "based on" the original generalizations (which are "based on" the original set of observations). There is supposed to be a method (called "induction") by which one arrives at such generalizations. The classical statement of this view was made by Francis Bacon, an English philosopher and statesman (1561-1626), and we may accordingly call this view of science "Baconian."

This is not the place to give an extended documentation of the thesis that much of modern linguistics has been dominated by an extreme Baconianism. A few examples are, however, in order.

Probably the most influential book on linguistics published in America during the first half of this century was Leonard Bloomfield's *Language* (1933). In his theoretical asides and in the sketch of the history of linguistics (Chapter 1), Bloomfield displays a strongly Baconian view of science. The widespread, if never very explicitly formulated, assumption that linguistic theory should consist of a set of rigorous procedures by means of which utterances could be "segmented" and units "classified" to provide a grammar of a language is clearly based on a notion of Baconian induction ("mechanical discovery proceedure"). Finally, one may cite the often reiterated idea that the study of sentence structure can never succeed until we have programmed electronic computers to "handle" the vast bodies of data needed to provide the "basis" for our study. Perhaps these views are an inheritance from the tradition of historical linguistics out of which modern linguistics has grown. Part of historical linguistics deals with the study and interpretation of ancient texts, and one of its chief aims has been to provide compendia of different forms found in the "corpus" (the fixed body of texts that have been preserved). In such a compendium or "grammar" it is indeed important to avoid inventing forms that are not attested. But such a description has no theoretical status; it is equivalent to an organized index to the texts. Even here, however, a theory-free account of allegedly neutral facts is, strictly speaking, impossible.

A more nearly accurate account of scientific method might go as follows. Somehow or other a scientist becomes interested in understanding a certain range of phenomena or in solving a particular problem. How he comes upon the problem is of no theoretical consequence whatsoever. He

may be trying to accomplish a certain practical task such as building a rocket that will not burn up when it reenters the atmosphere, or he may notice some unexpected result when performing an experiment—for instance, the unexplained static that led to the development of radio astronomy. Scientific discoveries of the utmost consequence have been made by workers who were systematically working through all sorts of substances in the attempt to find drugs for specific medical treatments, but they have also been made by pure accidents. Of course, the accident has to be noticed by the right person, and usually a solid acquaintance with previous work in an area is a prerequisite for good scientific research.

The worker must then formulate some tentative answer to the question or problem, that is, an explanation or "hypothesis." A good hypothesis must meet several requirements. First, it must be precise and explicit enough to allow the deduction of various consequences, typically with the help of other hypotheses and observations. Second, among the possible consequences of the hypotheses there must be some that have some empirical content, in particular, the observations that the hypothesis purports to explain. It is misleading to oppose the deductive method of logic and mathematics to a putative inductive method of empirical science. Deduction plays a central role in linguistics and physics as well as in mathematics. We cannot, of course, deduce theories or hypotheses from observations and statements about them. But we must be able to deduce statements about matters of fact from our hypotheses, or else the hypotheses will be empirically empty. Once again, how we arrive at our hypotheses is insignificant. What is essential is that they say something that can be matched up against facts.

--Excerpt from Emmon Bach. 1974. *Syntactic Theory*. Holt, Rinehart and Winston, Inc.