THE OPERATIONAL METHOD IN SOCIOLOGY

THE OPERATIONAL METHOD IN SOCIOLOGY:
A CRITICAL METHODOLOGY

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ABSTRACT

This thesis is concerned with critically understanding and evaluating one step in the sociological research process, the operationalizing of concepts. It is contended that sociology is the offspring of positivistic philosophy, especially in its pragmatic expression. Due to this philosophical basis sociologists must face the problem of relating abstract concepts to the empirical world. Operationalism, making concepts synonymous with the operations by which they are empirically determined, was advanced as a solution to this problem. Sociologists in the first half of the twentieth century either interpreted operationalism (1) rigidly, allowing for only operationalized terms, or (2) loosely, acknowledging a need for abstract concepts as well. Examination of recent methods texts, research, and the literature on sociological theory construction suggests that "loose operationalism" has come to be the standard interpretation of the operational method in contemporary empirical sociology. The loose operational approach is explained and some advise is given concerning its use. The most important such advise is that methodological decisions, including the selection of operational terms, can not be isolated from the proper commitment of sociology, to enable men and women to know what is going on in the world and within themselves.

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I. INTRODUCTION

In this age when so-called "scientific knowledge" and "scientific methods" have achieved a virtual monopoly over the minds of contemporary men and women a critical analysis of social scientific methods might seem to be an unnecessary activity.[1] However, the very fact that most individuals, probably including many sociologists, are unconscious of the full meaning of their own theory of knowledge or epistemology and their own methodology of knowing and yet assume that they acheive "knowledge" demands that such an analysis be made. Any activity, whether mental or physical, which is directed toward the goal of obtaining knowledge presupposes that the subject of that activity has defined the goal, knowledge, and mapped out a route to get there. If this goal has not been defined nor this route made explicit then this goal and route have been defined and mapped implicitly, sometimes behind the subject's back. The English sociologist's, L.T. Hobhouse's, remark made in 1907 is still essentially true. "Sociology is not in the fortunate position of a science which can dispense with all discussions of its methods and object."[2] Until human beings reach a universal concensus on the nature of the universe and life within it no science will be in the "fortunate position" where issues of method are irrelevant. Sociologists must be concerned with questions of method unless they wish the meaning of their work to be made behind their backs.

Even among sociologists who agree that methodology is a legit-

imate concern how questions of methodology should be approached is still a topic of controversy. Many sociologists would probably join C. Wright Mills in suggesting that "controversy over different views of 'methodology' and 'theory' is properly carried on in close and continuous relation with substantive problems."[3] The point being overlooked by Mills is that questions of methodology involve substantive issues for the sociologist. The object of sociological study, broadly speaking, is human social behavior. Two particular aspects of human social behavior which sociologists should be interested in are how human beings know or come to think they know and how this "knowledge" affects other spheres of human activity. A more specific focus on the behavior of knowing might be on the way particular groups, such as sociologists, know or come to think they know and if and how their "knowledge" is used. It is a worthwhile suggestion that problems of methodology are best solved in relation to substantive issues, but the examination of methodological problems is necessarily intertwined with substantive sociological issues.

It should be clear that the term methodology is not being used here as it is often used in sociological textbooks to refer merely to the explanation of a number of useful reserach techniques. Methodology is not just the explanation of how to design an attitudinal questionaire, or how to run a multiple regression program through a computer, or where to look for information concerning directors of corporations, or any other such technique. C. Wright Mills noted that "'method has to do, first of all, with how to ask questions with some assurance that the answers are more or less durable."[4] A study of sociological methodology should include an examination of questions usually thought of as

the relam of theory and philosophy. In order to adequately understand sociological methodology assumptions concerning how humans can gain knowledge of themselves and their creations inherent in the use of a given method must be uncovered. Only in this way can the aim of methodology, which in Abraham Kaplan's words is "to help us understand, in the broadest possible terms, not the products of scientific inquiry but the process itself,"[5] be truly fulfilled.

The major tasks then of a sociological methodology is to examine the full meaning and justification of present methods, critically analyze them and their use, and if necessary point in the direction of alternative methodological approaches. In order for this study to be a realistic project these tasks will be performed on a specific stage or step in the research process. According to Philipp Frank a topic of major concern for the philosophy of science is the manner in which concepts are used in scientific research.

> The relationship between direct observation and the concepts we use in 'scientific description' are the main topics with which any philosophy of science is concerned.[6]

This topic is also central to sociological methodology which must include and examination of the philosophy of a particular science, sociology. For any discipline or science, such as sociology, which claims to be rooted in empirical "fact" this topic is particularly important and troublesome. A. Cornelius Benjamin has outlined the importance of this topic for the empirical scientist.

> Concepts are meaningless unless they can be tied to experience in some way. Without empirical contacts they run the risks of becoming lost in verbalisms; words become substituted for words, and the process either goes endlessly on or terminates in an appeal to non-empirical scources.[7]

The empirical sociologist as methodologist must confront the difficulty of relating concepts to experience. As in all sciences claiming the label "empirical" there is in sociology the nagging question of how concepts are to be related to empirical data during the research and generalization process.

The aim of this study is to examine this important and nagging question of how concepts can be related to empirical data in sociological research, or as it will be referred here the concept-data problem. Because sociological theory was born out of moral and political philosophy concepts are often borrowed form various "non-empirical" theoretical and philosophical sources. These concepts are then used in the course of research to describe specific pieces of empirical reality, or experience, as it is variously defined. This process can only make sense in reference to certain guiding methodological or epistemological principles. The first of those principles for the empirical scientist is the one expressed above by Benjamin that concepts must necessarily be "tied to experience." For example, if the sociologist shared e.e. cummings attitude the sociologist's longstanding claim to the title of "empirical scientist" could finally be layed to rest.

> (While you and i have lips and voices which
> are for kissing and to sing with
> who cares if some one-eyed son of a bitch
> invents an instrument to measure spring with?[8]

However, unlike the poet, the sociologist's interest is not in kissing and singing but most often in measuring. The eyes of the sociologist are on that one-eyed son of a bitch, who might be a sociologist himself, and his instruments. Sociological research is often first of all an

exercise in measuring spring, or power, or status, or deviance.

A widely discussed method for overcoming the difficulty of relating concepts to empirical data in sociological research is often referred to as operationism or operationalism. This method, operationalism as it will be referred to here, originally grew out of attempts by methodologists of the physical sciences to adjust physical scientific research methods to the newly accepted theories, of Albert Einstein. One of Einstein's theories, the theory of relativity, asserted that the core concepts of Newtonian or classical physics such as mass and length were not absolute qualities of an object but rather were relative of other factors such as speed. For example, a wire ten feet long as measured with a standard instrument at one speed, such as the speed of the earth's rotation, would not be ten feet long at another speed, such as the speed of light, even though measured with the same instrument.[9] The implications for research was that terms such as length had to be specified for the particular research project according to the conditions of that project and the operations used in the measurement of the concept. The obvious solution then to the methodological problem created by acceptance of Einstein's theory of relativity was to make the concept "synonymous with the corresponding set of operations."[10] This method soon became known as operationalism and definitions arrived at in this manner as operational definitions. In simple language, the concept (definiendum) is defined by the operations used to measure it or more broadly by the operations used to gather empirical information concerning it (definiems).

This method soon became widely applied in many empirical sciences

and a topic of much discussion in the social sciences during the nineteen thirties and forties when sociologists were attempting to become full fledged empirical scientists. Sociologists were facing a troublesome measurement problem and the operationalist method seemed the perfect escape. In the physical sciences operationalism was most often used to reinterpret already established research procedures, but in the social sciences, according to David and Judith Willer, operationalism has been "consistently (and persistently) used as a method."[11] Although the debate in social scientific circles over the legitimacy of the operationalist solution to the concept-data problem was often heated[12] the method seems to have been eventually absorbed into standard social scientific research prodedure.

It should be emphatically stated at the beginning of this discussion that the term operationalism as it is used throughout this discussion refers to a research procedure, a method, for "tieing" concepts to empirical evidence. The term operationalism is sometimes used to refer to behavioristic or extreme empiricist sociological theory especially as it was articulated in the nineteen thirties. This is the meaning Henrika Kuklick attaches to the label operationalism in the following passage.

> In its commitment to particular methodological tools and to puzzle solving activity, operationalism constituted no less a paradigm then functionalism, but because it did not focus on current sociological preoccupations the profession as a whole agreed that is was not theoretical but but methodological.[13] (emphasis in original)

The term operationalism will not be used here to refer to the theoretical orientation Kuklick describes but rather to a methodological procedure developed by adherents to this theoretical orientation. The

theoretical orientation Kuklick is referring to is probably better labeled social behaviorism or sociological pragmatism. Even the original spokesman for the operational method, Percy Bridgeman, ten years after his first statement on the subject[14] maintained that he had not been setting up a "philosophical system" or an "elaborate and profound new theory of the nature of knowledge or of meaning."[15] Bridgeman believed that he had only stated the obvious methodological principle that if "we want to do certain kinds of things with our concepts they must be constructed in certain ways."[16]

Although the term operationalism as it is used here refers to a particular methodological strategy and not to a substantive theoretical orientation in sociology that does not mean that the method of operationalizing concepts does not contain certain theoretical implications. It would be a contradiction of the approach to methodological questions adopted earlier to pretend that any method, including operationalism, is devoid of theoretical and philosophical import. The very justification for the effort expended here must rest on the position that knowing subjects, such as sociologists, must evaluate their methods of knowing in cognizance of the full philosophical and theoretical content and implications of their methods. Critical examination of the content and implications of the method of operationalizing concepts is the aim of this study.

Henrika Kuklick implied in the passage quoted earlier that sociologists came to accept operationalism as a legitimate methodological procedure. Debates and discussion concerning operationalism which took place in the professional journals during the thirties and forties

seems to have quietly come to a close. However, the closing of debate on this subject did not necessarily mean that the issues being addressed had been resolved. Gideon Sjoberg, in a paper published in 1959, explained why operationalism was not a dead issue for social scientists.

> Operationalism is not a dead issue. The term is still variously interpreted by social scientists, including sociologists. It is so loosely bandied about that it requires critical evalution. Some writers assume it is sufficient merely to state this or that term is operationally defined and the issue of the concept's status is automatically settled. Operationalism--whether this refers to 'physical' or 'mental' operations--is in fact used to rationalize a variety of activities.[17]

The situation Sjoberg described demanded and continues to demand critical evaluation. Whether the sociologist is conscious of it or not the method by which concepts are defined for the purposes of empirical research can carry with it certain philosophical decisions which affect the entire research process and the meaning of the knowledge obtained.

The aim of this study is to clarify and critically evaluate the method of operationalism, or whatever method for dealing with the concept-data problem in sociology might have replaced it, in view of the philosophical decisions its use entails. It is necessary that the sociologist be aware of the consequences of the decision to treat concepts in a particular manner in the research process so that the sociologist might better evaluate the method being used as well as the products of such a method.

In order to fulfill the aim of this study it is necessary to first ask two major questions whose answers will account for the major portion of this study. Firstly, what exactly is the method of operation-

alism (including its inherent philosophical basis)? Secondly, is the method of operationalism used in contemporary sociological research and if so how? To answer the first question two steps are necessary. First, it is necessary to establish from where operationalism derived, that is, to discover the philosophical roots of the method of operationalism. This first step will also include a brief mention of the socio-historical roots of the intellectual tradition which gave rise to the operational method. The second step in answering the first question is to summarize the discussions concerning operationalism which have been carried on in social scientific and philosophical journals and articles. By summarizing the major points of these discussions it will be possible to understand how and if the method has been interpreted as an adequate approach to the concept-data problem in sociology. Answering the first question adequately will make it easier to address the second question.

Before considering the second question, however, it is necessary to elaborate briefly concerning the strategy outlined above for answering the first question. In order to determine from where operationalism derived it is necessary to review part of Western philosophical history. By selecting for examination a few modern philosophers as guideposts to the development of Western philosophy as it applies to the topic of concern here it will be possible to understand the general intellectual currents which lead to and accommodated the method of operationalism. Such an understanding should clarify the assumptions inherent in the method. Scott Greer has noted that knowing the assumptions of one's theory is a valuable asset, and that is equally true

of knowing the assumptions of one's method.

> A clear understanding of assumptions also increases intellectual power and freedom. You can, for one thing, always return to your root assumptions when the argument becomes self-contradictory, when the theory does not work.[18]

Although the approach being used here will look primarily at the history of ideas the use of such an approach does not imply that socio-historical factors are irrelevant to the development of the operational method or to any other idea. While it will be necessary to take note of the socio-historical conditions which gave rise to the general intellectual tradition from which the method of operationalizing concepts emerged it would be highly tedious and unnecessary for the purposes of this study to attempt a detailed analysis of the socio-historical antecedants of the method of operationalism. Discussion of the philosophical roots of operationalism and the clarification of the epistemological assumptions of this method will be carried out primarily in reference to the method's intellectual antecedants.

Examination of the philosophical roots of the method of operationalizing concepts will point out many of the method's inherent biases, but this approach will not clearly define the issues involved in the use of operationalism as a method of dealing with the concept-data problem in empirical sociology. Although most social scientists were searching for relief from their respective discipline's concept-data problem during the late nineteen twenties, Percy Bridgeman's now classic formulation[19] did not bring immediate relief. The next two decades resulted in heated discussions and exchanges between numerous philosophers, psychologists, and sociologists concerning the true

meaning and importance of the method of operationalism for social scientific research. Although the discussions concerning the use of operationalism in the social sciences (including sociology) have continued the level of interest and controversy is greatly reduced. In order to outline this method, its content and implications, it is necessary to briefly review the issues raised and positions taken concerning the concept-data problem in the social sciences. Outlining these issues will make it possible to better understand operationalism's meaning and relevance to social scientific research. After accomplishing this task and the task of locating the philosophical roots of the method of operationalism it will be possible to outline the method of operationalism and its full implications for sociology as a method for dealing with the concept-data problem.

In answering the second major question the analysis must move to the area of contemporary sociological practice. First of all, it will be necessary to look at contemporary methodology textbooks in sociology for their instructions concerning the use of concepts in empirical research. These instructions will show whether operationalism is being condoned in modern sociology, and if not what method for resolving the concept-data problem is. Secondly, in answering the second question it is necessary to look directly at examples of current empirical research in order to examine how concepts are dealt with in actual sociological research. It is possible that the cookbook instructions offered in methods texts are ignored when the cook enters the kitchen. By examining the manner in which concepts are used in actual research it will be possible to determine if operationalism

is used in the contemporary research process and if so how.

Given the large number of methodological textbooks and the enormous amount of sociological research published selecting examples from each area will mean that many methods texts and most recent research will necessarily be excluded. Hopefully, the examples to be presented and analyzed here are representative of the thinking and practice of most contemporary sociologists. The only justification for selection of the examples to be examined will be their (seeming) popularity among sociologists. The fact that there is neither theoretical nor methodological consensus among sociologists makes justification of the selection of only a few examples for analysis particularly difficult as Ernest Nagel has pointed out.

> Whatever material is selected for analysis is likely to be judged by many students as unrepresentative and the analysis itself as irrelevant to the central problems of social inquiry. But this risk is unavoidable.[20]

Hopefully, the examples selected here capture the main currents of present methodological thinking and practice in empirical sociology even though their representativeness will be open to challenge.

It should be noted that the examples analyzed will be confined to "hard" or "quantitative" methods and research. There are alternative methodological approaches in modern sociology, but these are marginal positions within the discipline. Some of the methodological and research literature excluded are in areas of grounded theory, ethnomethodology, phenomenology, historical analysis, dialectical materialism, and mass psychology. The exclusion of these and other approaches from analysis does not imply that they are insignificant to the field

of sociology or unrelated to the topic being addressed here. It is simply too large a task to analyze all the various approaches in contemorary sociology. The efforts here are confined to "mainstream" sociological methods and research--"quantitative, systematic empirical" research and methods.

The last stage in providing an answer to the second question is to examine the relatively recent literature on so-called theory construction. The label theory construction has come to refer to attempts being made to develop methods of building explanatory frameworks and systems on the basis of systematicly gathered empirical evidence. Theory construction is an attempt by empirical sociologists to develop methods for integrating the vast amount of empirical data being gathered by social researchers into broader and more meaningful explanatory systems. Any such attempt must include a strategy for relating concepts to definitions at two levels of abstraction or generalization. Theory construction is directly concerned with how general concepts can be related to specific empirical data and how empirical concepts can be related to general explanations. It would be a major oversight in answering the second question to ignore these attempts by empirical sociologists to deal with the concept-data problem. Once again it should be mentioned that the representativeness of the selected examples will be unavoidably open to question. Through the examination of research instructions, research practice, and the recent literature on theory construction it will be possible to answer, at least in part, if and how the method of operationalism is used in contemoprary empirical sociology.

The attention being given to the second question should not be misinterpreted as a concern for developing what Karl Popper refers to as a "naturalistic methodology" for sociology.

> This view, according to which methodology is an empirical science in its turn--a study of the actual behavior of scientists, or of the actual procedure of 'science'--may be described as 'naturalistic.'[21]

Popper points out that although such an approach can be valuable in the clarification of present procedures it is an inadequate approach if used alone because it is necessarily uncritical of what are only methodological conventions.[22] The worth of a methodological analysis, such as this one, is in its ability to critically evaluate the methodological convention(s) being examined. The whole purpose of asking and answering the two questions mentioned earlier is to be able to critically evaluate operationalism as a solution to the concept-data problem in empirical sociology.

If the final aim of this study is the critical evaluation of the common approach to the concept-data dilemma in empirical sociology, then it is necessary to first briefly outline what will be the criteria of judgement. Like C. Wright Mills "I am hopeful that my biases show, for I believe judgements should be explicit."[23] The outlining of the criteria of judgement (and thereby the revelation of biases) will aid the reader in assesing the validity of the evidence and conclusions advanced in the proceeding chapters.

There are, of course, standard criterion that are traditionally used in the literature of the philosophy of science and of scientific methodology to evaluate scientific knowledge and methods. Probably the

four most often mentioned points of evaluation are simplicity, reliability, validity, and the explanatory power of the knowledge obtained. The first point often used to evaluate scientific knowledge and methods is simiplicity or economy of procedure. Is the method the simpliest and most efficient possible for the task? This point leads right into the second point of evaluation, reliability. Reliability refers, generally, to whether a procedure can be duplicated by various practioners or at different points in space and time with equivalent results. The communicability of the procedure, its social or intersubjective quality, is the basis of evaluation on this point. Obviously, the simplicity of the procedure will likely have a pronounced effect on a procedure's reliability. The third common point of evaluation is validity. Validity refers to whether the use of a procedure results in "real" information about the object or phenomena of concern. The use of this criterion carries with it important philosophical assumptions. Implicit in the use of validity as a basis for evaluating scientific procedures and knowledge are the beliefs that scientific researchers are studying something that is "real" (exists in a reality external to the subject) and that scientists can conceive of the object of study before empirical investigation of it (knowledge of an object <u>a priori</u> of systematic empirical experiencing of it). Validity refers to the correspondence between the information a procedure yields and the "real" properties of the object or phenomena being studied. Finally, the question of whether a method can result in information with real explanatory significance is also commonly asked. In other words, the success of a method in leading to information which explains the object of study is also used as a

criterion of evaluation. These four points are all related to the concept-data problem, especially validity, and operationalism's relation to these criteria will be discussed. However, there is a criterion for the evaluation of methods of knowing which is of as much, if not more, concern as the four listed above.

Traditionally sociological methodologists have warned the social researcher to ask before applying a method whether the method is efficient, reliable, and can yield valid and coherent information. Overriding these concerns must be a deep concern with the effects of methodological choices on the meaning and possible uses of the resultant knowledge. In other words, how a certain method affects the meaning and utility of information obtained by its use is of utmost importance in evaluating methods of knowing. Although certain information might readily explain a phenomenon the question of explain to what end must be asked. If sociological methods carry with them hidden biases which affect the way that sociological knowledge can be used then these biases and their sociological implications must be exposed. C. Wright Mills noted that "there is no necessity" that the political meaning of sociological research "be shaped by the accident of the setting" of "the purposes of other men."[24] It is equally true that the political meaning and use of sociological knowledge should not be determined by the sociologist's ignorance of the implications of methodological decisions. The major task of a critical sociological methodology, such as this study, is to make explicit the implications of using certain methods on the meaning and use of the information obtained, and to determine if this meaning and use is consistent with the promise and

proper commitment of a knowledge of human beings and of their environment.

It is an abdication of responsiblity to believe that knowledge does not or should not have a commitment or purpose. "There is no necessity" that the meaning of sociology, its promise, be determined by anyone or anything except its practioners. This was the lesson of C. Wright Mills's The Sociological Imagination for modern sociologists. Mills noted in that important work that behind the use of The Sociological Imagination is the "urge to know the social and historical meaning of the individual in the society and in the period in which he has his quality and his being."[25] This urge, as Mills explained, is not without purpose but is an urge to fulfill a critical need of modern men and women.

> What they need, and what they feel they need, is a quality of mind that will help them to use information and develop summations of what is going on in the world and of what may be happening within themselves.[26]

The urge that the possessor of The Sociological Imagination, the sociologist, must feel is not that of an individual subject in search of truth but that of a delegate of humankind. The promise of sociology, like all knowledge, is not just to sociologists, or any particular group, but to all human beings. The most important criterion of a sociological method is whether the knowledge produced or obtained helps fulfill the urge and the need to understand what is "going on in the world" and what meaning what is going on has for all of us, "our quality and our being."[27]

The remainder of this study will be devoted to fulfilling the

tasks already outlined. The first aim is to answer the two questions posed earlier. What is the method of operationalism and what is its full philosophical meaning? Is operationalism used as a method in contemporary empirical sociology and if so how? Secondly, in view of the answers to these two questions, it will be possible to offer a critical evaluation of operationalism, or whatever method is used, as a solution to the concept-data problem in sociology. By accomplishing the tasks set out here it will be possible to either offer a clear statement of a method for overcoming the concept-data problem in sociology, or, at the very least, to reject a method that is inadequate for or in opposition to the promise of sociology. Regardless of the final conclusion of this investigation it should be of use to the sociologist as methodologist.

Notes

[1]In order to avoid confusion it should be noted that the term "science" will be used here in its classic sense to refer to the general activity of knowledge seeking which is based on the conscious attempts by the individual subject to verify his or her notions. The expression "empirical science" is used here to refer to a more specific knowledge seeking activity based on "positivistic" methods of verification which will be explained in Chapter II. "Empirical science" here refers to what is popularly called "science."

[2]Hobhouse, L.T., Sociology and Philosophy: A Centenary Collection of Essays and Articles, (Cambridge: Harvard Univ. Press, 1967), p. 3.

[3]Mills, C. Wright, The Sociological Imagination, (Oxford Univ. Press, 1959), p. 120.

[4]Ibid., p. 120.

[5]Kaplan, Abraham, The Conduct of Inquiry, (San Francisco: Chandler Publ., 1964), p. 23.

[6]Frank, Philipp, Philosophy of Science: The Link Between Science and Philosophy, (Englewood Cliffs, N.J.: Prentice-Hall, 1957), p. 5.

[7]Benjamin, A. Cornelius, Operationism, (Springfield, Ill.: Charles C. Thomas Publ., 1955), pp. 15-16.

[8]e.e. cummings quoted in Simon, Julian L., Basic Research Methods in Social Science, (New York: Random House, 1969), p. 18.

[9]This example is not exact. Obviously, if length varies with speed then the instrument and its calibration will also vary with speed. In order for this example to be exactly consistent with the theory of relativity the measuring instrument must be free from the effects of the difference in speed. Hopefully, the example conveys the problem without mention of added complicating factors.

[10]Bridgeman, Percy, The Logic of Modern Physics, (New York: MacMillan, 1961), p. 5.

[11]Willer, David and Willer, Judith, Systematic Empiricism, (Englewood Cliffs, N.J.: Prentice-Hall, 1973), p. 108.

[12]"For many sociologists in the 1930's like E.W. Burgess the profession was being torn apart by the controversy over operationalism (137:148). The paradigm's chief spokesman was George Lundberg who saw himself in the forefront of the coming consensus in sociology." Kuklick, Henrika, "A 'Scientific Revolution': Sociological Theory in

the United States 1930-1945," Sociological Inquiry, XLIII, (Winter, 1973), p. 15.

[13]Ibid., p. 16.

[14]The statement immediately preceeding footnote 10 on page 6. Although this statement is quoted from the 1961 edition of Bridgeman's Logic of Modern Physics, Herbert Marcuse quotes the same passage only at more length from the original 1928 edition also published by MacMillan. See Marcuse, Herbert, One Dimensional Man, (Boston: Beacon Press, 1964), pp. 5-6.

[15]Bridgeman, Percy,"Operational Analysis," Philosophy of Science, V, (April, 1938), p. 114. This question will be addressed in more detail in Chapter III.

[16]Ibid., p. 119.

[17]Sjoberg, Gideon, "Operationalism and Social Research," in Symposium on Sociological Theory, ed. by Lewellyn Gross, (New York: Harper and Row, 1959), p. 603.

[18]Greer, Scott, The Logic of Social Inquiry, (Chicago: Aldine Publ., 1969), p. 26.

[19]The statement immediately preceeding footnote 10 on page 6.

[20]Nagel, Ernest, "Problems in Concept and Theory Formation in the Social Sciences," in Philosophy of the Social Sciences, ed. by Maurice Natason, (New York: Random House, 1963), p. 190.

[21]Popper, Karl, The Logic of Scientific Discovery, (New York: Harper and Row, 1968), p. 52.

[22]Ibid., p. 53.

[23]Mills, op. cit., p. 21.

[24]Ibid., p. 177.

[25]Ibid., p. 7.

[26]Ibid., p. 5.

[27]For a more complete discription and justification of "the promise of sociology" see C. Wright Mills's The Sociological Imagination. My conception of the promise of sociology is consistent with Mills's and will become clearer throughout the remainder of this study, especially in conclusion.

II. PHILOSOPHICAL BACKGROUND TO THE METHOD OF OPERATIONALISM

The first task of a sociological methodology should be an attempt to understand the full philosophical meaning of the problems encountered when seeking knowledge of human beings and their creations. When a problem is encountered in the course of gathering sociological knowledge or becomes apparent after exposure to what is proported to be sociological knowledge the first step in solving the problem is to clarify the philosophcial issues involved. This need for clarification of issues usually demands a partial understanding of the intellectual antecedants to the methodological problem. The methodologist of sociology's first task should be a review of the philosophical background to the methods of interest.

This study is concerned with the concept-data problem and the method of operationalism as a technique for dealing with it. This topic requires some philosophical clarification. The first step toward understanding the concept-data problem and the method of operationalism is to review in part the philosophical history of modern "empirical" methodology or epistemology as it applies to these concerns. This will be done by selecting certain philosophers and in some cases a single work for examination as guideposts to the development of the philosophical tradition which led to the present difficulty of relating abstract concepts to empirical data and to the development of operationalism as a method of dealing with this difficulty. The approach here is to examine the history of ideas. However, this

approach should not be interpreted as an endorsement of the position that ideas "cause" ideas or that socio-historical factors were unimportant in in the development of empirical sociological methods. For the purposes of clarification, for uncovering the philosophical issues involved in the problem and in the use of the method, this approach seems the most useful.

Before this examination of selected modern philosophical writings begins, it is necessary to speak briefly of the rise of modern philosophy, especially so-called "positivism." The logical point of departure for any analysis of the philosophical basis of sociological methods is with modern positivism. As Herbert Marcuse has noted "sociology originated in this positivism and through its influence developed into an independent empirical science."[1] It will be easier to understand some of the issues involved in the intellectual history of positivistic thought after being made aware of some of the socio-historical factors which lead to positivism's development.

The European Renaissance brought with it a challenge to the previous social arrangements. The authority of the church which had gone practically unchallenged for centuries was questioned internally and forceably challenged externally. The economic arrangements of the feudal era began to disintegrate. A whole new economic class had grown up in the young cities. Merchants and independent craftsmen who composed the new middle class[2] along with their noble allies challenged the economic and political power of the aristorcracy. The rulers of the time had justified their rule by reference to their divine right to govern and were usually blessed with the authority of

the church. Members of the new middle class had to challenge the authority of the chruch in order to claim the power and wealth of the aristoracy.

The authority of the church during the feudal era was intertwined with the mental dominance of the spiritual realm over the temporal realm. This dominance was readily apparent in the leading philosophical style of the time, Scholasticism, for as William Wright has noted the outlook of the philosopher "is an expression in some way of the scientific, religious, moral and economic outlook of his time."[3] Saint Thomas Acquinas is one of the most notable of the Scholastic philosophers. Acquinas defined his interest as "the sacred science", a science which accepts "on authority . . . the principles revealed by God."[4] Acquinas argued that "a thing is understood in that it is immaterial,"[5] expressing the epistemological basis of Scholasticism. According to the Scholastics, the empirical world was not the object of human understanding; the intellect's domain is the immaterial, the spiritual.

In challenging the authority of the chruch members of the new middle class had to challenge the intellectual dominance of the spiritual over the temporal, or empirical. This intellectual challenge found expression in positivistic philosophy. Reflecting the interest of the emerging middle class positivistic philosophy reversed the Scholastics' arguement and maintained that only the material could be known.[6] Because positivism was born in opposition to the spiritual preoccupation of scholastic philosophy it can best be thought of, as Lesek Kolakowski points out, as "prohibitions concerning human know-

ledge"[7] which seek to limit knowledge to the experiential and practical realm. Kolakowski defined positivism by listing four core tenants or rules of positivist methodology. (1) The world of appearance, of phenomena, is all that can be known. Any statement about the true nature of reality, or essences, is meaningless (phenomenalism). (2) Since humans only experience individual phenomena or objects and not groups or classes of objects or phenomena knowledge is confined to particulars. Generalization and abstraction are heuristic creations which have no real meaning apart from the particulars on which they are based (nominalism). (3) Value judgements and normative statements have no cognitive value and can not be justified by reference to reason. (4) There can be an unified method for obtaining knowledge concerning all aspects of the experienced, empirical, world.[8] With these tenants as its core positivist philosophy developed and influenced the methodology of most modern empirical sciences including sociology. The intellectual developmemt of positivism as it pertains to the concept-data problem and the development of operationalism will be the concern of the remainder of this chapter.

The philosophy of David Hume is probably the first cogent and complete presentation of modern positivist epistemology and methodology. Kolakowski refers to Hume as "one of the most brillant minds the modern era has produced and at the same time the real father of positivist philosophy."[9] Hume's first major work was the long and often tedious Treatise on Human Nature. Hume expected the Treatise to bring him instant recognition, but when recognition was not forthcoming Hume revised and abridged his original Treatise and in seventeen forty

eight published An Enquiry Concerning Human Understanding. Because the Enquiry is more lucid and yet presents the basic principles of Hume's methodology attention here will be concentrated on that work.

Hume divided all human thought or "perceptions of the mind" into two categories. "The less forcible and lively are commonly denominated Thoughts or Ideas." The other category Hume called impressions which he defined as sense perception or "all the more lively perceptions, of which we are conscious."[10] For Hume all human ideas are merely copies or remembrances of our sense perceptions or actual experiences.

> Or to express myself in philosophical language, all our ideas or more feeble perceptions are copies of our impressions or more lively ones.[12]

If human ideas are mere "feeble copies" of our perceptions than any system based on ideas with no reference to the perceived world can only be a feeble copy of "real knowledge." Hume even denies that we can infer the existence of an external reality on the basis of our perceptions. All we can know are our perceptions.

> Tis impossible upon any system to defend either our understanding or senses; and we but expose them further when we endeavour to justify them in that manner.[13]

We should merely deal with our perceptions as they are given to us and reject the useless activity of trying to assert that they validly represent our external environment. With these remarks Hume challenged almost the whole of Western philosophy up to his time. Without any a priori non-experiential principles or ideas not only the Scholastics, but both ancient Greek and modern European Rationalism are without a basis.[14]

Hume's critique of metaphysics does not stop there. Besides denying any reality beyond appearance or perception, Hume sets definite limits on what can be inferred from the world of appearance. Although "the utmost effort of human reason is to . . . resolve many particular effects into a few general causes" "we should in vain attempt their discovery."[15] We can never observe any connection or power between events and thus can never know causality, only conjunction.

> All events seem entirely loose. One event follows another; but we never can observe any tie between them. They seem conjoined, but never connected.[16] (emphasis in original)

According to Hume, our idea of causation is the result of a habit of thought which can not be defended against rigorous empirical criteria of knowledge.

> Our idea, therefore, of necessity and causation arises entirely from the uniformity observable in the operations of nature, where similar objects are constantly conjoined together, and the mind is determined by custom to infer the one from appearance of the other. These two circumstances form the whole of that necessity which we ascribe to matter. Beyond the constant conjunction of similar objects, and the consequent inference from one to the other, we have no notion of any necessity or connection.[17] (emphasis in original)

Without the idea of necessity or causation the realm of human knowledge is severely limited.

Firstly, without the principle of causation or necessity there can be no notion of resemblance between past and future events. The arguement that the future can be predicted on the basis of past experience rests on the assumption that a given event (A) causes (or is necessarily followed by, necessity) another event (B). Without

the principle of necessity or causation there can be no principle of resemblance. The causal inference from A, the first event, to B, the second event, can not be made.

> It is impossible, therefore, that any arguements from experience can prove this resemblance of the past to the future; since all these arguements are founded on the supposition of that resemblance. Let the course of things be allowed hitherto ever so regular; that alone without some new arguement of inference, proves not that, for the future, it will continue.[18]

Although Hume maintained a personal belief in the orderliness of nature he argued that human beings could not discover the nature of that order nor defend such a view on empirical grounds. For Hume knowledge of the future is at best probabalistic.

> Though there be no such thing as Chance in the world; our ignorance of the real cause of any event has the same influence on the understanding and begets a like species of belief or opinion.[19]

According to Hume, human knowledge is restricted to the realm of past experiences and can not, without uncertainty, make inferences beyond that realm.

The second implication of Hume's rejection of causation is that of nominalism. Without the principle of causation there can be no connections between the endless flux of experiential data (sense perceptions). The human knower, the subject, is faced with numerous particular events without a method of classification and organization. The subject is not only without the organizing principle of causation but also that of substance (essence).

> We have therefore no idea of substance, distinct from that of a collection of particular qualities, nor have we any other meaning when we either talk or reason concerning it.[20]

Both the realm of universal laws and the realm of general categories and concepts are beyond the reach of human certainty. For Hume the human subject is "but a bundle or collection of different perceptions . . . in a perpetual flux and movement."[21] The strict demand that knowledge be grounded only in immediate experience has produced for Hume and the positivistic tradition the problem of how the human subject can anchor his use of concepts in sense perceptions.

Hume has reduced the realm of human knowledge to that of common sense or "experimental reasoning itself, which we possess in common with beasts." He denies that we can know how this common sense operates; "it is nothing but a species of instinct or mechanical power."[22] Hume rejected the elaborate schemas of logical analysis as a guide to legitimate knowledge for there is no guarantee that these schemas can adequately represent the world of our perception. Hume does allow for an exception, mathematics, but maintains that only the rule of identity and opposition apply to ideas other than quantity.

> It seems to me, that the only objects of the abstract science or of demonstration are quantity and number, and that all attempts to extend this more perfect species of knowledge beyond these bounds are mere sophistry and illusion. As the component parts of quantity and number are entirely similar, their relations become intricate and invloved; and nothing can be more curious, as well as useful, then to trace, by a variety of mediums their equality or inequality, through their different appearances. But as all other ideas are clearly distinct and different from each other, we can never advance futher, by our utmost scrutiny, than to observe this diversity, and by an obvious reflection, pronounce one thing not to be another.[23]

The meaning of knowledge for Hume becomes pragmatic. Without any criterion of logical thought and without any test of validity for

for human perceptions truth and reason become meaningless terms. Knowledge is a set of guidelines, useful in practice but devoid of cognitive value.[24]

David Hume developed two lasting principles of positivist philosophy. First, he denied that human reason had any role beyond the development of mathematics and the application of common sense to our sense perceptions. According to Wright "the significance of David Hume in the history of modern philosophy consists, first, in his development of the empirical and psychological method in the theory of knowledge (epistemology) to its logical conclusions."[25]

> If we take in our hand any volume of divinity or school metaphysics, for instances; let us ask, Does it contain any abstract reasoning concerning quantity and number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames; for it can contain nothing but sophistry and illusion.[26] (emphasis in original)

Secondly, Hume formulated the question of "whether a knowledge, at once absolutely reliable and yet not devoid of content was possible."[27] Although Hume formulated this question he was unable of answer it leaving it to be wrestled with by later positivistic philosophers. These two major influences of David Hume's on the development of positivism earned him the label of "the father of positivism" and by implication the grandfather of the methodology of the empirical sciences.

While major postions of Hume's philosophy have been forgotten his empirical methodology and his demand that all knowledge, including any knowledge of the social realm, be consistent with this empirical method has earned him a special spot in the history of modern philosophy and in the history of social scientific methodology, as Fredrick

Mayer points out.

> Strangely enough, Hume's moral and political thoughts are frequently disregarded, but it must not be forgotten that his main purpose was to introduce the experimental method into the social sciences.[28]

William Wright maintains that Hume must receive much of the credit (or blame) for modern social science.

> . . . much of the lasting glory of David Hume lies in the fact that he showed that the empirical method of investigation can be employed in ethics and social sciences; he laid the foundations for much of the constructive work that has been accomplished in these fields since his time.[29]

Along with credit for modern social science's "constructive work" Hume must also be given credit for empirical social science's methodological problems. By laying the foundations for empirical social science's methods, including operationalism, Hume opened up the concept-data problem.

One response to the issues raised by Hume was that of Immanuel Kant's Critique of Pure Reason.[30] Hume's "skepticism horrified Kant" and so he attempted to refute this skepticism with a new theory of knowledge which would conserve "what was of real merit in Hume's empiricism."[31] Kant's response was to posit that there was more to knowledge than pure experience.

> But though all our knowledge begins with experience, it does not follow that it all arises out of experience.[32]

For Kant experience is the content of our knowledge, but our knowledge is ordered, connected and simplified by the human understanding. The form of knowledge comes from the mind through the "understanding."

> For experience is itself a species of knowledge which

> invloves understanding; and understanding has rules which I must presuppose as being in me prior to objects being given to me, and therefore as being a priori. They find expression in a priori concepts to which all objects of experience must agree.[33]

For Kant human knowledge is not merely pragmatic and probablistic. Knowledge conforms to certain concepts and categories which are psychological constants, invariable and irrelative to a particular content.

Like Hume, however, Kant does not assert that there is any resemblance between the world of our senses and understanding and the "real" world.

> What we have meant to say is that all our intuition is nothing but the representation of appearance; that the things which we intuit are not in themselves what we intuit them as being, nor their relations so constituted in themsleves as they appear to us, and that if the subject, or even only the subjective constitution of the senses in general, be removed, the whole constitution and all the relations of objects in space and time, nay space and time themselves would vanish.[34]

For Kant the "distinction between the phenomena (appearance) and the nouminon (reality) is extremely important."[35] While Kant attempted to refute Hume's skepticism, the Kantian subject must also remain skeptical of what appears to be for there may be no correspondence between appearance and reality. Fredrick Mayer has remarked that "at the end of the Critique of Pure Reason we are almost caught by the dilemma of Humian skepticism."[36]

Although Kant did not completely resolve the issues raised by Hume his philosophy has earned a special place in the history of Western philosophy. Kant, like Hume, stressed the importance of empirical data in the obtaining of knowledge, but, unlike Hume, he maintained

that abstraction, which is based on the a priori categories of the mind, is of cognitive significance. The conjunction of these two principles signalled the development of an alternative approach to an empirically relevant theory of knowledge. Much of Kant's importance lies in his offering of this alternative to positivist epistemology. Kant, like Hume, can be thought of as the father of an important tradition in Western philosophy, a tradition which has influenced some social scientists. Gideon Sjoberg and Roger Nett have remarked that all social researchers are either neo-Humians or neo-Kantians.[37] It is for this reason that the epistemology of Kant deserved brief mention here. Although this study is primarily concerned with neo-Humian sociological methodology this brief mention of the Kantian theory of knowledge should be suggestive of an alternative to the positivistic methodology being examined here.

Unlike Kant, John Stuart Mill, writing in the mid-ninetenth century, found Hume's empiricism "more satisfactory" and along with others, including Auguste Comte,[38] "developed positivism."[39] Mill's philosophy is relevant to the concept-data problem and sociological methodology for two reasons. First, he developed certain rules whereby, he thought, the empirical world could be conceptualized.[40] Secondly, he recognized the pragmatic character of empirical knowledge and tried to incorporate a utilitarian criterion for human action into his system. Mill accepted the principle that knowledge is ultimately experiential but tried to develop methods whereby experience could be organized and simplified without adding another component, such as the Kantian understanding, to human knowledge.

Mill asserted that is was possible to induce generalized concepts and principles from observation of particular objects or occurences.

> It consists in inferring from some individual instances in which a phenomena is observed to occur, that it occurs in all instances of a certain class; namely in all which resemble the former in what are regarded as the material circumstances.[41] (emphasis in original)

Induction is possible for Mill because he asserts that there is order in the natural world.

> We must first observe, that there is a principle implied in the very statement of what Induction is; an assumption with regard to the course of nature and the order of the universe: namely, that there are such things in nature as paralleled cases; that what happens once, will under a sufficient degree of similarity of circumstances, happen again, and not only once, but always. This, I say, is an assumption; involved in every case of induction. And, if we consult the actual course of nature, we find that assumption is warranted; the fact is so.[42]

Mill's justification for such an assumption is not that it is logically necessary but rather that it can be induced from experience, by "consulting the actual course of nature."

> Many of the uniformities existing among phenomena are so constant, and so open to observation as to force themselves upon men's involuntary recognition. Some facts are so perpetually and familiarly accompanied by certain others, that mankind learnt, as children now learn, to expect the one where they found the other long before they knew how to put their expectation into words, by asserting, in a proposition, the existence of a connexion between those phenomena. No science was needed to teach men that food nourishes, that water drowns, or quenches thirst, that the sun gives light and heat, that bodies fall to the ground.[43]

The task of the human intellect, according to Mill, is to discover

the general laws and uniformities present in nature.

Mill does recognize, however, that certain realms of human investigation, such as politics and history, are extremely complicated and for such phenomena the inductive or experimental method has only limited utility.

> If so little can be done by the experimental method to determine conditions of an effect of many combined causes, in the case of medical science, still less is this method applicable to a class of phenomena more complicated than even those of physiology, the phenomena of politics and history.[44]

Mill suggests an alternative method for the social sciences.

> The mode of investigation which from the proved inapplicability of direct methods of observation and experiment, remains to us as the main source of knowledge we possess, or can acquire, respecting the conditions, and laws of recurrence, or the more complex phenomena, is called in its most general expression the Deductive Method.[45]

Mill has led himself into a dilemma. If knowledge is experiential then from where do the general statements from which testable propositions are deduced come from. Mill's answer is simple, by induction.

> Some of these general truths will naturally be obtained by observation and experiment, others by deduction: the more complex laws of human action, for example may be deduced from the simpler ones; but the simple of elementary laws will always, and necessarily have been obtained by a directly inductive process.[46]

This is a peculiar position for a positivist. Mill must assert that the scientist needs more than the ability to accurately observe.

> For such cases something more is required than a mind accustomed to accurate observation and comparison. It must be a mind stored with general conceptions, previously acquired, of the sorts which bear affinity to the subject of the particular inquiry. And much will also depend upon the natural strength and acquired

> culture of what has been termed the scientific imagination; upon the faculty possessed of mentally arranging known elements into new combinations such as have not yet been observed in nature though not contradictory to any known laws.[47]

The obtaining of scientific knowledge then is not just an exercise in "experiencing" but, as Mill admits, involves some other type of "creative" ability and activity.

Although Mill suggests that it is possible to generalize and conceptualize on the basis of empirical evidence he must admit the ultimate uncertainty inherent in any generalizations based on such evidence. Like Hume, Mill recognizes that propositions based on past experience are not necessarily applicable to possible future experience.

> Propositions hitherto found true in every observed instance, may yet be no necessary consequence of laws of causation or of ultimate uniformities, and unless they are so, may, for aught we know, be false beyond the limits of actual observation: still more evidently must this be the case with propositions which are only true in a mere majority of the observed instances.[48]

Because we can never establish with certainty, only with differing levels of uncertainty, that propositions we arrive at are consequences of invariable natural laws we can never rellly establish absolute truth. Truth remains probablistic for Mill. The question remains then how can human action, including knowledge, be evaluated.

Mill offered an evaluative standard for human activity in his utilitarian ethics. Despite his own prohibition against absolutes, Mill asserts that the search for pleasure and the avoidance of pain is an absolute law of human behavior.

But these supplementary explanations do not affect the

> theory of life on which this theory of morality is grounded--namely, that pleasure and freedom from pain are the only things desirable as ends; and that all desirable things are desirable either for pleasure inherent in themselves or as means to the promotion of pleasure and prevention of pain.[49]

Mindful of the extreme hedonistic implications of this position Mill modifies his position by adding that people must be taught a "nobleness of character," that is to realize what true pleasure is.

> Utilitarianism, therefore, could only attain its end by the general cultivation of nobleness of character, even if each individual were only benefited by the nobleness of others, and his own, so far as happiness is concerned, were a sheer deduction.[50]

Mill even refers the reader of his Utilitarianism to his positivist colleague, Auguste Comte, for instruction into the necessity for the cultivation of a "feeling of unity" in the schools and religious institutions.[51] In other words, Mill is asserting that the value of all activity, including knowledge, is measurable against the ultimate end--"happiness." However, many men will need to learn what happiness is before they can measure their actions accordingly. Instruction into "nobleness of character" will presumably come from the positivist priesthood composed of such men as Comte and Mill.[52]

Mill's often elaborate attempts to escape the dilemmas of a positivistic theory of knowledge do not adequately resolve the problems which Hume had created by basing all knowledge totally on experience. Mill justifies the inductive process by stating that nature is orderly, but then attempts to prove that nature is orderly by an inductive process. Besides this logical slight of hand, given the empirical basis of knowledge and without the perfect perception of God, Mill or anyone

else can not assert that all sense data has an underlying order, at least not by induction. In fact, given the empirical basis of knowledge only God (or some equivalent ides) could discover that nature is orderly by induction.[53] Secondly, Mill, realizing that human behavior is often too complex for application of the inductive method proposed a deductive method for the social sciences. The laws which are deductively tested must first be arrived at by induction. We must induce in order to deduce whereby we overcome the limitation of induction. Thirdly, although Mill asserted that there could be no absolutes he proposed an absolute goal for all human activity. The usefulness of any activity, including knowledge, in obtaining happiness, as defined by Mill and his colleagues, will be its value.[54] Mill's attempts to overcome the skepticism inherent in Hume's theory of knowledge without altering the core tenants of Humian or positivistic epistemology led him into assumptions and contradiction.

Although Mill's elaboration of the empirical epistemology was not able to convincingly add to that of Hume's, Mill's special contribution to the development of positivism was his attempt to formulate a utilitarian or pragmatic standard of human knowledge.[55] Mill's utilitarian ethics foreshadowed the later development of the positivistic theory of knowledge by the American pragmatists. According to Kolakowski, pragmatism is "the most original American contribution to the history of philosophy."[56] As Kolakowski also notes pragmatism as a philosophical style reflected the "ideals of that part of the world [the United States] at a time when [particularly between the turn of the century and the Great Depression] its outlook was most optimistic

and its spirit of enterprise most energetic."[57] The pragmatists claimed that they had developed a flexible tool of everyday life which could offer a solution to the dilemmas which faced those seeking meaningful knowledge about the empirical world. Because modern empirical sociology was also becoming an American phenomenon around this same time it was to be expected that the influence of pragmatism on empirical sociologists' theory of knowledge and methodology would be important.[58]

Probably the earliest expression of pragmatism, or what would later become known as pragmatism, was by Charles S. Peirce. Writing around the turn of the century, Peirce refers to his system of philosophy as "Critical Common Sensism" and later as "Pragmaticism." These self applied labels are signals not only of Peirce's place in the tradition of positivism but of the type of solutions he advanced to the problems of an empirical epistemology. According to Peirce, not only is knowledge rooted in experience but distinctions of thought are also practical distinctions.

> Thus we come down to what is practical as the root of every real distinction of thought, no matter how subtle it may be; and there is no distinction of meaning so fine as to consist in anything but a possible difference of practice.[59]

Peirce asserts that knowledge is not only experiential but must also be based on practical need and practical activity. Reflecting the growing stress on scientific experimentation and technological inovation, Peirce was not satisfied to let knowledge rest on passive observation, but rather maintained that knowledge must be sought through the active manipulation of the objects of experience.

Peirce's faith in the experimental method was so strong that he suggests that every thing knowable must be known experimentally.

> . . . since obviously nothing that might not result from direct experiment can have any direct bearing upon conduct, if one can define accurately all the conceivable experimental phenomena which the affirmation or complete definition of the concept, and there is absolutely nothing more in it.[60] (emphasis in original)

William Wright summarizes Peirce's criterion of knowledge by noting that for Peirce "an idea which cannot be tested by action is devoid of all significance.[61] Peirce acknowledges the biblical advise, "by their fruits ye shall know them. " In fact, Perice suggests that we can conceptualize the empirical world by reference to the effects of the objects of experience on practical activity.

> It appears, then, that the rule for attaining the third grade of clearness of apprehension is as follows; consider what effects, which might conceivably have practical bearings we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object.[62]

Peirce added a new dimension to positivism or at least accentuated a tendancy that was already there. He proposed that the value of knowledge is relative to its practical consequences or effects. This formulation offers as a criterion of knowledge the practical significance of a particular conception for the purposes of the subject. Rather than a novel twist this relativism seems to be the inevitable result of the development of positivistic philosophy.

William James, although not as familiar with or as loyal to scientific experimentalism as Peirce, expanded on Peirce's early formulations of a practical philosophy. While Peirce "interpreted pragmatism as a method" James expanded on that interpretation.[63] James

acknowledges his debt to the positivist tradition but notes that his system differs from the earlier positivists.

> My discription of things, accordingly, starts with the parts and makes of the whole a being of the second order. It is essentially a mosaic philosophy, a philosophy of plural facts like that of Hume and his decendants, who refer these facts neither to substances in which they inhere nor to an absolute mind that creates them as its objects. But it differs from the Humean type of empiricism in one particular which makes me add the epithet radical.[64]

James's self proclaimed radical empiricism differs from Humian empiriciam in that James adds another dimension to the realm of experience. According to Fredrick Mayer, James felt that "experience . . . is not discontinuous but continuous; it contains not merely objects but also relations."[65]

> For such a philosophy, the relations that connect experiences must themselves be experienced relations, and any kind of relation experienced must be accounted as 'real' as anything else in the system.[66] (emphasis in original)

In other words, relations, such as cause and effect, can not be excluded from empirical knowledge just because they are not perceived in the same manner as material objects. Relations are experienced thus they must be part of an empirical system of knowledge. James does not make the distinction that Hume did between inferring from experience or habits of thought and experience per se. James sees no reason to question our "habits of thought" which develop through practical activity. If there is no other world beyond the perceived world, world of appearance, then relations are as much a part of knowledge as objects.

As has already been noted this position, that only perceptions

can be known, leads to an extreme relativism. Truth becomes an individualistic quality, a term without meaning beyond reference to the practical activity of a particular subject. The individual's knowledge is valid in so far as it makes itself practically valid for that individual.

> Why insist that knowing is a static relation out of time when it practically seems so much a function of our active life? . . . When the whole universe seems only to be making itself valid and to still be incomplete (else why its ceaseless changing?) why, of all things, should knowing be exempt? Why should it not be making itself valid like every thing else? That some parts of it may already be valid or verified beyond dispute, the empirical philosopher, of course, like anyone else, may always hope.[67]

Knowledge is not about something seperate from us but is a practical means for dealing with our "ceaselessly changing" environment. Knowledge is testable by reference to its practical consequences for the individual subject. If it works for the individual it is true for him or her at that time.

This extreme relativism has obvious implications for the task of ordering and conceptualizing the empirical world.

> Classifications depend on our temporary purposes. For certain purposes it is convenient to take things in one set of relations, for other purposes in another set.[68]

For James as for Peirce, the manner in which we simplify, order, and conceptualize the empirical world does not rest on a faith in the orderliness of nature, nor is it imposed by the psychological processes of the mind, but rather it is dependent on our immediate practical concern. Kolakowski has noted that Jame's doctrine is distinguished by the "unlimited application he makes of the utilitarian conception of

knowledge."[69] James's only qualification on human knowledge is that it conform to the individual subject's practical needs.

Probably the most articulate spokesman of American pragmatism was John Dewey. It was Dewey who, more than either Peirce or James, tried to present a systematic statement of pragmatic epistemology. Dewey argued that the history of human thought was propelled by a Quest for Certainty. Dewey believed that the reason previous philosophers had attempted to create a realm of pure reason was to avoid the uncertainty that the everchanging empirical world presented. The advent of positivism and experimental science changed the direction of this Quest for Certainty away from developing an unchanging abstract rational system and toward removing uncertainty from our experienced world.

> Henceforth the quest for certainty becomes the search for methods of control; that is, regulation of conditions of change with respect to their consequences.[70]

This new direction for the Quest for Certainty could only have been effected by an experimental model of knowledge.

Like William James, Dewey stresses that knowing is not achieved by passive thought or reflection.

> Knowing is itself a mode of practical action and is the way of interaction by which other natural interactions become subject to direction.[71] (emphasis in original)

Dewey not only admonishes the idealists with this conception of knowledge but also the earlier positivists.

> Only the peculiar effect exercised by exclusive preoccupation with knowledge could have led thinkers to identify experience with reception of sensations, when five minutes observation of a child would have disclosed

> that sensations count only as stimuli and registrars of motor activity expended in doing things.[72]

Dewey not only draws a distinction between pragmatism and idealism, but also, like James, between pragmatism and earlier forms of positivism.

By conceiving of knowledge as action (or adaptation) Dewey overcomes some of the problems the earlier positivists encountered. Dewey has no difficulty including mathematics in the realm of human knowledge. If knowledge is experience and experience is activity then mathematics is knowledge obtained by human mental activity and is not outside the realm of experience.

> Experimental empiricism has none of the difficulties of Hume and Mill in explaining the orgin of mathematical truths. It recognizes that experience, the actual experience of men, is one of doing acts, performing operations, cutting, marking off, dividing up, extending, piecing together, joining, assembling and mixing, hoarding and dealing out; in general selecting and adjusting things as means for reaching consequences.[73]

By extending this line of reasoning further knowledge can even be advanced by the use of purely symbolic procedures.

> By means of symbols, whether gestures, words or more elaborate constructions, we act without acting. That is we perform experiments by means of symbols which have results which themselves only symbolize, and do not therefore commit us to actual or existential consequences.[74]

In other words, we can resolve the objects of nature into quantities or symbols for the purposes of calculation and manipulation by merely thinking things so. Knowledge is based on activity and activity is the interaction between the subject and his or her enviroment. Assigning symbols to the objects of our experience is like assigning an

exchange value to objects of trade in a money economy. Currency is meaningless by itself but as it is associated with scarce objects it becomes real for the purposes of trade.

> The resolution of objects and nature as a whole into facts stated exclusively in terms of quantities which may be handled in calculation, such as saying that red is such a number of changes while green is another, seems strange and puzzling only when we fail to appreciate what it signifies. In reality, it is a declaration that this is the effective way to think things; the effective mode in which to frame ideas of them, to formulate their meanings. The procedure does not vary in principle from that by which it is stated that an article is worth so many dollars and cents. The latter statement does not say that the article is literally or in its ultimate 'reality' so many dollars and cents; it says for the purposes of exchange that is the way to think of it, to judge it.[75] (emphasis in original)

Any activity, whether physical or mental, which enables the subject to fulfill his or her immediate intellectual aims in a legitimate method.

Dewey was attempting to overcome the dualism present in the philosophy of Hume and other positivists between perceptions (experience) and thought. Dewey recognizes along with previous positivists that knowledge ultimately rests on perception, but he refused to limit knowledge exclusively to that realm.

> Directed activity demands ideas which go beyond the results of past perceptions, for it goes out to meet future and as yet unexperienced situations. But it deals, both in orgin and outcome, with things which can be had only directly; through immediate perception and enjoyment.[76]

Dewey argues that there is a fallacy involved in limiting knowledge exclusively to either the realm of sense perceptions or the realm of conceptions.

> Thus we are led by another road to the conclusion that

> the basic error of traditional theories of knowledge resides in the isolation and fixation of some phase of the whole process of inquiry in resolving problematic situations. Sometimes sense data are so taken; sometimes, conceptions; sometimes, objects previously known. An episode in a series of operational acts is fastened upon, and then in its isolation and consequent fragmentary character is made the foundation of the theory of knowing in its entirety.[77]

Rather than isolating or fixating on a particular stage of the knowing process the total process must be included in a pragmatic methodology.

In order to avoid the mistake of isolating a particular stage of the method of knowing and mistaking that step for the whole method a methodology of knowledge must be articulated and perfected. "Intelligence in operation, another name for method, becomes the thing most worth winning."[78] Dewey asserts that the value of any cognition is dependent on the method by which the particular cognition was arrived at.

> The statement may sound strange. But it is only saying that the value of any cognitive conclusion depends upon the method by which it is reached, so that the perfecting of method, the perfecting of intelligence, is the thing of surpreme value.[79] (emphasis in original)

Dewey held that the perfection of method was dependent on the efforts of the mathematican and the physicist.

> Nevertheless in the end thinkers in all lines are dependent upon the mathematical and the physical inquirer for perfecting of the tools employed in their respective callings.[80]

Through the efforts of these scientists the whole process of knowledge gathering, the methodology of various realms of inquiry, will be advanced.

For Dewey the most promising method of knowledge, and thus

the one to be perfected is the experimental method.

> It is, once more, a hypothesis rather than a settled fact that extension and transfer of the experimental method is generally possible. But like other hypotheses it is to be tried in action, and the future history of mankind is at stake in the trail.[81]

Dewey even suggests that the experimental method is applicable to the realm of human values.

> Experimental empiricism in the field of ideas of good and bad are demanded to meet the conditions of the present situation.[82]

The distinction between physical, social and moral objects of knowledge is one of varying levels of complexity and not one of differences in the nature of their realities.

> Artifical simplification or abstraction is a necessary precondition of securing ability to deal with affairs which are complex, in which there are many more variables and where strict isolation destroys the special characteristics of the subject. This statement conveys the important distinction which exists between physical, social and moral objects. The distinction is one of methods of operations not of kinds of reality.[83] (emphasis in original)

While "methods of operations" might differ, all objects of human knowledge, because the nature of their realities are identical, can be approached with a unified methodology. The experimental method, as developed and perfected by the scientific elite, the mathematicans and physicists, is the universally applicable methodology for gaining human knowledge, according to John Dewey.

Dewey's belief in the universal applicability of the experimental method would seem to imply, given the pragmatic theory of value, that he believes in a universal goal for humankind. If the value of an object or activity is dependent on the practical con-

sequences it has for a subject's purposes than a method of knowledge, an activity, universally applicable implies the existence of a universal goal or purpose. This is where Dewey's pragmatism and James's diverge. Instead of judging the value of knowledge on the basis of its consequences for the individual subject, as James did, Dewey has implied the existence of a collective goal.[84] Like John Stuart Mill, Dewey believed that all mankind wants or should want the same thing.

The collective goal which Dewey seems to be suggesting is the complete control by human beings of their environment.

> Knowing is, for philosophical theory, a case of specially directed activity instead of something isolated from practice. The quest for certainty by means of exact possession in mind of immutable reality is exchanged for a search for security by means of active control of the changing course of events.[85]

For Dewey this control is the ultimate result of intelligence in nature. Intelligence is a part of nature and thus the process by which human intelligence comes to control the rest of nature is a natural process.

> The intelligent activity of man is not something brought to bear upon nature from without; it is nature realizing its own potentialities in behalf of a fuller and richer issue of events.[86]

If human control over the natural environment is nature realizing its own potentialities then value is "identical with goods that are the fruit of intelligently directed activity."[87] As Mayer notes, Dewey maintains that "the more" the human subject "applies his knowledge and the more he experiments, the more he will contribute to civilization."[88] For Dewey the advancement of science and technology over nature is the goal of the human species.

As Kolakowski points out the whole anti-metaphysical doctrine, as expressed by John Dewey, ends up resting on a given system of valuation "as relative and closely bound up with a particular cultural background as any other."[89] Dewey ultimately confesses his faith in the experimental method of knowledge as the savior of mankind. The objects of this method are neither objects of an external reality nor categories of the mind. They are interactions of subjects with their perceived world. How then does Dewey avoid a paralyzing relativism? Without attempting to provide a basis for his faith in intelligent activity, Dewey assumes that intelligent activity, that is activity conforming to the operations of experimental empiricism, will necessarily provide "good" results. Not only does Dewey place his faith in the experimental method but also in the desirability of control by human intelligence over nature. Dewey's faith is a reflection of of the faith and hope in science and technological progress that characterized American thought during the time Dewey wrote and lived, especially during the nineteen twenties.

It was also during the late nineteen twenties and subsequently that the first attempts at developing a truly empirical sociology were being made in the United States. As has already been noted it is expected that any empirical methodology of the social sciences would be based on a positivistic theory of knowledge. Not only could the new empirical sciences be expected to adopt a positivistic epistemology, but also, thereby, inherit the problems, such as the concept-data problem, of positivism. It is also expected that proposed solutions to the methodological problems of empirical social science would be based

on solutions advanced in positivistic philosophy. For the positivist philosophers as for empirical sociologists the experienced or perceived world is incomprehensible as it is given to our senses. It is composed of an infinite number of objects and events in a constant flux. In order for the human subject to gain any knowledge, in order for the subject to understand the perceived world, some form of mental shorthand, some form of generalization, in short, some way of conconceptualizing of the empirical world must be developed. If, then, as Hume and his decendants suggested, the human mind is merely a collection of perceptions and memories of perceptions how can the human subject, the sociological researcher for example, ever validly use concepts to refer to groupings of his or her perceptions.

The solution to this problem has already been suggested, both directly and indirectly, by the philosophers examined here. Without any divine authority or a priori psychological constants such as the Kantian categories the only test for knowledge or methods of knowing seems to be a pragmatic one. In other words, the use of certain concepts is valid if they work. However, this still leaves unanswered the question of work for what. William James left the goal of knowledge up to the individual subject, but both Mill and Dewey thought that knowledge must be tested by reference to its consequences in reaching a collective goal of human activity. Dewey, the most contemporary of the philosophers examined here, defined the practical goal of human activity as increasing human control over the natural environment, or the Quest for Certainty. For Dewey the method of knowing which best suited that goal was experimentalism.

The solution then to the concept-data problem in positivistic methodology has already been suggested by the pragmatists. Firstly, the definition of experience, instead of being the passive reception of external stimuli, became action. The act of knowing, or experiencing, is one of rearranging and manipulating perceptions or representations of perceptions (symbols) in order to bring the subject closer to his or her goal. Concepts, then, can be defined in whatever manner serves the subject's purpose. However, the purpose or goal of human activity is a collective one thus the definitions used must be communicable and repeatable. The subject must be able to recount the operations which he or she used in defining a particular concept. In this way the store of human knowledge can be added to increasing the human species' ability to predict and control, to, borrow a textbook cliché, the empirical world. It is expected that the methodologists of empirical sociology encountering this same concept-data problem would adopt a solution similiar to the pragmatic one outlined above.

NOTES

[1]Marcuse, Herbert, Reason and Revolution, (London: Routledge and Kegan Paul, 1955 ', p. 328.

[2]Middle class does not refer to that same economic grouping that is referred to when this same term is used in modern sociological literature. It is used here to refer to the independent merchants, craftsmen, entrepreneurs, and farmers as distinct from the aristocracy and the peasantry. The term middle class as it is used here is synonymous with the term bourgeoise as it is used in the writings of Karl Marx and others.

[3]Wright, William K., A History of Modern Philosophy, (New York: MacMillan, 1941), p. 10.

[4]Aquinas, St. Thomas, Introduction to St. Thomas Aquinas, ed. by Anton Pegis, (Toronto: Random House, 1948), p. 6.

[5]Ibid., p. 128.

[6]The preceeding discussion of the socio-historical basis of positivism is based in part on Marcuse, op. cit., pp. 251-257, 323-330; Martindale, Don, The Nature and Types of Sociological Theory, (Boston: Houghton Mifflin, 1960), Chapter II, "The Birth of the Social Sciences," pp. 29-47; and Mayer, Fredrick, A History of Modern Philosophy, (New York: American Book, 1951), pp. 11-12.

[7]Kolakowski, Lesek, The Alienation of Reason, trans. by Norbert Gutman, (Garden City, N.Y.: Anchor Books, 1969), p. 9.

[8]Ibid., pp. 3-9. The term positivism will be used here to refer to those systems of philosophy which incorporate these four tenants.

[9]Ibid., p. 30.

[10]Hume, David, An Enquiry Concerning Human Understanding and Selections from a Treatise of Human Nature with Hume's Autobiography and A Letter from Adam Smith, (Chicago: Open Court Publ., 1927), p. 15. This reference refers to all the preceeding quotations in this paragraph.

[11]Ibid., p. 16.

[12]This arguement is presented by Hume on (Ibid.) pages 13-20.

[13]Ibid., p. 224.

[14]It should be noted, however, that Hume's claim that sense perceptions are our only basis of knowledge is an idea without experiential basis and is an a priori assumption.

[15]Hume, op. cit., p. 29.

[16]Ibid., p. 76.

[17]Ibid., pp. 84-85.

[18]Ibid., p. 37.

[19]Ibid., p. 57.

[20]Ibid., p. 228.

[21]Ibid., p. 247.

[22]Ibid., p. 113, This reference refers to all the preceeding quotations in this paragraph.

[23]Ibid., p. 173.

[24]Kolakowski, op. cit., p. 38.

[25]Wright, op. cit., p. 217.

[26]Hume, op. cit., p. 173.

[27]Kolakowski, op. cit., p. 44.

[28]Mayer, op. cit., p. 230.

[29]Wright, op. cit., p. 217.

[30]The quotations here will be limited to Kant's introduction to the Critique. It would have been a lengthy and unnecessary diversion to try and present Kant's entire epistemological system. The introduction to the Critique seemed adequate for outlining Kant's theory of knowledge.

[31]Wright, op. cit., p. 217.

[32]Kant, Immanuel, Critique of Pure Reason, trans. by N.K. Smith, (London: MacMillan, 1934), p. 25.

[33]Ibid., pp. 16-17.

[34]Ibid., p. 54.

[35]Mayer, op. cit., p. 303.

[36]Ibid., p. 295.

[37]Sjoberg, Gideon, and Nett, Roger, A Methodology for Social Research, (New York: Harper and Row, 1968), p. 33.

[38]It is interesting to note here that Mill was impressed by the methodological and epistemological principles of Auguste Comte's, the so-called father of sociology's, "positive philosophy." (Comte had a great ability to coin words. Not only did he coin the label positivism, but also the term sociology.) Although Mill rejected Comte's Religion of Humanity, there is a similarity of methods between Mill and Comte's positivism. See Manuel, Frank, The Prophets of Paris, (New York: Harper and Row, 1965), pp. 261, 266, 267 for a discussion of Comte and Mill's friendship and exchange of views and support.

[39]Wright, op. cit., p. 217.

[40]It is interesting that Mill's experimental methods are still presented in some sociology methods texts as guidelines for sociological research, For example, see Phillips, Bernard, Social Research: Strategy and Tactics, (New York: MacMillian, 1966), pp. 87-90.

[41]Mill, John Stuart, System of Logic, (New York: Harper and Brothers, 1855), p. 183.

[42]Ibid., p. 184.

[43]Ibid., p. 191.

[44]Ibid., p. 263.

[45]Ibid., p. 264.

[46]Ibid., p. 264.

[47]Ibid., p. 397.

[48]Ibid., p. 354.

[49]Mill, John Stuart, Utilitarianism, ed. by Oskar Peist, (New York: Bobbs Merrill, 1957), pp. 10-11.

[50]Ibid., p. 16.

[51]Mill directs the reader to M. Comte's "Traite de politique positive" on (Ibid.), page 42.

[52]Anyone familiar with modern psychological behaviorism, especially that of B.F. Skinner, should be familiar with these arguements. Notice the similarity between these views and those in Skinner, B.F.

Beyond Freedom and Dignity, (New York: Bantam Books, 1972).

[53]This arguement is adapted from Willer, David and Willer, Judith, Systematic Empiricism, (Englewood Cliffs, N.J.: Prentice Hall, 1973), p. 42.

[54]There is a notable similarity between this utilitarian conception of value and that of value in a market money economy. Underlying both is the belief that all value is measurable on a standard scale. (If it is not measurable then it must be valueless.)

[55]Kolakowski, op. cit., p. 76.

[56]Ibid., p. 149.

[57]Ibid., p. 150. (paranthetic comments mine)

[58]Without getting overly concerned with this issue it should be pointed out that there are various interpretations of why empirical sociology became a peculiarly American discipline when its philosophical roots and heritage were in Britan and France. One explanation is the differential institutionalization of the discipline, (Shils, Edward, "Tradition, Ecology, and Institution in the History of Sociology," Daedalus, XCIX, (Fall, 1970), pp. 760-825) and there are various other sociology of knowledge type explanations. It is interesting that John Dewey was in the philosophy department at the University of Chicago and probably influenced directly and indirectly American sociology by virtue of this position. The University of Chicago had the first department of sociology in the United States and is still a center of education in sociology. Besides the influence of Dewey there was the obvious influence of George Herbert Mead, Dewey's departmental colleague, who shared many of Dewey's pragmatic views.

[59]Peirce, Charles S., "How to Make Our Ideas Clear," in Selected Writings (Values in a Universe of Chance), ed. by Philip Wiener, (New York: Dover Publ., 1958), p. 122.

[60]Wright, op. cit., p. 511.

[61]Peirce, "What Pragmatism Is," in op. cit., p. 182.

[62]Peirce, "How to Make Our Ideas Clear," op. cit., p. 124.

[63]Mayer, op. cit., p. 528.

[64]James, William, Essays in Radical Empiricism and A Pluralistic Universe, ed. by Ralph Perry, (New York: Dutton, 1971), p. 24.

[65]Mayer, op. cit., p. 532, (emphasis in original).

[66]James, op. cit., p. 25.

[67]Ibid., p. 41.

[68]Ibid., p. 74.

[69]Kolakowski, op. cit., p. 155.

[70]Dewey, John, The Quest for Certainity: A Study of the Relation of Knowledge to Action, (New York: Minton, Balch, and Co., 1929), p. 128.

[71]Ibid., p. 107.

[72]Ibid., p. 156.

[73]Ibid., p. 156.

[74]Ibid., p. 151.

[75]Ibid., p. 134.

[76]Ibid., p. 171.

[77]Ibid., p. 188.

[78]Ibid., p. 204.

[79]Ibid., p. 200.

[80]Ibid., p. 221.

[81]Ibid., p. 194.

[82]Ibid., p. 258.

[83]Ibid., p. 217.

[84]This analysis borrows heavily from Kolakiwski, op. cit., pp. 163-164.

[85]Dewey, op. cit., p. 204.

[86]Ibid., pp. 214-215.

[87]Ibid., p. 286.

[88]Mayer, op. cit., p. 541.

[89]Kolakowski, op. cit.

[90] In order to avoid confusion it should be noted that Dewey's Quest for Certainty, op. cit., was written after Percy Bridgemen's formulation of operationalism in 1928. In fact, Dewey refers to Bridgeman in the Quest. However, Dewey had been writing for sometime and his epistemological system was not developed around Bridgeman's formulation. The ease with which Dewey could accomadate operationalism into his system attests to the fact that operationalism was the logical outcome of positivism as developed by the pragmatists. Dewey's epistemology, which had been labeled pragmatic or instrumentalism, was referred to as operationalism after publication of the Quest.

III. THE OPERATIONAL METHOD AND EMPIRICAL SOCIOLOGY

For whatever reasons, and they are to numerous to mention here, empirical sociology rose to a position of prominence in the United States in the first half of the twentieth century. Aspiring social scientists borrowed the models and methods of the more established natural sicentists along with philosophical and methodological arguements of the positivist philosophers. While hoping for the proven productivity of the experimental method in other fields of inquiry social scientists encountered numerous problems inherent in the epistemology of the positivists. One such problem was that of relating general or abstract concepts to empirical data. The development and attempted resolution of the problem in the writing of positivistic philosophers has already been addressed (Chapter II). The aspiring empirical sociologists and psychologists did not interpret the methodological problems of positivism, such as the concept-data problem, as indicators of the inadequacy of positivistic methodology for their purposes. Instead they turned their attention to the efforts being made by natural scientists to overcome such problems.

While the difficulty of tieing concepts to experience, or to empirical referents, had always been a problem for the philosophers of empirical science it had not been a question which particularly troubled working natural scientists. The scientific advances and promises made over the past two centuries had kept most natural scientists oblivious to the problems inherent in their methodology.

It was with the introduction of Einstein's theories into modern physics that a methodological crisis was effected in that discipline. Einstein proposed a new "paradigm" or guiding theoretical framework for physics and challenged the traditional Newtonian conception of the physical world.[1] As Thomas Kuhn points out it is in times "of acknowledged crises that scientists have turned to philosophical analysis as a device for unlocking the riddles of their field."[2] The paradigm shift from Newtonian physics to modern or Einsteinian physics brought specific attention to the problem of concept formation and use in physical research.[3] It is no surprise then that theoretical physicists turned some of their attention to the concept-data problem during the early part of the twentieth century.

In 1928 the first edition of a book entitled The Logic of Modern Physics was published. In it the author, Percy Bridgeman, outlined a method, soon to become known as operationalism or operationism, for overcoming the concept-data problem as it applied to research in physics which involved the use of abstract conceptions such as length.

> The concept of length is therefore fixed when operations by which length is measured are fixed: that is, the concept of length involves as much an and nothing more than the set of operations by which length is determined. In general we, mean by any concept nothing more than a set of operations; the concept is synonymous with the corresponding set of operations.[4]

Bridgeman's now classic formulation was not immediately accepted into the methodology of physics but, because it offered a solution to the general concept-data problem inherent in positivistic methodology,

Bridgeman's operational method became a topic of much concern in fields of inquiry other than physics. Alert sociologists and psychologists, wrestling to develop their own empirical methodology, were quick to adapt Bridgeman's formulation to the realm of social scientific research. As A. Cornelius Benjamin has noted, Bridgeman's contribution to physics is only part of his importance.

> While this fact [his contribution to physics] would have been sufficient to justify the importance of Bridgeman's contribution to the theory of method, a more significant consequence was the general adoption of his point of view by other scientists, particularly by sociologists and psychologists.[5] (parenthetic comments mine)

It is because of this "more significant consequence," the adoption of his method by social scientists, that Bridgeman and the method of operationalism are important to this discussion.

It is not at all surprising that students of human individual and social behavior would turn to the methodology of the natural sciences for direction in their own inquiries. The whole direction of positivistic philosophy had been toward applying experimental methodology to social and moral questions; a position most recently suggested by the American pragmatists. The direction of Western philosophy, as expressed by the positivistic philosophers, was to subsume all realms of possible human knowledge under one methodology. It is no surprise that some social scientists, such as Carroll Pratt, should see no difference between the objects of interest of the social scienctists and those of the natural scientists.

> They [different sciences] do not represent basic differences in subject-matter, for the subject-matter of all sciences comes from the same initially undifferentiated stuff, viz., direct experience.[6] (paranthetic

comments mine)

If all human knowledge is ultimately rooted in experience then the experimental method, the positivistic method, is applicable to all areas of human knowledge. Due to the success, pragmaticly speaking, of the natural sciences, especially physics, social scientists looked to physicists, such as Percy Bridgeman, for methodological guidance, as John Dewey had advised.[7]

While Bridgeman's "operationalism" was an important development in "scientific methodology" Bridgeman maintained that he was not setting up a "philosophical system" or elaborating a "profound new theory of the nature of knowledge."[8] He disassociated himself from those who have attempted to elaborate such a philosophical system using his formulation as a starting point. Although Bridgeman argues against labeling operationalism a philosophical system he does not belittle the importance of his formulation.

> Not only will operational thinking reform the social art of conversation, but all our social relations will be liable to reform. Let any one examine in operational terms any popular present-day discussion of religious or moral questions to realize the magnitude of the reformation awaiting us.[9]

Bridgeman might seem slightly enthusiastic when evaluating the importance of his own contribution but there is no doubt that it is an important development. However, it is also true, as Bridgeman maintains, that he did not effect a new theory of knowledge or meaning. Bridgeman's contribution is in attempting to resolve a troublesome problem of positivistic epistemology and not in creating an epistemology to replace it.

Franz Alder has pointed out that "operational defining is based on a definite epistemology and makes sense only if that epistemology is accepted."[10] That "definite epistemology", given Bridgeman's background in experimental science, would most likely be positivistic. In fact one of Bridgeman's social scientific adherents, Carroll Pratt, has remarked that all good experimentalists have been operationalists.

> All good scientists have been operationists in deed, if not in word. And philosophers like Bacon and J. S. Mill have also been operationists in spirit, if not in deed.[11]

Rather than argue over competing claims the best way to discover the epistemological basis of Bridgeman's operationist method, as Benjamin points out, is to analyze Bridgeman's ideas.

> Futhermore, an analytic exposition of Bridgeman's ideas might enable us to detect the various threads which make up the texture of his position. Two of these would certainly be empiricism and pragmatism.[12]

As Benjamin notes, it is anticipated that Bridgeman's ideas are firmly rooted in what has been called here the positivist tradition.

Bridgeman places himself firmly in the positivist tradition along with Hume and Mill when he remarks in the opening of The Logic of Modern Physics that "experience is determined only by experience."[13] The fact that Bridgeman was helping effect the rejection of absolutes in physics also suggests that operationalism is directly descended from the philosophy of David Hume.

> The "absolute" therefore disappears in the original meaning of the word. But the 'absolute' may usefully return with an altered meaning, and we may say that a thing has absolute properties if the numerical magnitude is the same when measured with the same formal procedure by all observers. Whether a given property is absolute or not can be determined only by experiment,

> landing us in the paradoxical position that the absolute is only relative to experiment.[14]

As Benjamin has noted, Bridgeman's rejection of "absolutes" is, at the least, an implicit rejection of the a priori.[15] If there are no absolutes then nothing can be true before first being experientially verified. Bridgeman's rejection of absolutes and thus of a priori propositions places him in the same positivist tradition as the philosophers examined in Chapter II.

The lack of a priori categories of knowledge plus the rejection of the possibiliby of experiencing universals led the positivists into the dilemma of how to use abstract terms to refer to an experience which is made up of countless particular perceptions. If Bridgeman faced the concept-data problem then, like earlier positivists, he not only rejected the a priori but also the "reality" of universals. This rejection becomes apparent in Bridgeman's discussion of developing new operations for determining a concept.

> These new operations are, of course, to be so chosen that they give, within experimental error, the same numerical results in the domain in which two sets of operations may be both applied; but we must recognize that in changing the operations we have really changed the concept, and that to use the same name for these different concepts over the entire range is dictated only by considerations of convenience, which may sometimes prove to have been purchased at too high a price in terms of unambiguity.[16] (emphasis in original)

As Benjamin points out "experience, for Bridgeman, at least to the extent to which it is made up of operations, contains no universals but only particulars."[17]

Along with his stress on experience and his rejection of ab-

solutes and the a priori. Bridgeman, accepting the major proscriptions of the positivistic method, adopted the nominalist position that only particulars could be known. Benjamin outlines the overall similarity between Bridgeman's views and those of earlier positivists.

> It appears, then, that Bridgeman is a good empiricist both in his positive emphasis on experience as the source of knowledge, and in his denial of the need for supposing either the a priori or the mystical has any cognitive role to play. He is empirical also in his strong emphasis on particulars rather than universals. . . . Finally, he accepts the general spirit and approach of the positivists.[18]

However, Bridgeman's methodology must go beyond that of the early positivists for if his methodology did not go beyond theirs he, like the early positivists, would never have been able to propose the operational solution to the concept-data problem.

According to Benjamin, although "Bridgeman seldom refers to pragmatism as such" his theory of knowledge "could be more effectively described as an example of this particular kind of knowledge."[19] Like Peirce, Bridgeman was most concerned with the clarity of concepts.[20] A question only has meaning for Bridgeman if it is "possible to find operations by which an answer may be given to it."[21] For Bridgeman as for James and Dewey, the whole idea of operation implies activity, the directed activity of a human subject,[22] which in turn implies that experiencing or knowing is human acitvity. Bridgeman also adopts a pragmatic criterion for judging methods of knowing.

> We have merely a pragmatic matter, namely that we have observed after much experience that if we want to do certain kinds of things with our concepts, our concepts had better be constructed in certain ways.[23]

According to Bridgeman the value of our concepts, or probably all method-

rests on whether they work for our purposes. It is by adopting these pragmatic positions that Bridgeman was able to arrive at his method of operationalism.

Bridgeman, like most empirical scientists, inherited the concept-data problem when he accepted the positivist proscription that human knowledge be limited to experienced particulars. However, by adopting the view that experience involves activity, or as Dewey would say "cutting, marking off, dividing up, extending, piecing together,"[24] Bridgeman found an escape from the concept-data problem. If experience is activity then activity which helps "us do certain things" is legitimate for doing those things. If our goal is knowledge and we are confronted by the question of how we can relate our concepts to empirical referents we are in actuality asking how we can find activities to make such concepts empirically valid. If we can devise operations to measure or determine a quality, or quantity, or an object then we have experientially defined our concept by making it synonomous with these operations. The concept is true then if it fulfills our practical goal, knowing for the purpose of prediction and control.

Although the philosophical basis of Bridgeman's ideas might seem obvious and unimportant they are central to this discussion. It would be impossible to adequately analyze the operational method as it relates to sociology without first being aware of the epistemological arguement on which the justification of this method rests. Of course, the operational method has been variously interpreted even among sociologists. There will probably be some differences between Bridgeman's operationalism and the operational method proposed or defended by

others. However, it seems unlikely that any interpretation of the operational method will be in opposition to the general positivistic and pragmatic principles on which Bridgeman's operationalism is based. Having been made aware of the philosophical basis and implications of the operational method it is now possible to examine some of the various interpretations of the issues involved in adapting the operational method to the social sciences, particularly sociology.

The first step in the application or adoption of the operational method to social science is to fully define or interpret the method. Stuart C. Dood, an exponent of the opertaional method in sociology, attempted to do this when he offered an operational definition of "operational definitions."

> A definition (genus) is an operational definition (species and definiendum) to the extent that the definer (A) specifies the procedure (differentia (a)) (including materials used) for identifying or generating the definiendum, and (b) finds high reliability (differentia (b)) for his definitions.[25]

What Dodd is actually saying, and as he summarizes the above formal definition, is that an operational definition "includes reliably specified procedures."[26] What Dodd stresses in Bridgeman's original formulation is the methodological idea of reliability. Implied in this interpretation of the method is that a procedure or operation must be "communicable by the actor,"[27] and repeatable, given a certain level of technical competence. An operational procedure can not be one that is purely subjective, that is only known to and performable by an individual subject. This issue will be returned to shortly.

An interesting interpretation of the operational method was

was presented by F.S.C. Northrop. Northrop was attempting to effect a reconciliation between the humanistic tradition and the scientific tradition in Western thought through a synthesis of their divergent methodologies. Northrop attempted to resolve the dualism between theory and research by proposing a linkage between concepts on two levels of abstraction, theoretical and empirical. Northrop proposed that we could think of an "epistemic correlation" or relation existing which tied "concepts of postulation," theoretical concepts, to "concepts of intuition," empirical or operational concepts."[28] By use of this mental construct, the epistimic correlation, it would be possible to verify theoretical concepts or concepts by postulation which had not been empirically verifiable by traditional approaches.

> Nonetheless, it is possible by means of these epistimic correlations to verify the existence of the unobservable scientific objects. One postulates the latter objects and sets up epistimic correlates ahead of time between them and the factors which one can directly inspect. If the directly inspected data are in accord with what the postulated or deduced theorems plus the epistimic correlations specify with respect to the continuum of immediately apprehended fact, then the unobservable scientific objects are said to exist.[29]

To use a sociological example, the concept of status generally refers to the level of social deference an individual receives due to his or her occupation or position in the social hierarchy. We can not really observe this thing, status, but we can deduce that there should be a differential distribution of desirable goods among people holding different occupations or positions. We can postulate then that an epistimic correlation exists between this unobservable status and the observable possession of desirable goods. Thus we can verify the status of an

individual or occupation by observation of the goods the individual or individuals holding a certain occupation possess. As Northrop points out "all that is observed is the immediately apprehended end term" and "neither the relation nor . . . the theoretically designated term . . . of the relation is inspected."[30] Northrop maintains that only by use of the notion of epistimic correlation, or some similar notion, is "the operational meaning of a theoretical concepts possible" and are "operational definitions of scinetific concepts important."[31]

Other proponents of the operationalist method, such as the sociologist George Lundberg, interpret the method differently than Northrop. Lundberg seems to deny the legitimacy of all concepts except operational ones. Lundberg offers a strategy for effecting the transition form "commonsense communications" to "standardized 'quantitative' terms" in sociology.

> Its first steps are the selection of significant categories representing aspects of behavior and (2) their clear definition in terms that lend themselves to operational representations of relationships.[32]

Lundberg seems to leave no room in sociological methodology for concepts other than "standardized 'quantitative' terms." In fact, Lundberg notes that although he has no objection to "the use of nonoperational concepts, if they are found useful" this is only a transitional rule applicable "until the more desirable operationally defined concepts are developed in any field."[33] Using the same example, Lundberg would grant the concept status no special theoretical meaning. Status would only refer to the specific measures being used to arrive at its empirical meaning. Status might simply mean the weighted value

of a person's house, plus the weighted value of the person's car(s), plus the weighted value of a person's annual income, plus the weighted value of the number of people who called the individual Mister, Misses, or Miss at his or her place of work divided by the number of persons at the individual's place of work. It is not possible, according to Lundberg, to use conclusions reached by use of this definition of status to talk about status in a more general and abstract way as Northrop proposes. For Lundberg there seems to be only one level of social scientific analysis, raw empirical analysis.

A particularly troublesome point of interpretation for the proponents of the operational method is deciding on what are allowable operations. Bridgeman seems to have been talking about "physical" operations in his original formulation although he never clearly stated what he means by operations in that work. Ten years after Bridgeman's original formulation he maintains that he was not limiting operational definitions to "physical" procedures.

> I think examination of my writings will show that 'mental' operations have often been mentioned. It seems to me that the most superficial examination of what we do in any situation, even a situation which we might perhaps describe as predominatly 'physical', shows at once that 'mental operations' are involved, and further that no sharp distinction is possible between 'physical' and 'mental' operations.[34]

In later editions of The Logic of Modern Physics Bridgeman adds after his statement that concepts be synonymous with the operations used that such a definition is applicable to "mental concepts" defined by "mental operations."[35] As Benjamin points out there is a problem involved in making this allowance. Accepting the use of mental operations without

limiting what these operations might be makes the method of operationalism meaningless.

> But if the notion of operation is generalized to include all activity, operationalism loses its distinctiveness and we no longer say anything significant when we say that science is operational or that concepts should be operationally defined.[36]

If operationalism is to have any distinctive meaning for social scientists then the types of operations allowable for operationally defining a concept must be limited.

The major limitation that social scientists seem to put on allowable operations is that the operations used to arrive at or determine a concept must be communicable. Lundberg notes that "only if one leaves a record of the operations which one goes through in registering an observation can others verify the report."[37] Dodd maintains that a procedure (operation) must be "communicable"[38] as has already been noted. Bridgeman expresses the same thought as both Lundberg and Dodd by remarking that "in order to be of practical value the operations must, at the minimum, be such that they are repeatable and performable on demand."[39] Obviously, this limitation does not exclude so-called "physical" operations, such as the use of data gathering "instruments," a particular questionaire for example. The use of these physical procedures, that is instruments both verbal and mechanical used according to certain overt behavioral rules, are allowable in defining a concept operationally. This limitation would seem to exclude certain "mental" or "private" procedures which are not or can not be standardized. This limitation would probably exclude procedures such as empathizing or dream analysis from the realm of allowable operations for defining or

determining operational concepts. Such a limitation does not exclude such "mental" operations as mathematics or statistics. These operations can be standardized and communicated. Dodd notes that there are generally two levels of operations involved in operationally defining a concept, the level of gathering data and the level of analyses and syntheses of data.[40] Using the criterion that operations be reportable limits allowable operations on the data gathering level to "physical" procedures and on the analysis level to mathematical or statistical procedures. This would seem to be the interpretation of "allowable operations" that social scientific proponents of the operational method have come to accept.

The decision to limit operational definitions to communicable and repeatable operations is not without philosophical basis. Such a decision illustrates the philosophical position of the operationalists. If definitions can only be composed of intersubjectively reliable operations then knowledge must be sought for some intersubjective purpose. Like Dewey, the sociologists who adopted this position on allowable operations, implicitly reject the individualistic pragmatism of William James. If these sociologists reject all grounds for determining truth except practical ones, which, as was illustrated in Chapter II, they must given their positivistic framework, and yet stress the necessity of an intersubjective method then knowledge must be sought toward some common end. It would seem that the exponents of the operational method in sociology, like John Dewey, believe that knowing is a Quest for Certainty, a certainty to be obtained by extending "intelligent control" over nature[41] and, because they are part of nature, over unpredictable

human beings. It is not inconsequential that empirical sociologists who have adapted the operational method to sociology would also implicitly adopt the self-proclaimed goal of the natural scientists, "to predict and control."

Another difficulty in the operationalist method arises from the acceptance of one of the tenants of positivistic methodology, nominalism. As was earlier pointed out Bridgeman acknowledges that "in principle that in changing operations we have really changed the concept."[42] The implication then is that for every different procedure used or set of procedures used for arriving at a particular concept, no matter how minutely they may differ, there must be a different concept. Benjamin illustrates this principle by example.

> Two measurements of the length of a given object, even if the results are the same, can be distinguished. Now if a concept is always to be defined by an operation, and each operation is particular, the concept itself takes on the particularity of its mode of definition. Not only will there be a difference between the tapeline length of the field and the triangulation length (even if the measured values are the same), but there will be a difference in <u>meaning</u> between all individual tapeline lengths of the field (again, even though the measured values are the same).[43] (emphasis in original)

Using the example of status, everytime a different measurement of status is used, or adopting the more extreme position, everytime status is measured there must be a new concept, such as $status_1$ or $status_{k1}$.

To overcome the paralyzing effect the application of such a restriction would impose on generalization based on empirical findings the idea of equivalent concepts was introduced. If we arrive at the same numerical result although measuring a concept through the use of

different methods then we can say that we are dealing with equivalent concepts and can refer to the two equivalent concepts with one term. However, the introduction of the idea of equivalance into the operationalist method is also necessarily accompanied by the assumption of absolute quanity, else equal numerical results would tell us nothing. Harold Isreal points to the contradiction for operationalists involved in acceptance of such a non-operational assumption.

> Operationally defined, two quantitative results can not be the same unless they are determined by the same set of operations, and the mistake of regarding two constructs as the same because they bear the same numerical designation is one which no operationalist should make. By introducing the non-operational construct of absolute quantity the operationist escapes the narrow limits of his highly restrictive doctrine.[44] (emphasis added)

In other words, what the operationists are doing when they accept the principle of absolute quantity is accepting the rationalists' assertion that particulars can be grouped only by reference to universals, such as "absolute quantity." Although most proponents of the operationalist method overlook or ignore this difficulty they do so at the expense of refuting their own positivist premise.

Another criticism leveled at the operationalists is that in the rush to obtain precise concepts too much of a concept's meaning is often sacrificed. Herbert Blumer attacks the operational method because precise definitions can also be meaningless definitions.

> It should be noted first of all that the method begins with the selection of a concept, which necessarily already has some meaning and some reference to an area of empirical experience. To limit this meaning to what is determinable quantitatively or measuratively is essentially an act of reduction which may be at the expense of the empirical refer-

> ence which the concept originally had and with which one is concerned. For it may well be, as seems to be attested by the results of 'operational' procedure made so far, that what is omitted is the most vital part of the original reference.[45]

Franz Alder raises the same criticism in another respect. He notes that the "scientist" has a responsibility to "society" and as such should deal with concepts that are meaningful to the "man in the street." The "scientist" should avoid constructing a conceptual never-never land to which admittance is limited to a small sect.

> A science has a mandate from society. Part of this mandate is the explanation of the phenomena it studies. . . . If sociologists feel called upon to explain radicalism, it is primarily the phenomena of radicalism as it is experienced by the same man in the street that they must explain, not any arbitarily concocted concepts to which they give this name. If sociologists continually fail in their mandate to explain social phenomena as they are experienced outside the sociologists' academic retreats their science may be short lived indeed.[46]

Alder further notes that these narrowly concocted concepts become an "obstacle to scientific advance because criticism is excluded."[47] It is impossible to criticize a particular operational definition on the grounds that it overly limits or distorts the real meaning of a concept without moving outside the operationalist framework. In order to criticize an operational definition on these grounds it would be necessary to refer to a non-operational definition of the concept of interest which, in the opinion of most operationalists, is a resort to indefensible rationalistic arguement. The operationalist psychologist, Carroll Pratt, further notes that operationalism may restrict the creative aspect of scientific research.

> The element of danger in operationism, especially

> as applied to psychology, lies in just that, viz., the forced restriction of imagination in the selection of problems and construction of hypotheses.[48]

Even some of the proponents of operationalism are aware that meaningfulness and advance are often sacrificed before the alter of precision.

Other proponents of operationalism were not without response to such warnings and criticisms. George Lundberg takes note of some scientists' desire to leave non-operational meanings of concepts intact but implies that such a desire is not based on any concern for "scientific advance."

> In other cases, the operational definition is deliberately avoided because it would definitely circumscribe the meaning of words which are now used to express not relations, but feelings, usually vague in meaning but very strong in emotional significance. Rigid definition would therefore interfere with rhetorical diction and block the release which the latter affords. Many of the present terms are highly valued because of their familiar and reassuring sound, and are therefore not infrequently mistaken for data, 'fact' and 'truth.'[49]

Lundberg does recognize that the meaning of some concepts will be limited by operationally defining them, but he denies that any meaning need be lost.

> It is granted, of course, that the concepts thus arbitarily defined by the operations which register our responses will usually not mean the same as they did before, assuming that we retain many of the old words stripped of their vague, folklore connotations. Thus the term <u>attitude</u> would under an operational definition have a very much narrower but a more definite meaning than at present. This does not mean that all the other meanings which it now has would be denied or ignored, as seems to be assumed by the critics of this type of measurement. The <u>other</u> meanings in so far as they are scientificly relevant would be similarly defined operationally by <u>other</u> words or symbolic devices.[50] (emphasis in original)

Lundberg notes that "this degradation of concepts is, I fear, a necessary cost of scientific progress."[51] While others, such as Alder, are warning that the operational method threatens scientific advance Lundberg turns this criticism around. How does Lundberg know that such "degradation of concepts" will advance knowledge? Easily, if it worked for the physicists it will work for the sociologists.

> But, it is interesting to note that in our adjustments to 'physical' phenomena we have reconciled to set aside the judgement of our unaided senses in favor of the conclusions of instruments; while in our societal adjustments the presumption is still strongly in favor of the greater validity of uncorrected intuitive impressions. This may merely indicate the instruments for societal observation are as yet actually inferior to 'common sense'. At the same time, the knowledge of the limitations of our unaided senses which the other sciences have revealed suggests that the subtleties of societal phenomena call for even more refined instruments and technics of observation, thought and analysis.[52] (emphasis in original)

When finally backed into the corner and forced to defend himself Lundberg draws the inevitable six-gun of pragmatic justification, it worked for the natural scientists.

Another important question tied directly to the issue of meaningfulness is how can a concept's validity be established. One response, that of George Lundberg, is to dispense with the issue by denying the assumption on which the question is based, that concepts refer to "real" things (phenomenon external to the subject).

> It is unnecessary to argue whether what is tested is 'really' an attitude, because attitude is defined as that behavior evoked by this test. It is likewise futile to argue whether a certain behavior considered in a test is 'really' radical. For the constructors of the test and the scale agree to call it radical. It is, therefore, also unnecessary to argue whether

> the statement that one individual is twice as radical as another is 'comparable', 'similar', and as logically defensible as the statement that one stone is twice as heavy as another, because in terms of the two scales (both of which assume an arbitrary, rational origin) one is obviously twice the other in both cases.[53] (emphasis in original)

Lundberg denies that there is any need to defend operational definitions against "something" which presumably exists in some external reality. If researchers agree to call a person's score on a particular questionaire his or her status then that is his or her status. The activities of the social researcher are the basis of concept validity. Lundberg adopts the subjectivist and relativist position of the pragmatists toward reality. There is no such thing as "nature" or "reality" just "knowledge of nature" and "knowledge of reality", a view that dispenses with the question of validity.

Stuart Chapin makes a similar attempt to skirt the question of validity. Like Lundberg, Chapin denies that the problem of validity is a real one. Before operations used in the measurement of a concept become the concept's definition such operations are "standardized", agreed upon by the particular group of scientists concerned.

> In reality, however, the dilemma is not a real one, because the assertion "public opinion <u>is</u> what this scale measures" is made <u>after</u> the scale has been standardized. The process of standardization, if done throughly, disposes of the question of validity, so that the assertion of operational form of the definition of public opinion does not beg the question.[54] (emphasis in original)

According to Chapin the operationalist response to the issue of validity is not evasive. Because the measurement instrument and operations employed are standardized before the operations define the concept the

question of validity is solved. Of course, Chapin assumes that standardization and validity are synonymous, and he does not even consider the possibility that a standardized definition, or agreed upon definition, might bear no resemblance to the object or phenomena to which the concept refers. Chapin, like Lundberg, seems to assume a pragmatic view of reality and denies any cognitive status to assertions about the real world apart from the world of appearance.

Stuart C. Dodd offers a similar view on the question of validity. Dodd, like Chapin, seems to equate validity with convention. However, Dodd's arguement is not consistent.

> Validity always involves a criterion. Without an accepted criterion validity in the technical sense accepted in psycholocy and statistics and described here has no meaning. Futhermore, validity when determined, is relative to that specific criterion and may have a different value with respect to another criterion. The validity correlation is the proof of the extent to which a new and more efficient indicator of some phenomena can be subsitiuted for a less efficient but conventional and familiar indicator of those phenomena.[55]

Dodd notes that validity varies as the criterion varies, an obvious relationship. However, he goes on to assert that the validity correlation can inform us whether one operational definition is more valid than another. Dodd implies in this statement that there actually is a criterion, other than convention, for establishing the validity of an operational definition. While both Dodd and Chapin, like Lundberg, seem to stress the aspect of convention in the determination of validity they fail to point out that if certain operations are agreed upon as valid for defining a concept then the scientists who agreed on the validity of these operations had a <u>preconception</u> of the meaning of the concept.

Application of the pragmatic criterion of intersubjective reliability to the question of concept validity involves an implicit contradiction of one of the operationalists' major premises as Blumer notes.

> What this means is that symbols arrived at by the procedure being discussed become intelligible and capable of application only through the use of another order of concepts and hence they do not displace this latter kind of concept.[56]

As Blumer correctly points out there can be no basis for convention or agreement, or even for instrument construction, unless there is a prior commitment to certain definitions of concepts which are not operational.

Percy Bridgeman acknowledges this qualification, that operational definitions are meaningless without another level of definitions, of the operational method. Bridgeman states explicitly what Dodd seemed to imply.

> Operational definitions, in spite of their precision, are in application without significance unless the situations to which they are applied are sufficiently developed so that at least two methods are known of getting at the terminus.[57]

Bridgeman acknowledges that the question of validity can not be addressed without having already developed <u>preconceptions</u> concerning the area of interest.

> Operational analysis is valueless without a background of experience, and the conclusions from such an analysis can have no validity which is not already conditioned by experience.[58]

Like John Stuart Mill, Bridgeman seems to imply that the scientist must have a mind "stored with general conceptions previously acquired."[59]

Although the operational method of concept definition was introduced into the social sciences to rid these disciplines of theoret-

ically and philosophically loaded terms by substituting more precise terms, such a strategy seems doomed to failure. While it was easy to make concepts more precise for the purposes of empirical research, it was much harder to dispense with theoretical or "folk-usage" concepts dispite George Lundberg's attempts. Phillip Frank points to the situations under which operational definitions are applicable.

> All 'operational definitions' are limited to certain 'smooth' or simplified conditions. We can even go a step further. We can easily see that, practically, operational definitions can not be constructed in a domain of experience for which we don't know physical laws.60

To parapharse, without guiding theoretical frameworks, without another level of conceptions, the use of operationally defined concepts seems meaningless. Northrop was well aware of this point when he proposed the idea of "epistemic correlation" between "concepts of postulation" and operational concepts. Dodd, Chapin, and Lundberg might not have been aware of this point but the idea of standardization, convention, and even measurement implies that the scientists involved have some guiding conceptions before they develop their operational definitions. Unless we have some prior conception of status, the specification of operations, the process of reaching concensus (standardization), and the comparison of the results obtained by use of one set of operations to the results obtained by use of another set of operations would be either impossible or irrelevant to the issue of validity.

Although these issues remained the discussion and debate concerning the use of the operational method in sociology seems to have

drawn to a close. There are alternative explanations to why questions concerning the use of operational definitions in sociology were not pursued further. Henrika Kuklick explains this lack of sustained concern over problems of methodology and philosophy of social science by asserting that a "paradigm" had been accepted by sociologists.[61] According to Kuklick's Kuhnian framework, a condition of "normal science"[62] resulted in sociology and attention was diverted from methodological and philosophical issues. Kuklick maintains that most sociologists accepted a general guiding theoretical framework, functionalism, and limited their attention to problem solving activity within that framework. There was no need for clashes over methodological styles because such styles would be dictated by the "paradigm" and the particular problem of concern. While it is impossible to adequately argue against Kuklick's view without unnecessarily diverging from the topic of concern here, what seems to be a more plausible explanation is available. That explanation is one which takes into account the socio-historical conditions effecting the work of sociologists during the nineteen forties and subsequently.

The most significant event for most human enterprises in the nineteen forties was the Second World War. It would be naive to expect that the war did not have a significant and lasting effect on sociology. The effect, as Martin Nicolaus has pointed out, was to create a novel and large demand in the United States for information which sociological researchers could supply.

> Faced with unprecedented demands on its 'officer corps' ability to manage and control millions of fresh recruits, the Pentagon contracted with a team

> of sociologists, headed by Samuel Stouffer, for the development of a set of questionaires, tests, indices, and measurements. Published in four volumes after the war as The American Soldier, and containing no analysis of the demobilization riots which occured in the Pacific toward the war's end, this military project was the cornerstone of a sociological research enterprise whose growth has continued without significant interruption since that time.[63]

The demand for wartime sociological research was not met solely by Stouffer and his colleagues. Confronted with this unprecendented opportunity to receive support for doing sociological research sociologists' interest in methodological issues became incidental to the research they were doing. George Lundberg writing with Pearl Freidman in nineteen forty three recognized that all this "business" was beneficial for the development of a sociological methodology.

> The development of scales and tests for the measurement of abilities, personality, traits, attitudes, and other personal characteristics has greatly advanced psychology and sociology in the last two decades. There are some evidences that the necessities of the present war may impart a considerable impetus to this movement.[64]

There was no longer as much time for philosophical reflection. The time for the empirical sociologists had come. They picked up their methodological tools and joined the war mobilization hoping that in the process of contributing to the Allied war effort their methods would be refined.

As Nicolaus noted in the passage quoted earlier, the end of the Second World War was not accompanied by an equivalent end to the demand for sociological research in the United States. The increased penetration of the United States military and of American business interests into much of the world created a demand for increased research

efforts into many aspects of foreign societies. The growth of American business domesticly both during and after the war stimulated the demand for sociological research skills in the growing technical labor market. The owners and managers of American businesses needed more rational management techniques, such as in their relations with labor, and more rational marketing and advertising strategies. The growth of the federal government and its increasingly important administrative role in the American economy and political system also opened up opportunities for empirical sociologists. The relatively recent American development of empirical sociology was spurned on by the expansion of the American economy and by the increasing bureaucratization of the American social system.

Although it might seem that a state of "normal science" has existed in sociology in the post war period, rather than being the result of the ascendency of a particular "paradigm" in the discipline, as Kuklick suggests, it is probably better thought of as the indirect result of the increased demand for empirical sociological research. This increased demand for empirical sociological research resulted in a subsequest reorganization of the sociological academic community. C. Wright Mills describes breifly what these new demands meant for the organization of sociology.

> To practice abstracted empiricism requires a research institution, and, academically speaking, large funds. As the costs of research increase, as the team comes into being, as the style of work itself becomes expensive, there comes about a corporate control over a division of labor. The idea of a university as a circle of professional peers, each with apprentices and each practicing craft, tends to be replaced by the idea of a university as a set of research bur-

> eaucracies, each containing an elaborate division of labor, and hence of intellectual technicans, if for no other reason, the need increases to codify procedures in order that they may readily be learned.[65]

This necessity for codification of procedures militates against critical questioning of methodological practices and presents an appearance of "normal science." The teaching of these codified procedures as unquestioned sociological procedures insures that students training to become sociologists do not raise philosophical questions concerning methods. Mills describes the students of abstracted sociological empiricism.

> They have taken up social research as a career; they have come early to an extreme specialization, and they have acquired an indifference or a contempt for 'social philosophy'--which means to them 'writing books out of other books' or merely speculating.[66]

The debate over and critical questioning of the method of operationalism did not end because the issues its use entailed were resolved but because certain socio-historical events intervened. It seems that there was no longer time, nor the proper setting, nor the educational preparation for the philosophical analysis of the methodology of sociological knowing.

Discussion and analysis of methodological issues seems no longer to be a major concern for empirical sociologists. What little discussion of methodological issues does take place is most often relagated to small portions of methodological textbooks which in the most part resemble technical manuels. Methods are most often judged on purely pragmatic grounds. Does it get the job done? Although attention has waned on the operationalism issue, sociologists are still confronted with the concept-data problem which their positivistic

methodology entails. In nineteen fifty five Paul Lazarfield and Morris Rosenberg commented in the introduction to their popular The Language of Social Research on the concept-data problem as it relates to sociologists who often use concepts and theories which are not amendable to empirical verification due to their philosophical and "non-positivistic roots."

> It is instructive to examine the work of a classical writer, say, one in the field of public opinion research, and to see how his statements might be translated into the language of modern research procedures. It will be found, on the one hand, that such writings contain a great richness of ideas which could be profitably infused into current empirical work; on the other hand, it will be found that such a writer tolerates great ambiguity of expression. By proper explication, we can bring out more precise meanings which might be imputed to him; and we would be especially interested to see which of his statements permit verification.[67]

Ernest Nagel, in nineteen sixty one, notes that relating theoretical definitions of concepts to empirical ones in scientific research is still problematic.

> The general point that emerges from these examples is that, though theoretical concepts may be articulated with high degree of precision, rules of correspondence coordinate them with experimental ideas that are far less definite.[68]

The concept-data problem continues to trouble scientific researchers. Given the great demand and opportunity for sociological research empirical sociologists have, no doubt, developed or adopted strategies for resolving or avoiding this problem.

In view of the philosophical roots of the methodology of empirical sociology, as discussed in Chapter II, and the discussion and debate which took place among social scientists concerning Percy

Bridgeman's operational method it is possible to speculate concerning the strategy or strategies sociologists adopted to deal with the concept-data problem. First of all, it is likely that at least for the purposes of empirical research in sociology, the gathering and analysis of empirical data, concepts are defined by the particular research procedures used. It is also expected that allowable research procedures will generally be limited to repeatable and observable operations, standardized procedures. For example, in a research project which is concerned with the phenomena of status the researchers will likely define status, either explicitly or implicitly, by referring to all the operations used to gather, for example a specific group of questions administered according to certain procedural rules, and synthesize, certain statistical or mathematical procedures for example, empirical information on what the researchers believe is the phenomena of status. While it is expected that these steps are used in contemporary social research, at what point in the research process these steps are taken and how these "operational definitions" are interpreted is harder to predict.

The discussion of the issues involved in using the operational method in sociology seemed to suggest that there are two alternative interpretations of the operational method in sociology. One of those views is what Gideon Sjoberg refers to as "rigid operationalism."

> In this paper 'rigid' or 'physical' operationalism refers to efforts to define concepts or to seek 'empirical' or 'numerical' representations of social phenomena through a well-defined set of research operations, measurement in particular.[69]

Adding to Sjoberg's definition, "rigid operationalists" also desire to

convert all sociological concepts into operational concepts. They see no need for a seperate level of theoretical concepts and either dispense with the question of validity altogether or view it as resolvable by comparison of the results obtained by using two procedures which are generally agreed to be equivalent. A less rigid or "loose operationalism" is expressed by Michael Scriven writing in The International Encyclopedia of the Social Sciences.

> Definitions should therefore be of such kind that we can apply some independently determinable criteria to decide when the defined term should be used (we can, if we wish, call the process of determining whether these criteria apply 'operations'). But we cannot require that the only content of definitions should be operations, or we find ourselves caught in the dilemma of deciding when we have only one operation and hence only one concept . . . and so on.[70]

The loose operationalist acknowledges the need for theoretical and abstract concepts as well as operational ones. Their main concern is in developing some sort of methodological linkage between the two levels of conceptions so that theoretical concepts are not lost in a rationalistic, non-verifiable realm, nor operational concepts lost in the ultimate graveyard of precision, meaninglessness. The problem of linkage is, for the loose operationalist, the problem of establishing concept validity.

At this point it is impossible to speculate on which type of operationalism or whether both types are presently practiced by empirical sociologists. While it is expected that some form of "operational definitions" are used in contemporary empirical sociology it is impossible to say, on the basis of the preceeding discussion, what form and interpretation has been given to the operationalist method

in contemporary sociology. Sjoberg warned in nineteen fifty nine that "rigid operationalism will continue with us."[71] Of course, loose operationalism might also have continued with us. All that can be said at this point is to remark with Sjoberg that "operationalism is not a dead issue" for the sociologist.[72] The role of operationalism and approaches to the concept-data problem in contemporary empirical sociology will be discussed in the following two chapters.

Notes

[1]My reference to "paradigms" here does not mean that I accept the Kuhnian model as valid for interpreting all scientific change and discoveries or even that it is sufficient for explaining any particular change. However, Kuhn's model seems helpful in understanding the transition from Newtonian to Modern Physics. See Kuhn, Thomas, The Structure of Scientific Revolutions, vol. II, no. 2 (Revised Edition): International Encyclopedia of Unified Science, ed. by Otto Neurath, (Chicago: Univ. of Chicago Press, 1962) for a complete presentation of Kuhn's model and arguement.

[2]Ibid., p. 88.

[3]For more explanation on this point see Chapter I, page 5.

[4]Bridgeman, Percy, The Logic of Modern Physics, (New York: MacMillan, 1961), p. 5. The Logic was originally published in 1928 (see Chapter I, footnote 14, page 20). The edition being used here has been revised somewhat but it is not believed that any substantial changes have been made between this edition and the original.

[5]Benjamin, A. Cornelius, Operationism, (Springfield, Ill.: Charles C. Thomas Publ., 1955), pp. 3-4. Although I have some disagreements with Dr. Benjamin interpretation of the operationalist method his book proved an invaluable asset in preparation of this chapter. I have relied on it heavily.

[6]Pratt, Carroll, "Operationalism in Psychology," The Psychology Review, LII (Sept., 1945), p. 262.

[7]See Chapter II, page 45.

[8]Bridgeman, Percy, "Operational Analysis," Philosophy of Science, V (April, 1938), p. 114.

[9]Bridgeman, Logic, op. cit., p. 32.

[10]Alder, Franz, "Operational Definitions in Sociology," American Journal of Sociology, LII (March, 1947), p. 442.

[11]Pratt, Carroll, The Logic of Modern Psychology, (New York: MacMillan, 1948), p. 81.

[12]Benjamin, op. cit., p. 9.

[13]Bridgeman, Logic, op. cit., p. 3.

[14]Ibid., p. 26.

[15]Benjamin, op. cit., p. 18.

[16]Bridgeman, Logic, op. cit., p. 23

[17]Benjamin, op. cit., p. 20.

[18]Ibid., p. 28.

[19]Ibid., p. 11.

[20]Phillip Wiener refers to Peirce as the "father of operationalism" and refers to Perice's essay "How We Make Our Ideas Clear" as the first formulation of the operationalist method. See "Peirce, Charles Sanders," in International Encyclopedia of the Social Sciences, ed. by David Shils, XI, (New York: Crowell, Collier, MacMillan, 1968), p. 511.

[21]Bridgeman, Logic, op. cit., p. 28.

[22]Bridgeman, "Operational Analysis," op. cit., p. 116.

[23]Ibid., p. 119.

[24]See Chapter II, page 43.

[25]Dodd, Stuart C., "Operational Definitions Operationally Defined," American Journal of Sociology, XLVIII (Jan., 1943), p. 482. (emphasis in original)

[26]Ibid., p. 482.

[27]Ibid., p. 484.

[28]Northrop, F.S.C., The Logic of The Sciences and the Humanities, (New York: MacMillan, 1947), p. 119.

[29]Ibid., pp. 120-121.

[30]Ibid., p. 121.

[31]Ibid., p. 123. There is a similarity between Northrop's view and that of many contemporary sociologists writing on the topic of so-called theory construction. See Chapter V.

[32]Lundberg, George, Foundations of Sociology, (New York: David McKay, 1964), p. 57. This book was originally published in 1939 and has been only slightly revised subsequent editions.

[33]Ibid., p. 88, (footnote 22).

[34]Bridgeman, "Operational Analysis," op. cit., p. 123.

[35]Bridgeman, Logic, op. cit., p. 5.

[36]Benjamin, op. cit., p. 39.

[37]Lundberg, op. cit., p. 57.

[38]Dodd, op. cit., p. 484.

[39]Bridgeman, Percy, "Some General Principles of Operational Analysis," The Psychology Review, LII (Sept., 1945), p. 246.

[40]Dodd, Stuart C., "A System of Operationally Defined Concepts," American Sociological Review, IV (Oct., 1939), p. 620.

[41]See Chapter II, p. 47.

[42]Bridgeman, Logic, op. cit., p. 23. See also Bridgeman, "Some General Principles," op. cit., p. 247.

[43]Benjamin, op. cit., p. 67.

[44]Israel, Harold E., "Two Difficulties in Operational Thinking," The Psychology Review, LII (Sept., 1945), pp. 260-261.

[45]Blumer, Herbert, "The Problem of the Concept in Social Psychology," American Journal of Sociology, XLV (March, 1940), pp. 710-711.

[46]Alder, op. cit., pp. 441-442.

[47]Ibid., p. 442.

[48]Pratt, "Operationism in Psychology," op. cit., p. 267.

[49]Lundberg, op. cit., p. 65.

[50]Ibid., pp. 66-67.

[51]Ibid., p. 67.

[52]Ibid., p. 70.

[53]Ibid., p. 78.

[54]Chapin, F. Stuart, "Definition of Definitions of Concepts," Social Forces, XVIII (Dec., 1939), p. 156.

[55]Dodd, "Operational Definitions," op. cit., p. 448.

[56]Blumer, op. cit., p. 712.

[57]Bridgeman, "Some General Principles," op. cit., p. 248.

[58]Bridgeman, "Operational Analysis," op. cit., p. 131.

[59]See Chapter II, pages 34-35.

[60]Frank, Philipp, Philosophy of Science: The Link Between Science and Philosophy, (Englewood Cliffs, N.J.: Prentice Hall, 1957), p. 313.

[61]Kuklick, Henrika, "A 'Scientific Revolution': Sociological Theory in the United States 1930-1945," Sociological Inquiry, XLIII (Winter, 1973), p. 15.

[62]For a complete description of the state of "normal science" see Kuhn, op. cit., pp. 23-34, (Chapter Three).

[63]Nicolaus, Martin, "The Professional Organization of Sociology," in Radical Sociology, ed. by David Kolfax and Jack L. Roach, (New York: Basic Books, 1971), p. 49.

[64]Lundberg, George and Friedman, Pearl, "A Comparison of Three Measures of Socioeconomic Status," in The Language of Social Research, ed. by Paul Lazarfield and Morris Rosenberg, (New York: The Free Press, 1955), p. 73.

[65]Mills, C. Wright, The Sociological Imagination, (New York: Oxford Univ. Press, 1959), p. 103.

[66]Ibid., p. 105.

[67]Lazarfield and Rosenberg (eds.), "Introduction," op. cit., p. 2.

[68]Nagel, Ernest, The Structure of Science, (New York: Harcourt, Brace, and World, 1961), p. 100.

[69]Sjoberg, Gideon, "Operationalism and Social Research," in Symposium on Sociological Theory, ed. by Llewellyn Gross, (Evanston, Ill.: Row and Peterson, 1959), p. 606.

[70]Scriven, Michael, "The Philosophy of Science," in Encyclopedia, op. cit., op. cit., XIV, p. 86.

[71]Sjoberg, op. cit., p. 621.

[72]Ibid., p. 603.

IV. THE OPERATIONAL METHOD AND CONTEMPORARY EMPIRICAL RESEARCH IN SOCIOLOGY

The previous two chapters of this study presented an answer to the first question of concern posed in the introduction. What is the full philosophical and methodological meaning of the operational method? In answering this question it was established that inherent in the use of positivistic methods of knowing is the difficulty of relating empirical data to concepts, or subsuming particular empirical information under generalized conceptions. Through the development and revision of certain positivistic methodological principles, especially by the American pragmatists, a solution to this problem was suggested. This solution was the operational method first articulated by Percy Bridgeman. This method, while suggesting a solution to the concept-data problem of empirical scientific methodology, essentially adhered to the positivistic tenants of knowledge as developed by the pragmatists. The operational method was accepted by many empirical sociologists who attempted to adapt the method to the research needs of empirical sociology. Such attempts met with various problems and criticisms including the problem of defining an operation, establishing validity, establishing equivalence of operational definitions, and criticisms that it restricted scientific creativity and was worthless without a non-operational level of conceptions. Due in part to certain sociological factors these issues were not resolved, and the operational method was left open to two different interpretations by empirical so-

ciologists, "loose" and "rigid" operationalism.[1] In view of these facts, attention will now be turned to the second question posed in the introduction. Is the method of operationalism used in contemporary empirical sociology and if so how?

As was pointed out in the introduction to this study, the first place to look for an answer to the question asked above is in contemporary empirical sociological methods textbooks. It is here that the procedures of empirical sociology are codified, to use C. Wright Mills words, for presentation to future generations of empirical sociologists.[2] If the operational method is considered a legitimate research tool for empirical sociologists then it will be presented in these textbooks, and if it is variously employed and interpreted then that should also become clear by examination of these texts.

It would be practically impossible to look at all recent empirical sociological methods texts and instructions. Certain texts were examined and others ignored. The selection of the examples used here will no doubt be opened to the type of criticisms Ernest Nagel mentioned in the passage quoted in the introduction.[3] The examples selected here seem to be somewhat popular and representative of empirical sociological methodology texts and instructions. Justification for the selections made in this respect can not go beyond that assertion.

The first conclusion that can be reached after an examination of "methods texts", as they shall be referred to hereafter, is that the concept-data problem continues to haunt the empirical sociologist. Scott Greer notes that this crucial problem still presents a major

difficulty for the empirical social scientist.

> But the link between observation and formulation is one of the most difficult and crucial in the scientific enterpresis. It is the process of interpreting our theory or as some say, of 'operationalizing our concepts.'[4]

Aaron Cicurel also remarks concerning the difficulty and centrality of this problem for "research orientated sociologists."

> The reduction required to translate abstract theoretical statements to concepts with specificable dimensions is probably the most difficult task facing research orientated sociologists.[5]

It is clear from these two statements that the contemporary empirical sociologist has not been able to escape the intellectual difficulties of his or her positivistic methodological assumptions. The link between abstract conceptions and empirical data remains, as it was for Lundberg, Bridgeman, Dewey, and even Mill, a central problem for contemporary sociological methodologists.

Not only are the problems of empirical sociological methods tied to the discipline's intellectual roots but so too are the strategies proposed for dealing with this problem. Paul Lazarfield has outlined four steps involved in translating abstract concepts into empirically verifiable concepts.

> This process by which concepts are translated into empirical indices has four steps: an initial imagery of the concept, the specification of dimensions, the selection of observable indicators, and the combination of indicators into indices.[6]

Although Lazarfield does not call this technique of "translating concepts into empirical indices" operationalism, the method he outlines is similar to the operational method proposed by Bridgeman.[7] Begining

with "an initial imagery" of our abstract concept the first step is to specify dimensions which can be measured or determined by some observational procedure. These empirically observed or determined dimensions, indicators, are then combined into an index. The implication is that this index becomes, for the purposes of research, the definition of the concept. Although Lazarfield seems to be merely restating the operational method he does qualify its usefulness. The very fact that he lists as the first step in this technique the determination of an "initial imagery" suggests that the indices, the operational definitions, are impossible to arrive at without an abstract level of conceptions from which they can be deduced. Lazarfield goes on to note that the relationship between the "underlying concept", the abstract concept, and "each indicator" is a "probability relation" which "requires us to consider a great many possible indicators."[8] While we must examine all these indicators "we typically select a relatively small number of items from a large number of possible ones suggested by the concept and its attendent imagery."[9] Not only must operational definitions be accompanied by another level of conceptions but Lazarfield also admits that in the process of developing empirically relevant indices or definitions the imagery or meaning of the original concept is restricted. Lazarfield's method of dealing with the concept-data problem resembles that approach referred to as loose operationalism in the preceeding chapter.

Hubert and Ann Blalock not only suggest the use of a technique similar to operationalism, as Lazarfield does, but also pay their respects to earlier operationalists.

> The main contribution of the operationalists and extreme empiricists, it seems to me, was that they continually stressed that measurement problems constitute the key to the advancement of any science.[10]

If measurement is the key to "scientific advancement" then concepts which are not measurable are not verifiable and are out of bounds to the empirical sociologist.

> Since tests of hypotheses are actually made in terms of procedures or operations, it is quite evident that those concepts with which operations have not been associated must be kept out of propositions purporting to be testable.[11] (emphasis in original)

Although all "non-operational" concepts must be kept out of the research process the Blalocks do not deny the necessity for a theoretical language in sociology. They recognize that in translating theoretical language into operational language a whole set of assumptions must be made, but they imply that only in this way can the "key to scientific advancement," empirical measurement, be turned.

> Given a main body of theory, anyone wishing to test this theory may then construct an auxiliary theory containing a whole set of additional assumptions, any of which will be inherently untestable. This auxiliary theory will be specific to the research design, population studied, and measuring instrument used.[12]

Although the Blalocks stress the necessity for an operational language in empirical sociological research they do not deny the necessity for another set of conceptions to guide the definitions of operational terms. The Blalocks, like Lazarfield, can be characterized as loose operationalists.

Julian Simon, like Hubert and Ann Blalock, warns that "each term that actually enters into the empirical work, however, must be

defined operationally."[13] Simon also acknowledges that operational terms can not exist without another level of conceptions. This becomes clear when Simon attempts to illustrate by example the problem of linking the two levels of conceptions, theoretical and operational.

> The relationship between the operationally defined kiss count concept and the hypothetical concept 'love' can never be pinned down logically. Rather, the relationship is one of good judgement and scientific artistry. A wise scientist develops operationally defined concepts that are good 'proxies' (that is, that stand for the hypothetical conpect). But a proxy can never be perfect and complete; it connot represent all aspects of the hypothetical term.[14]

The question of determining the relationship between "operationally defined" concepts and "hypothetical concepts" will be returned to later, but the important thing to note at this point is that once again the necessity of two levels of conceptions is recognized. In fact, Simon does not consider the worth of operational definitions to lie in their enabling of measurement but rather in enabling "repeatability (replicability). " . . . This is the key property of operational definitions" for Simon.[15] It seems that the rigid operationalism of men like George Lundberg[16] has lost its appeal to contemporary empirical sociologists.

Clarie Sellitz, Marie Jahoda, Morton Deutsch and Stuart Cook seem to agree with the other methodologists examined that "the investigator must devise some operations that will produce data he is satisfied to accept as an indicator of his concept."[17] Sellitz, Jahoda, Deutsch, and Cook suggest that the "investigator" develop "working definitions," that is, definitions based on the research procedures

being used. They note that "the reader may notice a similarity between our concept of working definitions and the more commonly used term operational definitions," but they add that they "have avoided this more usual term because it carries with it certain philosophical connotations that we do not wish to go into here."[18] Sellitz and her colleagues, while adopting an operational method for deriving empirically relevant terms from abstract concepts, are so sensitive to becoming mired down in the conflict between loose and rigid styles of operationalism that they avoid use of the term, operational, altogether. It is clear, however, that they are purposing a loose style of operationalism as the following passage illustrates.

> Working definitions are adequate if the instrument or procedures based on them gather data that constitute satisfactory indicators of the concepts they are intended to represent . . . In any case, although the investigator will usually report his findings in terms of his abstract concepts in order to relate them more readily to other research and to theory, he and his readers must keep in mind that what he has actually found is a relationship between two sets of data that are intended to represent his concepts.[19] (emphasis in original)

In drawing attention to the continuing problem of moving intellectually between "working definitions" and concepts Sellitz, Jahoda, Deutsch, and Cook have also drawn attention to the necessity for both a theoretical language and a working language in empirical sociology.

Bernard Phillips approaches this issue differently but reaches a similar conclusion. Phillips contrasts what he conceives to be two approaches to the use of concepts in modern sociology. The first approach is one that stresses the "systematic import" of concepts.

In this view, concepts should not be treated seper-

> ately from the propositions and theories of which they are a part. If concepts are to be evaluated in terms of their contribution to explanation and prediction, then their role as elements of existing propositions and theories (the major tools for explanation and prediction)--their systematic import--must be taken into account.[20]

The other approach Phillips labels "extreme operationalism."

> The tendancy of some behavioral scientists to view clarity and ease of objective measurement as the most important cirteria for concept formation may be referred to as the strategy of extreme operationism. Under this approach, a concept such as 'goal' might not pass muster because, regardless of its relatively high degree of systematic import, it is more difficult to measure than many others.[21] (emphasis in original)

Phillips believes that there is merit in both approaches and that the proper strategy for the empirical sociologist is to borrow elements from both approaches. The proper approach to the problem of relating abstract concepts to empirical research in sociology must be a compromise position between the two extremes, according to Phillips.

> Operationism performs a valuable service by calling attention to the importance of clarity, precision, and operational definitions. More generally, operationist thought emphasizes the importance of moving down the ladder of abstraction. But without such concepts as intelligence, the investigator has no guide to the direction of future research. Unless the investigator is guided by the abstract concept intelligence, he has no criterion by which to assess and improve the intelligence test he has constructed. The extreme operationist viewpoint loses sight of the fact that clarity and precision are means to acheive the goals of explanation and prediction.[22]

The compromise strategy Phillips proposes is the same strategy that has been referred to here as loose operationalism.

Aaron Cicurel's text on Method and Measurement in Sociology is particularly interesting to examine in this regard. In it Cicurel

proposes an axiomatic methodological and theoretical system for empirical sociology. Generally speaking, an axiomatic system is one which begins with certain assumed postulates or principles from which various verifiable propositions can be deduced according to the rules of formal logic. Cicurel notes that "presumably our variables [indicators] should be specified by theoretical translations of our concepts" in an axiomatic system.[23] "Presumably" our concepts' "domain of relevance, the range of the values and the numerical properties they could take on, are all derivable from theory."[24] Putting all presumption aside, however, Cicurel admits that in actual practice most measurements of sociological concepts are arbitrary and not derived from theory.

> Our often arbitrary classifications of data become the basis of establishing some form of quantification. Since the classification is after the fact, the validity of our measurement is relative to the arbitrary classification and makes replication and the possibility of rigorously obtained knowledge remote at this time.[25]

Although Cicurel proposes a methodological system in which, ideally, the empirical indicators of a concept can be directly derived from the concept's theoretical definition, he admits that, at the present, concepts must take on an arbitrary definition. This definition must be relative to the procedures and purposes of the particular empirical research project. Because of the less than perfect (axiomatic) condition of empirical sociological methods empirical sociologists must remain acutely aware of the different levels of discourse in which they work.

Since almost all sociological measurement, particularly

> in the study of social action, is arbitrary, we cannot afford to ignore the three media--language, cultural meanings, and properties of measurement systems--through which we formulate theoretically derived or ad hoc categories and link them with observable properties of objects and events.[26]

Although proposing an axiomatic methodological system for empirical sociology, Cicurel reluctantly endorses, at least until the more perfect axiomatic system is developed, a position similar to the loose operationalist approach to the concept-data problem.

Another interesting approach to the concept-data problem is taken by Roy Francis. Francis argues that "some procedures for giving content to the logical form [abstract concept] are needed . . . It is the operational specification which connects the concept to the world of fact."[27] For Francis, only if operational specifications of important concepts are standardized can "the judgement of the falsity of a proposed statement" be made.[28] Although this approach seems very similar to the operational method, Francis draws what he believes to be an important distinction between the operational method and his approach.

> The term is operational specification, not operational definition, as is commonly used. I deny the possibility of defining anything by announcing a set of operations; the intent of definition is not contained in operations.[29] (emphasis in original)

This distinction may be important for the logical justification of the method, but pragmaticly, in respect to practical circumstances, the substitution of the word specification for the word definition seems hardly worth mentioning. Francis goes on to note that "it is impossible to develop an error-free operational specification," that is, an

operationally specified term can never capture all the meaning contained in the "logical form."[30] Although operational specifications are necessary for the empirical verification of propositions, the logical form, the theoretical concept, is also of central importance in an empirical science.

> At the same time, I feel constrained to assert propositions which will enable research to generalize as well as to admit new problems. This seems most possible when science is oriented to theory rather than to any 'operation.' The latter orientation tends to put technique ahead of problems and can rapidly become sterile.[31]

Roy Francis, like the previously examined methodologists, admits, at least implicitly, to the necessity for operational terms, but he does not see such terms as replacements for theoretical concepts in contemporary empirical sociology.

This examination of contemporary methods texts has pointed out certain reoccuring themes concerning the concept-data problem. Firstly, this problem continues to trouble empirical social scientists. Secondly, all the methodologists examined here suggest a procedure similar to the operational method for reducing abstract concepts to a level which can be related to empirical data although they often referred to the suggested method with a different name. Thirdly, the procedure suggested by the methodologists examined here can best be characterized as loose operationalism. Although these methodologists stress that abstract concepts must be defined or specified by the procedures or operations being used to measure or determine them for the purposes of a particular research project, they also stress the importance of and necessity for theoretical or logical definitions of concepts. In other

words, the methodologists examined here acknowledge the necessity for both an operational language and a theoretical language in contemporary empirical sociology. Lastly, by recognizing the need for two levels of language in empirical sociology these methodologists are still confronted with the difficulty of trying to link concepts at the two levels for the purpose of generalizing from empirical findings. Without such linkage verification of theoretical propositions and generalization from empirical findings remain problematic. Such difficulties do not seem to have been addressed by the methodologists examined. It is in this problematic state that most of the methodologists examined here seem to leave this methodological topic.

It is not enough to generalize about the position taken on operationalism and the concept-data problem in contemporary empirical sociology simply on the basis of recent methodological writings. As was suggested in the introduction the codified procedures presented in methods texts might merely represent ideals;[32] ideals which can not be fulfilled in the practical world of actual social scientific research. In view of this limitation on the generalizability of the conclusions reached from the examination of methodological instructions it is necessary to also examine some examples of current empirical sociological research. By examining the manner in which concepts are treated in the course of actual research it will be possible either to qualify or extend the conclusions reached on the basis of the examination of methods texts.

As with the selection of examples of methodological instructions, the examples of research selected for examination here might not be rep-

resentative of what others might conceive to be the major trends in contemporary empirical sociology. An attempt was made to avoid this criticism by use of a somewhat systematic method of example selection. It was decided that examples would be confined to journal articles so as to avoid the possibility of a tedious and lengthy presentation which adequate examination of research monographs might involve. The first step in the example selection was to review the abstracts in three recent volumes of each of the two major professional journals of American sociology, the American Journal of Sociology[33] and the American Sociological Review,[34] and two recent volumes each of two regional journals, the Sociological Quarterly[35] and Social Forces.[36] All articles which were not reports of empirical research were immediately eliminated from further consideration. These included theoretical articles, debates and commentaries and methodological notes. The original sample was composed of 271 research articles. The areas of specialization most represented in this sample were political sociology, race and ethnic groups, the family, stratification, organization, the sociology of religion, and social psychology. In order for a thorough examination of the use of concepts the size of this sample had to be considerably reduced. The sample was reduced to seven aritcles by selecting only articles authored by individuals listed as resident at a major American University and by trying to avoid repitition of research style and subject. Four atricles will be examined here as examples of sociological research.[37] Hopefully, these four articles are representative of the dominant style of research[38] in contemporary empirical sociology.[39]

Before examining the research articles it is necessary to comment briefly on the method of examination. Consistent with the concern of this study attention will be limited to the treatment of concepts. Other aspects of the research design, such as results or statistical procedures used, will be generally ignored. Firstly, the way in which the researchers introduce their topic will be examined. That is, do they begin with operationalized conceptions or is their research guided by more general theoretical concepts? If the researchers begin with theoretical conceptions it will be necessary to examine how the important concepts of concern are operationalized or specified for the purposes of the research project. Lastly, it will be determined if and how the researchers generalize from their findings concerning the operationalized proposition. By proceeding in this manner more light should be cast on the question of if and how the operational method is used in contemporary empirical sociology.

The first article to be examined here is a report of research done by Marvin Olson and Judy Tully in order to test Gerhard Lenski's theoretical proposition[40] that status inconsistency is positively related to support for "programs of social change."[41] Olson and Tully note that "Lanski originally argued that status inconsistency was related to political liberalism," but that he did not specify what "status dimensions or patterns" were involved.[42] Olson and Tully go on to note that most writers have intrepreted Lenski's proposition as referring to "socioeconomic-ethnic status inconsistency" which theoretically is interpreted as the difference between "achieved status (education, occupation, and income) and ascribed status (such as race, religion, or nation-

ality)."[43] Olson and Tully's purpose was to test Lenski's proposition in respect to whether it is applicable to a particular type of inconsistency, socioeconomic-ethnic, and whether it is applicable to inconsistency in one or both directions, low ascribed and high achieved or high ascribed and low achieved.

Olson and Tully conceive of "support for programs of social change" as including various types of political attitudes and behavior. They decided on ten "dependent variables--all of which are conceptualized as indicators of preference for political change."[44] One of these dependent variables was "liberal attitudes on economic issues" which was measured by the respondents' agreement or disagreement with four statements.

> (a) The Federal income tax should be abolished in order to stimulate private business and keep our economy strong (reversed scored). (b) When unemployment is high, the government should spend money in ways that will help create more jobs. (c) Government welfare programs like Social Security do more harm than good and should be stopped (reversed scored). (d) Economic security and well-being for everyone is not possible without extensive government participation in economic activities.[45]

Another dependent variable or indicator of "support for programs of social change" was "liberal attitudes on racial affairs" also measured according to the respondents' agreement-disagreement to an index composed of four questions.

> (a) When schools are racially integrated, the quality of education almost always declines (reversed scored). (b) If Negroes are not getting fair treatment in jobs and housing, the government should act to help them. (c) If Negroes want to be accepted by whites they must learn to work harder and show that they can be responsible citizens (reversed scored). (d) Civil rights demonstrations to block construction of housing projects

> and other facilities are often morally justified.[46]

Attitudes of political discontent were measured in a similar manner.

> (a) Most public officials are not qualified for their jobs, and many of them are only concerned with getting money or power. (b) Money is the most important factor influencing public policies and decisions. (c) Political leaders usually represent the special interests of a few powerful groups, and rarely serve the common needs and welfare of all citizens, and (d) Politicans spend most of their time getting re-elected or re-appointed to office, and don't give enough attention to public responsibilities.[47]

Another dependent variable was based on the attitudes of respondents toward the legitmacy of various types of protest actions. An index was used to measure this variable. It was based on the responednts' willingness to recognize "dissatisfied groups' in this country" right to "(a) hold public meetings and rallies, (b) march quietly and peacefully through town, (c) take actions such as boycotting and petitioning, (d) take action such as strikes or 'sit-ins' or 'walk-outs', (e) stage mass protest demonstrations with large crowds of people, and (f) engage in civil disobedience by purposefully breaking the laws."[48] Other dependent variables included whether the respondent believed the government exercised too much power, what the respondent's national party preference was, whether the respondent voted Democratic in the 1966 Congressional election and in the 1964 Presidential election, the frequency of "partisan political participation," and the frequency of interaction with local and national governments.[49] These ten operationally specified variables were all considered indicators of the generalized conception "support for programs of social change."

The other important conception in this study is that of status

inconsistency. Two general types of status were measured, achieved (defined as socioeconomic) and ascribed (defined as ethnic). Three major indicators of achieved status were used, the number of years of formal education, the first digit of the respondent's occupation rating on the Duncan Socioeconomic Index, and total annual family income before taxes in 1967. An index composed of the weighted value of each of these individual indicators was also calculated.[50] Four dichtomous individual indicators of ascribed status were used including race (white vs. nonwhite), religion (Catholic, Jew, and Orthodox Christians vs. Protesants and those with no religious preference), nativity (forgein born or both parents forgein born vs. all others), and ethnic identification (whether or not a respondent considered himself or herself a member of a minority group). An ethnicity index was composed based on the person's score on each indicator.[51] All possible combinations of pairs of indicators, one ascribed and one achieved, were correlated with the dependent variables.

> It is perhaps not surprising to find that the variables of education, occupation, and income are in effect interchangeable in our analysis, since they are empirically related and can be viewed theoretically as simply different aspects of one's overall socioeconomic status. But it is notable that this same situation occurs with all four measures of ascribed ethnic status. The political consequences of status inconsistnecy--however limited they may be--are not a function solely of race or religion or nativity or ethnic self-identification, but emerge when any of these forms of ethnicity is paired with any indicator of socioeconomic status.[52]

On the basis of this finding Olson and Tully remark that "we shall hereafter conceptualize both socioeconomic and ethnic status as single but seperate dimensions of social stratification" and that no further atten-

tion need be given to any individual indicator of either of these dimensions.[53]

Having defined "support for programs of social change" and the two dimensions of status one more important concept, inconsistency, has to be defined. If status inconsistency is related to political attitudes then there must be an interaction effect between the two dimensions of status which could account for political attitudes better than the purely additive effect of the two measures. Without going into detail concerning the exact findings of the study the interaction effect between the two dimensions (the socioeconomic index and the ethnicity index) was not found to be important.[54] This finding led the authors to conclude that the concept of status inconsistency "does not substantially increase our ability ot predict preferences for political change beyond what we can predict from the seperate effects of socioeconomic status and ethnicity."[55]

Some interesting facts emerge from the examination of how Olson and Tully treated concepts in this research project. There was a recognition on the part of the researchers that there were two levels of conceptions being dealt with. Firstly, the authors specified what type of status inconsistency was being dealt with and implied that socio-economic-ethnic inconsistency did not account for all types of status-inconsistency. (However, it is not equally clear that the authors differentiated between their indicators of achieved and ascribed status, and achieved and ascribed status as theoretical concepts.) Secondly, the authors used several indicators of preference for social change differentiating between various types of attitudes and never attempting

to combine all these dependent variables into an index of a general predisposition toward social change. It should also be noted that in measuring "support for programs of social change" the concept of social change was reduced in meaning to a very limited idea of social change, restricted to programs which were implementable within the present governmental structure in a certain society during a certain historic period (the present). It can be questioned if such a reduction of meaning does not also rob the original proposition of its explanatory significance. Another important methodological procedure that was exposed in the preceeding analysis was the unsystematic manner in which linkage between operational terms (the indicators) and Lenski's original theoretical concepts was made. Without specifying the authors concluded that status inconsistency does not increase our ability to predict preferences for political change. Exactly how the authors went from their findings that socioeconomic-ethnic status inconsistency does not increase our ability to predict certain specific political attitudes and behaviors to their more general conclusion is not at all clear. Such a linkage must have been made on the basis of what Julian Simon calls "good judgement and scientific artistry."[56]

The second research article selected for examination here is based on research directed by William Rushing in order to test Robert Merton's theory of "Social Structure and Anomie."[57] Rushing summarizes what he believes to be an important and questionable postulate of this theory.

> The most frequently discussed aspect of this theory, as well as its most controversial aspect, is the postulate that when low-status persons aspire to

> middle-class goals but are denied opportunity of reaching them, they tend to develop deviant attitudes ("normlessness") and to engage in deviant behavior.[58]

If Rushing hopes to test this proposition then he must empirically determine who are low-status and middle-status individuals and what is anomie or normlessness. Rushing later adds another important concept, culture, which will be dealt with later.

Initially the independent variable is class or status (the two concepts seem to be used interchangeably in this article). Due to Rushing's sample selection, class was easily defined for the purposes of this project. The sample selected was composed of Anglo-American farm workers, bilingual Mexican-American, and non-English speaking Mexican-American farm workers. The sample also included Anglo-American farmers for comparison.[59] Rushing defined farm workers as lower class on the basis of previous definitions of this occupation, and because the farm worker respondents also scored low on other accepted (standardized) indicators of status or class including income (average $3200 annually) and education (an average of less than seven years of formal education completed).[60] Farmers were defined as middle class a decision supported by the fact that their average income was $10,200 annually and the average number of years of formal education completed was twelve.[61] In order to control for the possible effect of different cultural backgrounds the analysis of class and anomie was limited to a comparison of Anglo-American farm workers and farmers, who were also, supposedly, Anglo-American.[62]

The dependent variable, anomie or normlessness, was not as easily specified for the purposes of this research project. Rushing

notes that anomie as used by Merton refers to a state of individual consciousness (alienation) and is not used in the same way Emilé Durkheim used the term, to refer to a societal state.[63] This focus on individual attitudes means that "persons who are psychologically alienated from (i.e., reject) the dominant normative order are viewed as normless."[64]

> Consequently, normlessness is conceived here in general terms with no reference to specific norms. It is conceptualized as a tendancy not to conform to the <u>generalized</u> normative order.

In order to measure or determine this normlessness an instrument was needed. Rushing had previously determined, through the use of pretests, that two popular standardized scales for measuring anomie, the McClosky-Schaar and Dean scales, "were too abstract for many farm workers to respond to meaningfully."[66] A new scale of six questions was created to measure normlessness.

> Is a person justified in doing almost anything if the reward is high enough?
> Some people say you have to do things that are wrong in order to get ahead in the world today. What do you think?
> Would you say that the main reason people obey the law is the punishment that comes if they are caught?
> Some people say that to be successful it is usually necessary to be dishonest. Do you think this is true?
> In your opinion, is the honest life the best regardless of the hardships it may cause?
> In your opinion, should people obey the law no matter how much it interferes with their personal ambitions?
> (last two questions reversed scored)[67]

On the basis of a score determined by the respondents' answers to these six questions anomie or normlessness was determined

Two other concepts were central to Rushing's project, "culture" and "disjunction between goals and opportunities." A qualifying condi-

tion Merton placed on his proposition was that the proposition of concern is applicable only to societal with "open-class ideologies." Rushing argues that Anglo-American farm workers have a cultural background which stresses an open-class ideology while Mexican-Americans, especially non-English speaking ones, do not have such a cultural background.[68] The composition of Rushing's sample defined the concept of culture in much the same way that it did class. Mexican-American farmworkers represented one cultural bakcground, Anglo-American farmworkers another. In order to empirically determine or define "disjunction between goals (aspirations) and opportunities (expectations)" Rushing concentrated on one specific goal, "their aspiration and opportunity for their children's education and occupation."[69] If the respondent wished that their children could go to college they were then asked whether they thought such an opportunity was very good, fairly good, or not good at all.[70] Those who viewed the opportunity as "not good at all" but who wished that their children could attend college were defined as experiencing a disjunction between goals and opportunity. In this manner Rushing attempted an empirical verification of Merton's theory.

Rushing's findings tended to support Merton's proposition. Rushing notes that "results for class differences in disjunction and the relationship of disjunction to normlessness among lower-class Anglo-American farm workers are consistent with Merton's theory."[71] Rushing also found, however, "that the realtionship is neither limited to the lower class nor does it hold under all conditions in the lower class."[72] Rushing found that the disjunction between goals and oppor-

tunities concerning the child's education was associated with normlessness, as measured by the six question scale used, among farmers as well as Anglo-American farm workers. Rushing did not find such a relationship holding among Mexican-American farm workers and was led to conclude that "cultural interpretation is a significant intervening variable in the relationship between aspirations and blocked preceived opportunity."[73]

Rushing's treatment of concepts does not differ substantially from Olson and Tully's. Rushing began with a theoretical proposition, Merton's idea of "Social Structure and Anomie." He then reduced his concepts to more empirically relevant terms whose meanings were determined, at least in part, by the pragmatic demands of the project. For example, normlessness becaue synonymous with certain scores above a determined number calculated on the basis of the respondents' answers to six questions. These questions were not standardized but were developed according to the demands of testing the particular sample selected. However, it should be clear that Rushing had preconceptions of anomie, cluture, and class or he would never had been able to construct measurement instruments or justify making the occupation, farm workers, synonymous with "lower class." It can also be seen that, once again, operationally defining or specifying terms carries with it the danger of overly restricting concepts' empirical reference as in the case of using only one goal, children's education, as a basis for determining "goal-opportunity disjunction." Partially because of this restriction of meaning another question is raised when Rushing goes to draw conclusions. How the researcher, Rushing, moved from the level

of Anglo and Mexican farmworkers to the level of cultural interpretation, and from the level of the aspiration and preceived opportunity for a child's education to the more abstract level of aspiration and blocked preceived opportunity is not clear. What is clear is that Rushing moved freely between the two levels of conceptions and did not fixate on either level. How he methodologically achieved such a linkage is neither explained nor justified in this article.

Another research article to be analyzed in regard to the treatment of concepts is one concerning the effect of urban living on patterns of family interaction and individual social-psychological states. According to Bernard Rosen, the author of this article, the industrial city affects migrants in five ways.

> (1) it imporves the migrants standard of living; (2) increases the quantity and quality of resources available to them; (3) provides experiences which enhance their sense of efficacy; (4) alters their perception of the kind of world in which their children will grow up; and (5) fosters new values appropriate to industrial life.[74]

Rosen believes that "the process of change is set in motion" by "the city's relatively open opportunity structure."[75] Rosen also believes that migrants who recognize that success in such a "relatively open opportunity structure" is dependent on "competitiveness and self direction . . . will come to favor achievement and independence; authoritarian relationships in the family will seem less appropriate, and the encouragement of excellance in performance more desirable."[76] Following this perspective, Rosen hypothesized that "as the migrants' experiences in the city increased . . . relationships within the family would tend to become more egalitarian, communication and responsiveness

of family memebers toward one another would grow greater, and more emphasis would be placed by parents on promoting achievement and independence in their children."[75]

The first concept that Rosen had to deal with was "the migrants' experience in the city." According to Rosen, this conception was "operationally indexed by length of residence in São Paulo (a Brazilian city)." The initial measurement was made by selecting a sample of corporate planation workers (colones) and a sample of barrio, urban slum, dwellers.[78] The barrio residents were further divided, on the basis of a questionaire given to third and fourth grade students, into recent migrants (average length of residence in São Paulo one and a half years), established migrants (average six and a half years residence), and natives of the city or Paulistanos.[79] The possible extraneous effects of class differences were controlled by establishing that "the men were regularly employed in lower class occupations, as defined by a widely used scale devised by Hutchinson and Castaldi."[80] In this way the families' exposure to the values of the industrial city was operationalized.

All the other important concepts in Rosen's statement of the research problem have to do with family interaction. Because, as Rosen notes, "data on family interaction were obtained by systematically observing parents and children in their homes, under relatively controlled conditions,"[81] it is necessary to briefly explain the research design. The two parents and the child were asked to take part in three activities. One of these activities was block building. The child was asked to build a tower out of irregularly shaped blocks while

blindfolded, and the parents were asked to estimate the number of blocks the child could stack without knocking the tower down. The parents were allowed to verbally direct the child. On the third trial the child was told he or she would be given one cruzeiro (about 13 cents) for each block stacked, however, if the tower fell before reaching the parents' estimation, no money would be paid, and no money would be paid for blocks stacked beyond the parents estimation. The parents were given a norm (four blocks) on which to base their estimation.[82] The second activity was tinker toy construction which consisted of presenting the subjects with three toy designs of obviously increasing difficulty. Each person selected the one they believed the child could construct in fifteen minutes and then the three were asked to arrive at a collective decision.[83] The third activity was a modified game of Pick-Up-Sticks. Two players picked up the sticks and one of the subjects acted as a judge in determining if other sticks were being disturbed. At the end of each round the judge had to become a player and one of the players the judge. It was left up to the subjects to decide who would be a player and who would be the judge in each round.[84] The families were scored on the basis of their interactions around these three activities.

The scoring system used to record each family's interactions was one previously developed by Rosen in co-operation with Roy D'Andrade.[85] The scoring was based on three general categories of acts and the positive and negative type of each category of acts. One type of acts was called positive instrumental acts which included giving directions, suggestions and hints the purpose of which was to control the behavior of the other family members. Negative instrumental acts were

those which were expended in order to resist control by others, such as rejecting directions, advice or suggestions. Positive affective acts included expressions of approval, positive evaluation of performance, and the showing of a positive tension release, such as laughing and joking. Expressions of disapproval, negative evaluation of performance and the showing of a negative tension release, such as coughing, were scored as negative affective acts. Another scoring category was acts which encouraged others to be independent, and the negative side of this type of acts was, of course, acts of dependence, such as seeking help or instruction. Generally, only verbal interactions were scored although non-verbal behavior whose meaning was obvious was also scored.[86] It is, on the most part, in relation to this scoring procedure and design that the other concepts in this study were empirically specified.

Rosen's hypothesis was that as exposure to urban values increased so to would (1) communication, (2) responsiveness, (3) achievement promotion, (4) equality, and (5) independence within the family. These then are the important dependent factors in the relationship being tested. "The level of communication in the family was operationally defined as the amount of talking people do" irrespective of its scoring category.[87] The phenomena of reciprocity was operationalized by correlating the number of acts "each person directed toward others with the amount he received."[88] Achievement promotion was measured by the parental expectations reflected by the estimates and choices made in the first two activities.[89] Independence, of course, was directly scored. However, independence as well as equality were also interpreted as "decision making power" which was measured by "the number of times the

subject made the decision [of who would be the judge] in each of the ten Pick-Up-Sticks games."[90] Power and influence were also measured by determining whose estimation of the child's ability was finally agreed upon in those situations when a final collective estimate was called for.[91] In these ways Rosen operationalized the highly abstract concepts of equality, reciprocity, and independence for the purposes of this research project.

Having measured the operationalized terms or variables, Rosen performed various statistical procedures in order to obtain correlation coefficients. On the basis of these statistical manipulations he was able to draw conclusions.

> In giving the migrant a chance to imporve his position in life, the industrial city has made it possible for him to experience success. The results of this experience are an increased sense of efficacy, new values, and different perceptions of how the world is organized. When these changes in personal orientation and perspective occur, the family--at first the target of change--becomes its active agent. New patterns of family interaction develop, characterized by openness and responsiveness, and a greater concern with achievement.[92]

Rosen concluded on the basis of the determined relationships between his operationalized independent and dependent variables that his theoretical proposition was essentially correct.

Rosen's treatment of concepts within the research design is equivalent to that of Rushing in his study of anomie and class, and to that of Olson and Tully in their study of status inconsistency and political attitudes. Rosen started out with certain general theoretical conceptions concerning the effect of the city on family interaction. These conceptions were expressed in his hypothesis that exposure to the

city effects the basic interaction patterns, including equality and independence, within the family. He then reduced and specified his concepts to experimentally measurable and limited aspects of the more general conceptions used in his hypothesis. In conclusion Rosen moved back to the level of theoretical concepts assuming that verification of the operational relations could be interpreted as verification of the more general proposition that urban exposure increases equality, independence, and responsiveness in the family. The basis by which such unrestricted intellectual movement between abstract conceptions and operational terms was made can not be ascertained from this article.

The last example of contemporary empirical research selected for analysis is concerned with the relationship between religious orientation and socio-political orientation. In this article Richard Stellway argues that although much research has been carried out concerning this question it had not been conclusively shown that there is a correspondence between religious orientation and political orientation because party preference had been used as a measure of socio-political orientation. According to Stellway, "in view of the slight differences often found between political parties," party preference can not be considered a legitimate indicator of socio-political orientation.[93] Stellway goes on to argue that Republican-Democratic party preference does not necessarily represent a liberal-conservative dimension and that voting in a particular election might reflect an attitude on a particular issue, possibly a local one, and not a general ideological commitment.[94] However, Stellway does not make these arguements to

refute the basic theoretical proposition but rather to illustrate that it has not yet been properly verified.

Stellway then proceeds to argue, theoretically, in favor of the acceptance of the theoretical proposition that religious orientation and socio-political orientation are positively related. He argues that Conservative Christians view human beings as inherently evil and unperfectable in this life and because of this view Conservative Christians would be more likely to accept and uphold the status quo (socio-political).[95] Liberal Christians, on the other hand, see God more in nature, de-emphasize humankind's sinful nature, and emphasize their creative ability to change. Obviously, such views seem most compatable with socio-political views that stress reform and increasing social and human betterment.[96] On the basis of these arguements Stellway proposes two hypotheses. "Christian conservatism is positively related to a socio-political status quo orientation, and to a preference for a conservative political party."[97] Stellway further hypothesized that "Christian liberalism is positively related to socio-political change orientation and to liberal political party preference.[98]

In order to test these hypotheses Stellway operationalized the central concepts. "Two theological orientations, Christian liberalism and Christian conservatism, were measured in terms of six and seven item scales respectively."[99] The Christian conservatism scale composed by Stellway includes seven statements to which the respondent is asked to agree or disagree.

> a. All Biblical miracles happened just as the Bible says they did.
> b. A man must seek God's forgiveness to enjoy fellow-

ship with him.
c. Jesus was more than a great prophet, he was God's only son.
d. Biblical miracles did not happen as the Bible says they did but have been used as examples. (reversed scored)
e. If they stay true to God, people who suffer in this life are sure to be rewarded in the next.
f. Religious truth is higher than any other form of truth.
g. The Bible is God's message to man and all it says is true.[100]

A comparable six item scale was used to determine Christian liberalism.

a. Science and religion are both equally good ways to find truth.
b. Biblical miracles did not happen as the Bible says they did but have been used as examples.
c. God and 'Nature' are in some ways the same thing.
d. It is more important that we believe that Jesus was a great prophet than he was God's only son.
e. Some Biblical miracles really happened as the Bible says they did but others can be explained by natural causes.
f. If a man does good for others he will enjoy fellowship with God.[101]

Each respondent received a conservatism score and a liberalism score on the basis of their responses to the respective scales. Respondents who scored above a certain score on the conservatism scale were defined Conservatism Christians and those who scored above a certain score on the liberalism scale were defined as Liberal Christians.

Two other central concepts in Stellway's hypothesis are socio-political liberalism and conservatism. "Socio-political liberalism and conservatism were operationalized in terms of status quo orientation, change orientation, and political party preference."[102] Status quo orientation was defined as agreement with three statements.

1) The American way has brought us as close as human beings can get to a perfect society; 2) All groups can live in harmony in this country without changing

> the system in any way; 3) We should show our respect for our founding fathers by not questioning what they did.[103]

Change orientation was measured by agreement with two statements.

> 1) The present free enterprise arrangement for the distribution of wealth should be revised; 2) We need laws to improve conditions for some groups of people in this country.[104]

The third aspect of liberalism-conservatism, party preference was determined by the respondents' answer when asked "if there were only two political parties in the United States, one for liberals and one for conservatives, which one would you support."[105] Throughout the analysis of the data the possible complicating factors of occupational status, operationalized as the Seigel occupational prestige score, and education were partialled out.[106] In this way Stellway operationalized socio-political liberalism and conservatism for the purposes of empirical verification of the theoretical proposition that religious orientation and socio-political orientation are positively related.

Stellway also introduced another concept into his research in order to preform a subtest on his original hypothesis.

> The hypothesis [subhypothesis] may be stated in general terms as follows: the correspondence between religious and socio-political liberalism and conservatism will become more apparent for those individuals encountering adverse circumstances potentially emanating from the social structure.[107] (emphasis added)

In order to test this subhypothesis Stellway had to operationalize the idea of "adverse circumstances potentially emanating from the social structure." Stellway did this by restricting the concept "adverse circumstances" to the respondents' inability to fulfill his or her occupational aspirations as measured by one question.

> When you first started working you had certain hopes and expectations on how you might do in your work. Comparing what you then expected would happen in the future with you have actually accomplished, would you say that you (a) have done better then expected, (b) have done about as expected, or (c) have not done as well as expected.[108] (emphasis in original)

Those respondents answering (a) or (b) were compared to those answering (c) in order to test the effects of "adverse circumstances" on the realtionship between religious orientation and socio-political orientation.

After having statistically analyzed the empirical data Stellway accepted both his major hypothesis and his subhypothesis. However, recognizing the restrictive nature of his tests, due to the restrictive specification of the concepts used, Stellway remarks that "the present design has only begun to explore the conditions which operate to influence the relationships between religious and socio-political orientation."[109] Stellway also notes that "the finding that unfilled occupational expectations serve to increase in magnitude the relevant correlations . . . suggest that adverse circumstances potentially linked to the social system, operate to strengthen the correspondence."[110] It is important to note that Stellway only says "suggest"; he does not believe verification of his operationalized hypothesis automaticly becomes verification of the corresponding general and more abstract hypothesis.

Although in some ways Stellway follows the pattern of the other researchers examined here in their handling of concepts he also differs in one important aspect. Stellway began with certain general ideas and concepts such as Christian liberalism. In fact, it is only

in reference to these theoretical conceptions that Stellway could characterize prior research into this question as inconclusive due to "certain methodological weakness in the measurement of both political and religious ideology."[111] It seems then that Stellway viewed his main task as finding better operational terms, or indicators, ones which better capture the meaning of the general concepts. Although Stellway used new measurement instruments and operational specifications for the central concepts of the proposition under consideration he seemed unable to generalize from his findings.[112] This is where Stellway's conceptual methodology differs from that of the other sociological researchers already examined. Those researchers, Rosen, Rushing, and Olson and Tully, moved from abstract conceptions to operationally defined or specified ones and then in conclusion moved back to the general level. Stellway only "suggests" on the basis of his operational concepts. He remained on the operational level and did not attempt a transition back to the theoretical level in drawing conclusions.

The purpose of this analysis of contemporary research practices in empirical sociology, as was outlined in the begining of this chapter, was to make it possible to offer an answer to the question of whether the operational method is used in contemporary empirical sociology and if so how. It is now possible to answer the first part of the question, is the operational method used in contemporary empirical sociology, and to answer the second part, if so how, in part.

The first part of the question can be answered yes. Everyone of the methodologists examined here suggested some method similar to the operational method for reducing general theoretical concepts to empir-

ically determinable ones. Whether it was called operationally defining, operationally specifying, arriving at working definitions, or whatever, the methods suggested were essentially the same. General concepts must be reduced in meaning to certain dimensions which are empirically measurable or determinable. These indicators or dimensions must be selected according to the pragmatic demands of the project. It was also found by examining examples of contemporary research that this is in fact, at least in the examples examined here, what is done. It should also be noted in this regard that methods texts do not only reflect present practices but because they are used to train future empirical research orientated sociologists it can be expected that the methods they propose will remain in use for some time.

An answer to the question of how the operational method is used in contemporary sociology can be suggested. One aspect of the answer to this question was revealed through the prior presentation of methods instructions and research examples. A more loose operational method than the rigid operationalism espoused by George Lundberg and others seems to be preferred by empirical sociologists, at least by the methodologists and researchers examined here. Rather than restricting sociological analysis to the level of empirically determinable concepts contemporary empirical sociologists seem to recognize the necessity for both theoretical and operational conceptions in sociology. All the methodologists examined here either suggest or imply that although operational terms are necessary for the empirical verification of propositions and notions such verification can only be guided by theoretical propositions and ideas. All four of the research articles examined

here began with a discussion of certain theoretical ideas and propositions from which hypothesis, proposition stated in operational terms, were derived. It is not surprising that a loose operationalist approach has been adopted by many empirical sociologists in view of the fact that even Percy Bridgeman, the operational method's immediate ancestor, came to accept such an interpretation of the method himself.[113] However, by accepting such an interpretation of the method another difficulty is raised.

If general propositions can be translated into operational terms for the purposes of empirical verification how then can one return to the general level in order to draw conclusions from the empirical test? This is the part of the question being considered here that can not be answered on the basis on the information in this chapter. None of the methodologists examined here really address this problem. In three of the four research articles examined here the researchers generalized beyond the scope of their operationalized concepts in conclusion. The researchers seemed to interpret the empirical testing of relationships between certain limited dimensions or indicators of their general concepts as testing of the theoretical proposition itself. How they justify or effect such a translation from operational propositions back up the ladder of abstraction to the level of theoretical propositions was never made clear. Only Richard Stellway did not move back to the level of theoretical concepts in drawing conclusions from his research. His conclusions remained restricted to the dimensions which became the operationalized indicators of his general conceptions. What does seem clear concerning this aspect of how the operational method is used in

sociology is that it can not be clearly explained or even adequately determined on the basis of an examination of methods texts or empirical research projects. In order to fully answer this question it will be necessary to examine another area of endeavor in contemporary empirical sociology.

Notes

[1]See Chapter III, pp. 85-86.

[2]See Chapter III, pp. 82-83.

[3]See Chapter I, p. 12.

[4]Greer, Scott, The Logic of Social Inquiry, (Chicago: Aldine Publ., 1969), p. 160.

[5]Cicurel, Aaron, Method and Measurement in Sociology, (New York: The Free Press, 1969), p. 16.

[6]Lazarfield, Paul, "Evidence and Inference in Social Research," in Evidence and Inference, ed. by Daniel Lerner, (Glencoe, Ill.: The Free Press, 1959), p. 109.

[7]See Chapter III, p. 58.

[8]Lazarfield, op. cit., p. 111.

[9]Ibid., p. 113.

[10]Blalock, Hubert, and Blalock, Ann; Methodology in Social Research, (New York: McGraw-Hill, 1968), p. 6.

[11]Ibid., p. 11.

[12]Ibid., p. 25.

[13]Simon, Julian L., Basic Research Methods in Social Science, (New York: Random House, 1969), p. 16.

[14]Ibid., p. 20.

[15]Ibid., p. 20.

[16]See Chapter III, pp. 74-75.

[17]Sellitz, Clarie; Jahoda, Marie; Deutsch, Morton; and Cook, Stuart; Research Methods in Social Relations, (New York: Holt, Rinehart, and Winston, 1959), pp. 42-43.

[18]Ibid., p. 42, footnote 8.

[19]Ibid., pp. 43-44.

[20]Phillips, Bernard S., Social Research: Strategy and Tactics, (New York: MacMillan, 1966), p. 35.

[21]Ibid., p. 36.

[22]Ibid., p. 37.

[23]Cicurel, op. cit., p. 16. (paranthetic comment mine)

[24]Ibid., p. 16.

[25]Ibid., pp. 16-17.

[26]Ibid., p. 24.

[27]Francis, Roy, The Rhetoric of Science, (Minneapolis: Univ. of Minnesota Press, 1961), p. 10. (paranthetic comment mine)

[28]Ibid., p. 10.

[29]Ibid., p. 10.

[30]Ibid., p. 12.

[31]Ibid., p. 14.

[32]See Chapter I, p. 11.

[33]Volumes LXXV,LXXVI, LXXVII (1969-70, 1970-71, and 1972) of the American Journal of Sociology were used in this regard. The AJS is published by the University of Chicago and is the journal representing the style of sociology which is centered at this important institution of professional sociological training and research.

[34]Volumes XXXVI, XXXVII, XXXVIII (1971, 1972 and 1973) of the American Sociological Review were used in this regard. The ASR is the official journal of the American Sociological Association, the professional association of American sociologists. For a short discussion of the historic reasons for the existence of two major journals of American Sociology see Kuklick, Henrika, "A 'Scientific Revolution': Sociological Theory in the United States, 1930-1945," Sociological Inquiry, XLIII, (Winter, 1973), pp. 3-6.

[35]Volumes XIII and XIV (1971-72 and 1972-73) of the Sociological Quarterly (journal of the Midwest Sociological Society) were used.

[36]Volumes L and LI (1971-72 and 1972-73) of Social Forces (associated with the Southern Sociological Society) were used. It should be noted that no examples for analysis were selected from this journal.

[37]The three articles which are not examined here are Wen Li's "Suicide and Educational Attainment in a Transitional Society," SQ, XIII, pages 253-258; Glen Elder's "Intergroup Attitudes and Social Ascent among

Negro Boys," AJS, LXXVI, pages 673-696; and John Mayer's "High School Effects on College Intentions," AJS, XXVII, pages 59-69.

[38]Because the term "empirical sociology" was defined in the introduction as "'hard' or 'quantitative'" sociology (p. 12) only research articles using this type of methodology were selected for examination. It should also be noted that excellance and importance does not necessarily determine whether an ariticle is selected for publication. (Crane, Diana, "The Gatekeepers of Science: Some Factors Affecting the Selection of Articles for Scientific Journals," in The Sociology of Sociology, ed. by Larry and Janice Reynolds, (New York: David McKay, 1970), pp. 406-419.) However, despite this situation journal articles are probably a good barometer of "mainstream" sociological practice for it is those that publish that are in a position to influence future work in the discipline.

[39]The term "empirical sociological research" is, in effect, being operationalized here. See Chapter VI, footnote 52, page 201, for more comment on this subject.

[40]See Lenski, Gerhard, "Status Crystallization: A Non-Vertical Dimension of Social Status," American Sociological Review XIX (August, 1954), pp. 405-413, for the original formulation of this proposition.

[41]Olson, Marvin and Tully, Judy, "Socioeconomic-Ethnic Status Inconsistency and Preference for Political Change," American Sociological Review, XXXVII (Oct., 1972), p. 560. Marvin Olson was at the University of Indiana and Judy Tully was at the University of Texas at the time of publication of this article. The research was sponsored by a National Science Foundation Grant, and an earlier version of this article was read at the 1970 meeting of the American Sociological Association.

[42]Ibid., p. 561.

[43]Ibid., p. 562.

[44]Ibid., p. 563.

[45]Ibid., p. 563, footnote 8. The way in which questions are asked effect the way they are answered. It is questionable whether reversed scored items are comparable to regularly scored items. Although beyond the scope of this study it should be noted that this "operation", not an uncommon procedure, is questionable.

[46]Ibid., p. 563, footnote 9.

[47]Ibid, p. 563, footnote 10.

[48]Ibid., p. 563, footnote 11.

[49]Ibid., p. 565.

[50]Ibid., p. 565.

[51]Ibid., p. 567.

[52]Ibid., p. 567.

[53]Ibid., p. 567.

[54]Ibid., p. 573.

[55]Ibid., p. 572.

[56]See page 97, footnote 14.

[57]See Merton, Robert, "Social Structure and Anomie," American Sociological Review. III (Oct., 1937), pp. 672-682.

[58]Rushing, William, "Class, Culture, and 'Social Structure and Anomie'," American Journal of Sociology, LIIVI (March, 1970), p. 856. Rushing was at Vanderbilt University at the time of this publication. The research was supported by a Public Health Research Grant from the National Center for Urban and Industrial Health.

[59]Ibid., p. 857.

[60]Ibid., p. 859.

[61]Ibid., p. 859.

[62]Ibid., p. 862.

[63]Ibid., p. 860.

[64]Ibid., p. 860. Although beyond the scope of this study it is interesting to note how the concept "normlessness" becomes synonymous with the rejection of the norms of a particular society, or more correctly of a particular group in that society, on a theoretical level. The implication seems to be that there are two choices "status quo" morality, or amorality.

[65]Ibid., p. 860. See footnote 45 concerning reverse scoring.

[66]Ibid., p. 861.

[67]Ibid., p. 861.

[68]Ibid., pp. 864-869.

[69]Ibid., p. 861.

[70]Ibid., p. 862.

[71]Ibid., p. 870.

[72]Ibid., p. 870.

[73]Ibid., p. 870.

[74]Rosen, Bernard, "Social Change, Migration and Family Interaction," American Sociological Review, XXXVIII (April, 1973), pp. 198-199. At the time of publication Rosen was at Cornell University. The research was supported by grants from the National Science Foundation and the Cornell Latin American Studies Program.

[75]Ibid., p. 199.

[76]Ibid., p. 199.

[77]Ibid., p. 200.

[78]Ibid., p. 200. (paranthetic comment mine)

[79]Ibid., pp. 200-201.

[80]Ibid., p. 201. (emphasis added)

[81]Ibid., p. 201.

[82]Ibid., p. 202.

[83]Ibid., p. 203.

[84]Ibid., p. 203.

[85]Rosen and D'Andrade, "The Psychological Origins of Achievement Motivation," Sociometry, XXII (Sept., 1959), pp. 185-218.

[86]This scoring system is explained in Rosen, op. cit., p. 203 in the text and in diagram 1.

[87]Ibid., p. 204.

[88]Ibid., p. 205.

[89]Ibid., p. 206.

[90]Ibid., p. 208. (paranthetic comment mine)

[91]Ibid., p. 209.

[92]Ibid., p. 211.

[93]Stellway, Richard J., "The Correspondence Between Religious Orientation and Socio-Political Liberalism and Conservatism," Sociological Quarterly, XIV (Summer, 1973), p. 431. At the time of this publication the author was at the University of Illinois at Urbana. The research was sponsored by the Illinois Agricultural Experiment Station.

[94]Ibid., p. 431.

[95]Ibid., pp. 431-432.

[96]Ibid., p. 432.

[97]Ibid., p. 432.

[98]Ibid., p. 432.

[99]Ibid., p. 432.

[100]Ibid., p. 437, Appendix, Table A. See footnote 45 concerning reverse scoring.

[101]Ibid., p. 437, Appendix, Table B.

[102]Ibid., p. 433.

[103]Ibid., p. 433.

[104]Ibid., p. 433.

[105]Ibid., p. 433.

[106]Ibid., p. 433. (These prestige scores were first presented by Seigel in an unpublished Ph.D. thesis at the Univ. of Chicago in 1971).

[107]Ibid., pp. 434-435. (paranthetic comment mine)

[108]Ibid., p. 435.

[109]Ibid., p. 436.

[110]Ibid., pp. 436-437.

[111]Ibid., p. 431.

[112]Generalization here does not refer to the ability to apply the findings from a sample to a population but rather the ability to interpret findings concerning limited aspects of a phenomena (i.e., change orientation) to that phenomena itself (liberalism).

[113]See Chapter III, p. 78.

V. THE OPERATIONAL METHOD AND SOCIOLOGICAL THEORY CONSTRUCTION

A relatively recent development in sociology is the increasing interest shown by empirical sociologists in so-called "theory construction" or "formalization." According to Jack Gibbs, "more books on theory construction were published between 1965 and 1970 than throughout the field's history before that period."[1] The literature on sociological theory construction, as it will be referred to here, is, generally speaking, attempts by empirical sociologists to state more systematicly and with more precision rules for expressing ideas about the human social world, testing those ideas, and generalizing from those tests about the correctness of the original idea. This is not to say, however, as the term theory construction might seem to imply, that sociological theory construction is concerned with how new ideas come about, or as Karl Popper would say the psychology of knowledge, but rather with what Popper calls the logic of knowledge.

> As to the task of the logic of knowledge--in contradistinction to the psychology of knowledge--I shall proceed on the assumption that it consists solely in investigating the methods employed in those systematic tests to which every new idea must be subjected if it is to be seriously entertained.[2]

Popper, like many empirical scientists, agrees with Albert Einstein that new ideas "can only be reached by intuition, based upon something like an intellectual love (Einfühling) of the objects of experience."[3] However, once ideas are arrived at the empirical scientist demands that they be empirically tested, and in order to be empirically tested new

ideas must be stated precisely and in such a manner that they will be amendable to and modifiable by empirical tests. This is the topic of sociological theory construction, the development of rules for making sociological ideas amendable to and based upon empirical testing.

This topic, theory construction, has caught the attention of empirical sociologists. Because of the particular difficulties empirical sociologists face in testing ideas about the social world, the historical basis or the present discipline of sociology as pointed out earlier, the testing of theoretical ideas is particularly difficult.[4] Although the research methods of sociologists are often modeled after those of natural scientists and rest on positivistic epistemological justification, many of the popular theoretical ideas in sociology have been inherited from a more humanistic tradition. This division of intellectual ancestry also led to a division of labor within the discipline of sociology between theorists and researchers. This division of labor has tended to increase the original distance between the activities of empirical research and theorizing in sociology. As Hans Zetterberg has noted this has resulted in a "considerable gap at present between systems of definitions developed by social theorists and descriptive schemas used by researchers."[5] This is the situation to which most writers on sociological theory construction are addressing themselves. They hope to make the sociological knowledge gaining enterprise more productive by helping to unify the efforts of the divergent scholars who have claimed the label sociologist.

At this point in this study it should be obvious that a major proportion of any attempt to develop a systematic methodology for "testing

new ideas" must be directed to the problems of concept use, making concepts empirically applicable and moving from one level of conceptual abstraction to another. It is in this regard that the recent literature on sociological theory construction will be examined here.[6] Examination of this literature should make it possible to expand on the answer advanced in the conclusion of the previous chapter[7] concerning if and how the operational method is used in contemporary empirical sociology. Hopefully, examination of the sociological literature on theory construction will make it possible to determine how the concept-data problem is dealt with and how the operational method is used and interpreted in contemporary empirical sociology. It should be noted, however, before proceeding that the rules of formalization and verification proposed by the writers on sociological theory construction may bear little resemblence to the actual procedures used in the course of present sociological research, such as that discussed in the last chapter. This possibility does not detract from the fact that theory construction has gained increasing attention among sociologists, and although the procedures examined here may not be widely practiced this growing interest in theory construction might be indicative of its potential influence in the future on empirical sociology.

Before proceeding with the analysis of how writers on sociological theory construction deal with the concept-data probelm it is necessary to note briefly their continuity with the positivist-pragmatic tradition of empirical sociological methodology. For example, Jack Gibbs notes that he is taking a positivistic approach to theory construction; an approach which stresses that theories be stated formally,

be, testable, and be judged on the basis of their predictive power.[8] Paul Reynolds takes a similar approach and stresses that scientific knowledge must be empirically relevant.[9] However, the approach of the writers on sociological theory construction is not merely positivistic but more specifically pragmatic. Gibbs notes that procedures must be judged pragmaticly,[10] as does Arthur Stinchcombe who remarks that "the crucial question to ask of a strategy is not whether it is true, but whether it is useful."[11] Like Dewey and other pragmatists, the writers on sociological theory construction not only believe that a procedure must be evaluated on the basis of its practicality but more specificly on the basis of its practicality in gaining knowledge which will help extend control over the empirical world. It is because of the usefulness of theoretical models in extending control over the human environment that they are of interest to the empirical sociologist, according to Robert Dubin.

> These theoretical models are intensely practical, for the predictions derived from them are the grounds on which modern man is increasingly ordering his relationships with the environing universe.[13]

Paul Reynolds notes that although control is not a necessary criterion for the acceptance of knowledge it is the (desired?) outcome of "scientifically useful knowledge."

> However, it will be assumed that, if a theory related to a particular phenomenon is scientifically useful, then scientists and 'men of action' can examine their ability to influence the variables that will affect the events they wish to control.[13]

It seems clear that although the topic of theory construction is a relatively recent one in sociology, the general philosophical approach of

the writers on theory construction concerning problems of gaining knowledge of human beings and their social creations does not differ substantially from the general philosophical approach of other empirical writers in sociology. The methods of empirical sociology remain tied, even in the area of theory construction, to the intellectual tradition outlined in Chapter II.

The first example from the recent literature on sociological theory construction to be examined here is Jerald Hage's Techniques of Theory Construction. As expected, given the title of this type of methodological writing, theory construction, Hage stresses the necessity for abstract theoretical concepts.

> Theroetical concepts are the foundation of any theory. The first task in constructing a theory, therefore is to find some concepts to use in our theoretical statements. The most helpful kind of theoretical concept is the general variable, a continuum that applies to any culture and at any point of time--to societies that have ceased to exist, that presently exist, and that have yet to come into existence. These criteria, culture free and timeless, are easy to apply and thus make our task of recognizing general variables a simple one.[14]

According to Hage, the first step in constructing theories is to select abstract theoretical concepts, or general variables. However, if sociological theory is to be empirically relevant then it is not enough to have only theoretical concepts.

Hage acknowledges that in order for sociological theory to be empirically verifiable a second level of conceptions, indicators of the theoretical concepts, must be introduced. Hage stresses the importance of both aspects of concepts, theoretical definition and operational definition, in the development of sociological theory.

> Criticism is facilitated by the interaction between theoretical and empirical implications. It is much easier to decide if the indicators are valid with the presence of the theoretical definition, while indicators are a check on the utility of the definition. A concept can be measurable but not relevant because it bears little relationship to any other theoretical idea, as a number of factor-analytic studies have indicated. Similarly, a grand idea that is unmeasurable remains largely useless. Without a theoretical definition, the indicators can remain too specific. Without an operational definition, the meaning can remain too diffuse. We want to guard against the excesses of grand theory and empiricism, as noted by Mills. This is best done by having two different kinds of definitions.[15]

Hage rejects both the rigid operationalist approach, which he believes will lead to what C. Wright Mills called "abstracted empiricism,"[16] and the construction of theory apart from empirical testing, which he believed would lead to what Mills referred to as "grand theory."[17] In order to guard aginst these trends Hage proposes a loose operationalist approach to the use of concepts in the constructing and testing of social theories.

It is one thing to propose such an approach, but it is another to suggest ways of implementing and using it. Hage suggests that one should search both modern and historical sociological literature for not only useful theoretical concepts but also for operational ones.[18] He also suggest ways in which theoretical concepts can be used to suggest indicators,[19] and how indicators and indices can be used to suggest theoretical definitions,[20] an approach particularly suited to the use of factor analysis.[21] However, Hage seems to avoid the problem of determining some sort of linkage between the two levels of conceptual abstraction.[22] The problems involved in moving both up and down the

ladder of abstraction in the course of testing sociological theories are never directly addressed. Although Hage proposes a loose operationalist approach to the treatment of sociological concepts, like the methodologists and researchers examined in Chapter IV, he does not attempt to systematize such an approach.

Nicholaus Mullins has written a volume on sociological theory construction designed "for freshman, sophomores, and others without prior training in the social sciences."[23] This introductory text was meant to enable students to "generate a simple system of empirically testable propositions about social life."[24] One of the first distinctions Mullins makes in this introductory text is between concepts and variables. Mullins recognizes the necessity for both theoretical and empirically determinable concepts as becomes clear in his definition of a variable.

> A variable is a potential proxy for a concept. It must be a proxy because a concept cannot be directly measured but is rather associated with a variable that can be measured. It is a potential proxy because a variable must be explicitly associated by a definition with a concept before it can become that concept's proxy.[25] (emphasis in original)

Mullins, like Hage, believes that in order to "generate a simple system of empirically testable propositions about social life" there must be two levels of conceptions, or definitions of concepts.

Mullins suggests a strategy similar to that suggested by Hage for translating concepts into variables and variables into concepts. By means of a procedural definition "concepts with several subconcepts" can be translated into "variables."[26] Definition can also move in the opposite direction. By means of a "verbal definition" it is possible to move "from a variable to a concept."[27] However, Mullins, unlike

Hage, is more sensitive to the troublesome problem of effecting some sort of linkage between the two levels of definitions. He notes that "concepts in social theories are usually formulated broadly" but "variables are necessarily more limited," and because of this "social theorists often find it quite difficult to fit concepts with empirical variables."[28] While Mullins acknowledges the rigid operationalist approach to this problem he rejects it on the grounds that such restriction of concepts "cripples a theory's ability to order board ranges of material."[29]

The question then that Mullins must answer, given his acceptance of two levels of conceptions, is how validity, linkage between the variable and the theoretical concept, can be determined. Mullins's suggestion for answering this question is to use convention as a criterion of validity.

> Beyond these concerns, definitions must meet a validity criterion, that is your definition must be accepted by some competent other person as a proper indicator of the concept and a proper conceptualization of the variable.[30]

Although such an idea of validity might be attacked on a number of grounds such a suggestion is not surprising given the pragmatic basis of sociological methodology. What should be pointed out is that while convention might serve as an adequate pragmatic criterion of concept validity it can not ensure that a variable is a valid indicator of a theoretical concept. Because of this, and of course other factors as well, Mullins reminds the reader that "while a test may prove the inadequacy of a particular prototheory, it may also simply reflect an inadequacy in your testing procedure."[31] Although intersubjective

agreement concerning the linkage between a variable and a concept might increase the theory tester's confidence in his or her indicators it in no way guarantees that he or she has been using an adequate indicator of the concept of concern.

Paul Reynolds also acknowledges the need for two levels of concepts, or definitions, when constructing social theories. Reynolds points out that "a theoretical concept should not be concrete, that is, it should not be related to a particular spatial or temporal setting."[32] Partially because they are abstract, theoretical concepts must depend upon convention for their meaning. Primitive terms, which derived definitions are composed of, must refer to concepts "shared by the relevant scientists." According to Reynolds, "achieving agreement among the audience on the meaning of a term is more important than the actual form of the definition."[33] Related to each theoretical definition arrived at in this manner "may be several operational definitions."[34] Operational definition is, for Reynolds, a necessary step if concepts are to be empirically determinable.

> Operational definition--A set of procedures that describes activities an observer should perform in order to receive sensory impressions (sounds, visual or tactile impressions, etc.) that indicate the existence or degree of existence of a theoretical concept.[35]

In order for empirical sociology to meet two of the three criteria Reynolds lists for the determining of scientific knowledge, abstractness and empirical relevance,[36] concepts must be both theoretically and operationally defined.

If concepts must be defined on two levels of abstraction, which

technically results in two concepts, then there must be some way of judging whether the operationally defined concept is truely related to the theoretical concept. Reynolds's solution to this problem of linkage is similar to that suggested by Nicolaus Mullins.

> Careful study of the theoretical concept leads one to consider some measurable characteristic (of a person, group social system, and the like) that is reasonably related to the theoretical concept. There is no way to avoid the fact that this is largely a matter of judgement. Intersubjective argreement is the only criterion for evaluating the suitability of an operational definition for measuring a theoretical concept.[37]

Because the whole question of linkage must be based on convention so too must the whole process of moving up and down the ladder of abstraction for the purposes of testing and modifying a theory.

> If it is agreed that the facts described by any concrete statement are also described by a more abstract statement, then any empirical support for the concrete statement also provides support for the abstract statement.[38] (emphasis added)

For Reynolds, the worth of a theory, as well as the worth of its test, is dependent on what the "relevant scientists" consider is its worth. This position, a test of a theory is what we agree to call a test, is reminiscent of Lundberg's arguement against the idea of validity, radicalism is what we agree to call radicalism.[39]

Robert Dubin, in his book entitled Theory Building, declines to call "the things out of which theories are built" concepts, due to confusion surrounding the meaning of the term, concept. Instead he employs "the more neutral term unit." There are essentially two kinds of units according to Dubin, real and nominal ones.

Where there is some confidence that such empirical

> indicators are available or can be invented (i.e., instruments can be developed to produce empirically ascertainable traces), the unit of a theory for which the empirical indicator stands will be called a real unit. Where empirical indicators are not considered to be available to stand for a unit, it will be designated a nominal unit.[41] (emphasis in original)

Although Dubin contends that in order for a theory to be empirically relevant it must be composed of "real units," he critisizes the "extreme operationalists" for their position that only real units are allowable in the construction of sociological theories.[42] Dubin recognizes that many nominal units have been important to the development of the social sciences.

> Such units of social science theories as Id, ego, anomie, syntality, conflict, power, charisma, subjective probability, maximization, culture and society have played important roles in the development of scientific theories in psychology, sociology, political science, economics, and anthropology.[43]

Although Dubin does not believe that every unit in a sociological theory must be linked to an empirical indicator he does accept the position that sociological theories must be empirically verifiable. In order for a theory to be verifiable many of its units must be real; empirical indicators of the theoretical units must be "available."

Dubin's idea of an empirical indicator is somewhat similar to Paul Reynold's idea of an operational definition. Dubin asserts that "an empirical indicator is an operation employed by a researcher," but instead of asserting, like Reynolds, that the operation is employed by the researcher in order to receive sensory impressions of a concept, Dubin asserts, more specificly, that the operation is employed in order "to secure measurements of values on a unit."[44] Dubin's first require-

ment of an adeaquate empirical indicator is that it be quantifiable. He adds to this requirement "two principle criteria of an adequate empirical indicator."

> 1. The operation or operations involved in the relation between observer and the apparatus he uses for observing may be explicitly set forth so that it or they may be duplicated by any other equally trained observer.
> 2. The employment of the observing operation produces equivalent values for the same sample when employed by different observers.[45]

These two criteria, repeatability and consistency of results, are generally subsumed under the more general criterion, reliability. However, beyond these requirements, quantifiability and reliability, empirical indicators must be linked to the theoretical units they are meant to represent; their validity must be established. Dubin's approach to this question is similar to both Reynold's and Mullins's approach.

> The fundamental sense given to the term validity is that there is consensus that an empirical indicator measures values on a stated unit. This consensus is a manmade consensus and is nothing more than a conventional agreement among a group of interested students and spectators that the empirical indicator and theoretical unit whose values it measures are homologous.[46]

For Dubin the problem of linking theoretical units and empirical indicators is solvable only by the reaching of consensus between the interested "students and spectators."

Dubin has developed some rules for moving down the ladder of abstraction but in order for empirical research to be relevant to the ongoing development of sociological theories the question of how to move back up the ladder of abstraction must also be addressed. Dubin states that the task of empirical research is to either demonstrate the

correspondence between "states of the observable world that it (theory) protrays" or "to show that the observable conditions of the world differ from those predicated by theory."[47] Dubin views the process of theory building and testing as an inductive-deductive procedure.[48] First the theory is arrived at by inducing from available empirical evidence. Secondly, empirical propositions are deduced from the theory, by the use of empirical indicators, for the purpose of testing the theory.[49] However, there is a missing final link to this process. Once the empirical proposition has been tested the empirical sociologist must draw conclusions about the theory of interest on the basis of the test. Dubin suggests that "particular attention and prominence" must be given "to deviant cases and nonfitting data that feed back immediately onto the theory" in "modifications."[50] While such a suggestion might be helpful it does not really offer a solution to this problem of generalizing from the results of empirical tests. The only answer to this problem seems to rest on Dubin's definition of validity as convention. In order to generalize about a theory; prove, disprove, or modify it; on the basis of the results of a test of an empirical statement, which necessarily is more limited in scope and reference than the theory, the relevant audience must reach a consensus on the meaning of the results of the test. It is only through the use of this pragmatic criterion, intersubjective agreement, that Dubin can overcome the full implications of the concept-data problem.

Hans Zetterberg has taken a somewhat different approach to sociological theory construction than the writers already examined. Zetterberg attempts to develop procedures for the construction and

use of an axiomatic theoretical system in empirical sociology. Such an approach to theory construction has implications concerning the use and development of concepts. Zetterberg suggests that the starting point for the sociological theorist is the identification of "primitive terms." Primitive terms are "extralogical words" which form the basis (along with purely logical terms) for the definition of all other terms in a theory, "derived terms."[51] "These primitive terms are the building blocks which . . . furnish more complex terms."[52] The implication is that because these terms are not defined their meaning must be based, essentially, on convention. It seems that from the very beginning Zetterberg's axiomatic theoretical system is tied to the criterion of consensus among relevant scientists for its legitimacy.

Once the concepts of the axiomatic theory are accepted or derived the problem of empirically determining concepts for the purposes of verification must be faced. Zetterberg argues that "conventional nominal definitions" are needed, especially in the case of axiomatic theories because nominal definitions "enter into logical relationships . . . more readily than operational definitions can."[53] Zetterberg acknowledges the necessity of both nominally defined concepts and indicators of these concepts. Because of this acknowledgement he must deal with the problem of linking those two levels of conceptions. Ideally, in an axiomatic system the "definitions and indicators" should "embrace each other in the most intimate way." According to Zetterberg the intimacy of this embrace determines the validity of an indicator.[54] In other words, the indicator, to be perfectly valid, must have "the same scope and content as the definition."[55] While such assertions

express well the idea of validity they do nothing to show how this embrace can be determined much less how movement between the two levels should be effected when there is less than perfect validity. Although Zetterberg is never explicit on this subject his endorsement of the Kuhnian model of theory acceptance and rejection suggests that he, like the writers examined earlier, accepts that it is in fact convention which links the activities of theory building, research, and theory change and modification.[56] Once again, it seems that ultimately the concept-data problem, the problem of determining the embrace between concepts and indicators, is seen as a question of reaching agreement among concerned "students and spectators."

David Willer proposes a methodological strategy similar in many ways to that proposed by Zetterberg. Willer believes that "nominally defined concepts stem originally from terms used in everyday experience" whose meaning is narrowed to produce percise terms.[57] Willer goes on to note that there are two levels of meaning in any science, the nominal level, "the level of scientific explanation and understanding," and the operational level, "the research level."[58] Willer argues against "extreme operationalism" in passing[59] and notes that "operationalism of the most radical sort is almost dead."[60] Willer then acknowledges the necessity for two levels of definitions in Scientific Sociology and in doing so acknowledges the need for linking the two levels of conceptual abstraction.

Willer notes that identity of meaning between the two levels of meaning of a science, a necessity if theory and research are to be related, depends on "both isomorphism of relational structure and adequate

correspondence of nominal and operation meaning" of concepts.[61] Willer stresses that the "first criterion for measurement is not the correspondence of the rules of measurement or operational definitions, but the correspondence of operational definitions to nominal definitions."[62] Willer, like Zetterberg, views the issue of validity as a question of the intimacy of the embrace between indicators and concepts. Willer believes that such validity, the intimacy of the embrace, can be established.

> In the case of the theory model, correspondence between nominal and operational definitions can be inferred if thinking with the model [the logical implications of the theory] gives essentially identical results to those found by the application of the system [empirical test].[63] (emphasis added)

It should be noted that correspondence between the two levels of conceptions must be "inferred"; it cannot be firmly established.[64] Willer notes that while the "model and formal system will indicate the form and properties needed, they cannot determine the construction of measures."[65] Although Willer stresses the need for two levels of conceptions in a Scientific Sociology he admits that he is unable to develop any precise way of connecting or linking the two levels of definitions. Correspondence between operational and nominal definitions must be inferred.

Arthur Stinchcombe has also addressed the issue of concept use in the construction of social theories. Stinchcombe, like Willer, notes that, "in general, a science starts off with its variables defined by common sense, by the distinctions that people make in daily life."[66] Even before this assertion Stinchcombe asserts that the first require-

ment of a theoretical concept is that it "accurately reflect the forces operating in the world."[67] However, such correspondence, between concept and reality, is not easily ascertained. Because of this every concept "must be, either implicitly or explicitly, a hypothesis that specified phenomena, and no others, are in some situations, causally operative."[68] In order for these concepts, these hypotheses, to be meaningful they must be related, translated for the purposes of application, to the "real," empirical, world.

Stinchcombe believes that empirically testable propositions are logically implied in theoretical statements.

> From this theoretical statement we derive, by logical deduction and by operational definitions of the concepts, an empirical statement. The theoretical statement logically implies the empirical statement.[69] (emphasis in original)

Stinchcombe, unlike David Willer, maintains that measurement "is a part of theory," derivable from it.[70] Stinchcombe does not maintain, however, that the logical deduction of empirical statements by use of, in part, operational definitions is without difficulties. He admits that the testing of a theory includes "the investigating of as many of the empirical consequences of each theory as is practical."[71] It seems that each concept might imply numerous operational definitions or empirical consequences. It is necessary then to choose from among all these possible indicators to find the most valid ones or one; the one which most closely captures the full scope and meaning of the theoretical concept. In order to make such a choice, to establish validity, some criterion must be available. However, Stinchcombe never really addresses this question of how linkage between theoretical defini-

tions and operational definitions can be effected.

Hubert Blalock, whose methodological instructions were examined in the last chapter, has also written on sociological theory construction. Blalock, like the other writers on sociological theory construction examined here, acknowledges the need for two levels of conceptions in empirical sociology. He also recognizes the difficulty this need presents.

> The statement of theories on a highly general level requires that concepts be defined rather abstractly. . . . But if such general theories are to be applied to diverse empirical data, one must somehow link the more abstract concepts with numerous indicators or research operations. The abstract or general concepts will ordinarily be fewer in number than the indicators. . . . Testing the more abstract or general theories requires that the small number of abstract variables contained in these theories be linked in very explicit ways to measured variables.[72]

While Blalock proposes that, ideally, a completely closed deductive theoretical system is the goal of the sociological theory constructor he admits, "more realisticlly," that such a goal can only be approximated.[73] Because empirically testable propositions can not be readily deduced from theoretical propositions the problem of linking abstract concepts to indicators, research operations, remains significant.

Blalock is aware of this troublesome problem and faces it directly. Borrowing the language of F.S.C. Northrop,[74] Blalock reinterprets the notion of abstraction.

> These abstract concepts or constructs must then be linked with indicators that can actually be measured. In this sense the notion of 'abstraction' refers to the distance from the kinds of immediately sensed data that Northrop refers to as 'concepts of intuition.'[75]

Like Northrop, Blalock admits that the link between theoretical concepts

and indicators, the epistemic correlation, can not be observed or determined but must in fact be assumed.

> There will remain the problem of establishing 'epistemic correlations' between the theoretical concepts and the operational indicators, and this will usually if not always, require one to make certain a priori untestable assumptions concerning the causal linkages involved.[76]

Blalock admits that the transition from theoretical concepts to operational indicators is necessarily accompanied by certain a priori assumptions. However, unlike many of the other writers examined in this chapter, he does not suggest, in this work, that the adequacy of an indicator can be judged by consensus as to its use.

Blalock does make one suggestion concerning the testing of theories and the selection of operational indicators. Although those who are "more concerned with the process of theory construction should at least suggest the kinds of operational procedures and possible distrubing influences that should be considered in developing auxiliary theories" (theoretical propositions operationally translated),[77] "one can hardly expect the theorist to specify more than a handful of particular indicators."[78] It is up to those testing the theory to construct "an auxiliary theory appropiate for the particular population, measuring instruments, and research design with which he is dealing." For Blalock, "such a division of labor seems absolutely essential, given the magnitude of the task that lies ahead."[79] Blalock suggests that the best way to deal with the necessity for two levels of conceptions is to develop specialists in the development and use of each level of conceptual abstraction. How this would affect the already difficult problem of linking the two levels is not clear. What is clear is that Blalock

believes that it is primarily the researcher who must be concerned with translating abstract concepts into operational indicators, a position with which Jack Gibbs strongly disagrees.

Jack Gibbs, more than any of the other writers examined here, stresses the need for formalization of sociological theory. Gibbs admits that "throughout the history of sociology no major theorist has stated a theory formally, and I fear that the tradition will not be abandoned."[80] However, Gibbs views such a situation and its continued existence as a major liability toward the advance of empirical sociology. Because of this deeply felt need for the formalization of sociological theory Gibbs attempts to develop a formal mode of theory construction for sociology "applicable only to quantitative properties."[81]

Gibbs admits that there is still a need for both theoretical terms and empirically applicable terms in empirical sociology. He asserts that theories are verifiable only to "the extent that some of the component terms are empirically applicable."[82] However, at present many terms do not "designate measurable phenomena." The only way testable predictions can be derived from statements made up of such terms is "in accordance with a mode of formal theory construction."[83] Gibbs acknowledges the contribution of operationalism in pointing to the necessity for verifiable theories, but he adds that a theory can be tested even though many of its terms "designate vague undefined notions."[84] Gibbs, like Blalock, recognizes that, at least at present, there is a need for the existence of both theoretically and operationally defined terms in empirical sociology.

Gibbs strongly differs from Blalock, however, in his suggestion

concerning the manner in which indicators of theoretical concepts should be selected. Gibbs recognizes that at present few theorists suggest operational terms or indicators of their concepts,[85] but instead of promoting such a division of labor, like Blolock, Gibbs considers it a defect of contemporary empirical sociology.

> No defect of sociological theories is more glaring than the omission of formulas and procedures for obtaining data. The defect is rationalized by the myth that investigators will know what formulas and procedures are appropriate for tests of a theory. The myth suggests that formulas and procedures enter only into tests; that is, they are not components of the theory; but if this is true, it is difficult to see how an investigator knows what forumlas and procedures to employ.[86]

Gibbs, then, accuses Blalock, indirectly, of promoting a myth. Instead of a need for a division of labor to aid in the translation of theoretical concepts into empirically applicable ones, "theory construction and test procedures are interrelated, and a mode of formalization is incomplete unless it stipulates procedures for testing theories."[87]

For Gibbs, it is not enough to merely suggest that procedures for testing be specified in a truely formalized theory. The theorist, the formalizer of theory, must select indicators and must try to establish some link between the two levels of conceptions. Gibbs dismisses the idea of validity by arguing that sociological concepts do not refer to directly experienced objects phenomena, but to objects or phenomena inferred on the basis of experience.[88] Because of this "an attempt at validation is nothing more than a test of an implicit theory; and once that is realized the utility of validity as a notion is questioned."[89] If Gibbs rejects the notion of validity in determining the

adequacy of an indicator he must substitute some other criterion. Gibbs's solution is a familiar one, convention. Gibbs defines "empirical applicability" as "the extent to which independent investigators can agree in applying a term to identify particular events, things or properties."[90] Gibbs notes elsewhere, to illustrate this principle, that if a unit term is used to denote a type of population, "the implied assertion is that investigators can agree substantially in designating aggregates as instances."[91] Thus, even Jack Gibbs who so strongly stresses the need for theory formalization and the specification of indicators in theory, admits that when it comes to moving up and down the ladder of conceptual abstraction the only real guide is convention.

It is now possible to summarize what seems to be the major trends in the literature on sociological theory construction concerning the concept-data problem and the operational method. As was expected, given these writers' interest in theory, everyone of the writers examined here endorse a loose operational approach. They all acknowledge that it is necessary, at least at this point in the development of sociological theory, to use abstract theoretical concepts in order to truely represent the rich and complex nature of human social life. However, if these theoretical concepts are not used in association with another level of conceptions or definitions of concepts they run the risk of losing all reference to the "real," empirical, world and developing into systems that C. Wright Mills labeled grand theory. In order to avoid such a risk it is necessary that theories be put to empirical test, and in order for that to take place theoretical concepts must be

made empirically relevant. All the writers examined here acknowledge the need for operational definitions or indicators along side the theoretical definitions of concepts. Although there does seem to be some disagreement, between Hubert Blalock and Jack Gibbs for example, over whether the selection of indicators is the job of the researcher or the theorist, there does not seem to be any disagreement about the need for operationally specified indicators. Like the methodologists and researchers examined in the last chapter the writers on contemporary sociological theory construction admit to the need for both theoretical concepts, or units as Dubin calls them, and operationally specified ones.

The acceptance of this need for two levels of concepts carries with it certain difficulties. The rigid operationalists of the thirties, such as George Lundberg, had hoped to solve the concept-data problem by demanding that sociologists concern themselves only with operationally defined concepts. The acceptance by many contemporary sociologists, such as the writers on sociological theory construction examined here, of the need for abstract concepts revives or, more correctly, continues to illustrate the whole dilemma of linking concepts to empirically ascertainable phenomena and objects. However, the writers on theory construction examined here do not seem to be able to offer much of a solution to this perplexing methodological problem. While many of these writers stress that concepts and indicators should embrace, have the same scope and meaning, how such validity should be established is another question. The majority of the writers examined here suggest that validity must rest on convention. If the "audience" or "students and spec-

tators" or "a competent other person" agree that a certain operationally defined or specified concept, an indicator, validly represents a theoretical concept then it does validly represent that concept. Although many of the earlier operationalists' arguments seem to have been rejected by contemporary empirical sociologists the argument that validity is actually a question of reaching intersubjective consensus seems to have been readily adopted.[92] The writers examined here who did not adopt this argument seem to leave this question up to the good judgement of, what John Stuart Mill called, the "scientific imagination." None of the writers examined here offered any new insights into the problem of linking concepts at the two levels of abstraction beyond those which had already been noted earlier is this study.

The implication of this situation is that the testing, verification, and/or modification of sociological theories can still not be accomplished in any systematic way, despite efforts such as Gibbs's. If the jump down the ladder of abstraction from theoretical units to empirical units must be taken on the basis of convention or good judgement then the same applies to jumps back up the ladder. Once the auxiliary theory, the operational statement, has been tested the empirical sociologist can generalize on the basis of this test about the more abstract theory only if other sociologists agree that the tested auxiliary theory is a good representation of the abstract theory (if journal editors decide to publish it?) or if the empirical sociologist can trust his or her own good judgement.

These points might better be illustrated by example. Drawing upon the discussion in the last chapter of the research done by William

Rushing into the applicability of Robert Merton's theory of "Social Structure and Anomie,"[93] it should be possible to briefly illustrate the above mentioned points. Firstly, both abstract concepts and operationalized concepts entered into the work. Rushing begins with Merton's abstract theoretical proposition that "low-status persons (persons whose social role affords them few rewards, either in prestige or monetary terms) aspire to middle-class goals (monetary achievement, education, security) but are denied opportunity (the means) for reaching them which leads them to develop deviant attitudes (reject the prevailing normative order)." In order to arrive at a testable operational statement Rushing had to operationally specify all the major concepts. Low-status persons became farmworkers, a decision based on the convention of referring to this occupation as low-status. Middle-class goals became the desire to send a child to college, a limited but generally accepted indicator of middle-class goals. Denied opportunity became the respondents' perception of denied opportunity, an often used mode of translating a theoretical concept into a measurable concept. Objective conditions are translated into the more easily determined subjective perception of conditions. Lastly, deviant attitudes or normlessness was translated into certain responses to six questions. Because these questions had never been used previously it must be assumed that the choice of these questions was based on Rushing's "good judgement." Because Rushing considered these indicators valid representations of Merton's theoretical concepts, he felt he could draw conclusions about the adequacy or precision of Merton's theory from his research.[94]

The linkage between the two levels of conceptions rested on either

convention or Rushing's judgement and because of that the usefulness of the conclusions also rests on these factors.[95] The strategy that Rushing used in testing Merton's theory is very much like the strategy proposed by contemporary writers on sociological theory construction, and illustrates how their proposals are "put to work."

On the basis of the findings in the two previous chapters it is possible to offer an answer to the second major question of concern of this study. Is the operational method used in contemporary empirical sociology and if so how? In view of the consistency in approach to the operational method by methodologists, researchers, and writers on theory construction in contemporary empirical sociology it is possible to briefly summarize their approach to the operational method and the concept-data problem in general. Some of the generalizations drawn do not apply to everyone of the writers examined here, but they seem to summarize the general approach to the topics of operationalism and the concept-data problem in contemporary empirical sociology.

The operational method is still used, in a limited sense, in comtemporary sociology. Without exception, all the writers examined here admit to the need for empirically determinable concepts or indicators if sociology is to be based on empirical "fact." Such concepts must be defined in cognizance of the demands of the project and specified according to the operations taken to measure or determine them. However, unlike the rigid operationalists of earlier fame, modern empirical sociologists do not claim that these operational concepts are the only ones needed in sociology. In opposition to such a view they use or propose the use of two levels of conceptions. One level is necessarily

abstract, for the purposes of understanding and explanation, in order to represent the full range of meaning of the complex phenomena of interest to the sociologist. The other level, the operational level, in order to be empirically determinable is specific to the particular research situation or situations. However, operational conceptions can not be determined without the guiding presence of theoretical concepts. This loose application of the operational method is used by many contemporary sociologists.

If there are two levels of conceptions in empirical sociology there must be some sort of linkage between these two levels. This problem, the problem of establishing linkage, is, after all, the very concept-data problem itself. If the operational method is used to derive indicators from concepts without replacing them then the concept-data problem has really not been addressed. When it comes to linkage the conclusions which can be reached are not as clear as the previous conclusions. It seems that contemporary empirical sociologists have not been able to offer a systematic solution to this reoccuring problem. The solutions advanced seem to be of two types. One is that an operational definition is valid if the interested intellectual workers in the field agree that it is valid. The other is that we must depend on the "good judgement and scientific artistry" of the relevant scientists. Obviously, both of these are pragmatic solutions meant to skirt what seems to be an insoluable problem given the acceptance of the necessity for both levels of conception. Because linkage between levels of conceptions must be determined on these grounds so too must generalization based on research results obtained by measuring operationally defined terms. Gener-

alization on the basis of tests of statements composed of operational terms must also be justified on the basis of convention or good judgement.

The operational method is used in contemporary empirical sociology to derive empirically determinable terms from abstract concepts, though not to replace such abstract concepts. The real issue of the concept-data problem, linking theory to empirical research, has not really been solved. Rather, it is avoided by accepting the operational term as a valid indicator of the theoretical concept either on the basis of its acceptance as such by relevant scientists or by trusting the good judgement of certain researchers. Having answered the two major questions of concern in this study it is now possible to move on to the final task of this study. That task is to draw conclusions by critically evaluating the operational method used in contemporary empirical sociology as an approach to the concept-data problem.

Notes

[1]Gibbs, Jack, Sociological Theory Construction, (Hinsdale, Ill.: The Dryden Press, 1972), p. 3.

[2]Popper, Karl, The Logic of Scientific Discovery, (New York: Harper and Row, 1968), p. 31.

[3]Einstein as quoted in Ibid., p. 32.

[4]Chapter I, p. 4.

[5]Zetterberg, Hans, On Theory and Verification in Sociology, (Totowa, N.J.: The Bedminister Press, 1965), p. 62.

[6]Once again it should be noted that it was impossible to examine all the recent literature on theory construction. Hopefully, the books selected for examination here are representative of current sociological thought in the area of theory construction.

[7]Chapter IV,pp. 25-28.

[8]Gibbs, op. cit., p. 4.

[9]Reynolds, Paul Davidson, A Primer in Theory Construction, (Indianapolis: Bobbs-Merrill, 1971), p. 14.

[10]Gibbs, op. cit., pp. 12-13.

[11]Stinchcombe, Arthur L., Constructing Social Theories, (New York: Harcourt, Brace, and World, 1968), p. 4.

[12]Dubin, Robert, Theory Building, (New York: The Free Press, 1969), p. 3.

[13]Reynolds, op. cit., p. 10.

[14]Hage, Jerald, Techniques and Problems of Theory Construction, (New York: John Wiley and Sons, 1972), p. 32.

[15]Ibid., p. 67.

[16]Mills, C. Wright, The Sociological Imagination., (New York: Oxford Univ. Press, 1959), pp. 50-75, "Abstracted Empiricism."

[17]Ibid., pp. 25-49, "Grand Theory."

[18]Hage, op. cit., pp. 69-72.

[19]Ibid., pp. 72-77.

[20]Ibid., pp. 77-81.

[21]Factor analysis refers to a number of different statistical procedures for determining underlying factors or "concepts" which could account for the interrelations between a number of variables. Factor analytic techniques could be used, for example, to determine if a number of questions in a survey research study are apparently measuring only two or three "factors."

[22]Hage uses the term linkage to refer to links between concepts (on one level of abstraction) which enable propositions or statements to be formed (Hage, op. cit., pp. 85-110). This use of the term should not be confused with the way the term linkage is used here, to refer to links between corresponding concepts on the two levels of abstraction.

[23]Mullins, Nicholaus C., The Art of Theory: Construction and Use, (New York: Harper and Row, 1971), p. vii.

[24]Ibid., p. 2. (emphasis in original)

[25]Ibid., pp. 13-14.

[26]Ibid., p. 14.

[27]Ibid., p. 14.

[28]Ibid., p. 20.

[29]Ibid., p. 22.

[30]Ibid., p. 16.

[31]Ibid., p. 98.

[32]Reynolds, op. cit., p. 51.

[33]Ibid., p. 48.

[34]Ibid., p. 75.

[35]Ibid., p. 52.

[36]Ibid., p. 14. The other criterion is intersubjectivity which will be addressed in the next paragraph.

[37]Ibid., p. 56.

[38]Ibid., p. 116.

[39]Chapter III, pp. 75-76.

[40]Dubin, op. cit., p. 28.

[41]Ibid., p. 42.

[42]Ibid., p. 43.

[43]Ibid., p. 43.

[44]Ibid., p. 184.

[45]Ibid., p. 185.

[46]Ibid., p. 206.

[47]Ibid., p. 224.

[48]Although this question, generalizing on the basis of empirical tests, is related to the whole philosophical question of induction vs. deduction that troublesome question is being overlooked here. The question here is how linkage between two levels of conceptions can be achieved. Although proposed solutions to this problem often rest on deductive and/or inductive approaches to theory verification the important thing here is the examination of what procedures are advanced in order to be able to generalize about contemporary empirical sociology and not to argue concerning this more complex philosophical question.

[49]Dubin, op. cit., p. 240.

[50]Ibid., p. 242.

[51]Zetterberg, op. cit., p. 46.

[52]Ibid., p. 54.

[53]Ibid., p. 112.

[54]Ibid., p. 113.

[55]Ibid., p. 115.

[56]Ibid., p. 176.

[57]Willer, David, Scientific Sociology, (Englewood Cliffs, N.J.: Prentice Hall, 1967), p. 16.

[58]Ibid., p. 83.

[59]Ibid., p. 85.

[60]Ibid., p. 86.

[61]Ibid., p. 83.

[62]Ibid., p. 87.

[63]Ibid., p. 91. (paranthetic comments mine)

[64]Notice the similarity between this approach and Northrop's. Northrop can not "observe" the "epistimic correlation." It must be inferred. See Chapter III, pp. 66-67.

[65]Willer, op. cit., p. 95. (emphasis in original)

[66]Stinchcombe, op. cit., p. 41.

[67]Ibid., p. 38.

[68]Ibid., p. 40. I will not address the complex question of causality in sociology. That question is beyond the scope of this study. It should be noted that Stinchcombe assumes the existence of causally operative phenomena in the empirical world.

[69]Ibid., p. 16.

[70]Ibid., p. 43.

[71]Ibid., p. 22.

[72]Blalock, Hubert M., Theory Construction: From Verbal to Mathematical Formulations, (Englewood Cliffs, N.J.: Prentice Hall, 1969), p. 4.

[73]Ibid., p. 2.

[74]See Chapter III, pp. 66-67.

[75]Blalock, op. cit., p. 151.

[76]Ibid., p. 151.

[77]Ibid., p. 154.

[78]Ibid., p. 4.

[79]Ibid., p. 154.

[80]Gibbs, op. cit., p. v.

[81]Ibid., p. 15.

[82]Ibid., p. 8.

[83]Ibid., p. 12.

[84]Ibid., p. 53.

[85]Ibid., p. 97.

[86]Ibid., p. 98.

[87]Ibid., p. 289.

[88]Ibid., pp. 38-43.

[89]Ibid., p. 43.

[90]Ibid., p. 8.

[91]Ibid., p. 115.

[92]For the earlier operationalists' agruments see Chapter III, pp. 75-78.

[93]Chapter, IV, pp. 110-115.

[94]Notice that the division of labor between theorist and researcher as suggested by Blalock is being practiced here. It is the researcher, Rushing, who specifies the indicators not the theorist, Merton, as Gibbs suggests it should be.

[95]This situation probably does not just apply to sociological research. All science, including natural science, faces this same dilemma because of its philosophical basis. It is doubtful that any solution to this problem would escape the attention of empirical sociologists.

VI. CONCLUSIONS

It has been previously argued that the worth of any methodological analysis lies its ability to critically evaluate the methods being analyzed.[1] The worth of this critical methodology must be determined on the basis of the following conclusions. After all, the whole purpose of answering the questions of what operationalism is, and how it is used in contemporary sociology was to critically evaluate the methodological convention employed by contemporary sociologists in dealing with the concept-data problem. However, it would be helpful to briefly summarize some of the major points already covered before critically evaluating the operational method. Such a summary will re-establish some of the philosophical issues behind the use of the operational method and outline how the method has come to be interpreted and used by contemporary empirical soicologists. Having advanced a few critical comments concerning the present use of the operational method some advise concerning its use will be given.

In the course of answering the first major question of concern to this analysis, what is the full philosophical meaning of the operational method, it was pointed out that the concept-data problem, the problem of referring to empirical data (experience) with abstract concepts, was the result of the demand by positivist philosophers that legitimate knowledge be confined to experience, sense perception. David Hume, for example, maintained that all human knowledge was confined to impressions, which he defined as sense perceptions.[2] Hume,

however, recognized that although the "utmost effort of human reason" is to generalize from experience, such experience is complex and the relations which organize it, if they exist at all, are not experienced by human subjects.[3] This position, as expressed by Hume, is the positivistic position which led to the concept-data problem as it has continued to trouble empirical scientists and positivistic philosophers since Hume's time. If the positions, that knowledge must be rooted in, that is, verified by and tested against, empirical, experiential "facts" and that such "facts," as they are presented to the human senses, are of a complex and unorganized nature, is accepted, as it is by most empirical scientists including sociologists, then how can "facts" be referred to by a form of mental shorthand, conceptual abstraction, in order that the empirical world might be explained and understood? The concept-data problem in sociology is, then, a direct result of the acceptance by empirical sociologists of a positivistic epistemology (theory of knowledge).

Throughout the development of positivistic and, to a certain extent, all modern Western Philosophy this problem, the concept-data problem, has posed a major difficulty. Although various solutions have been advanced[4] it was not until the advent of American pragmatism that a philosophical escape to this problem which did not violate the core tenants of positivism was proposed.[5] The pragmatic philosophers, such as William James and John Dewey, argued that the only real criterion by which knowledge could be judged is its practicality, not its adherence to various logical and empirical rules of evidence. Practicality, the pragmatists argued, should be the standard by which all human ac-

tivity is judged, and being knowledge gathering, experiencing, is a type of human activity the basis for judging a method or procedure of knowing must be the method or procedure's consequences in terms of obtaining practical knowledge. The implications of this argument for effecting an escape from the concept-data problem were not long in being recognized. If concepts, or certain definitions of concepts, enable a human subject to gain knowledge relevant to the subject's practical goals then such concepts, or definitions of concepts, are legitimate for that subject.[6]

The heart of the pragmatists' argument concerning methods of knowing was that knowledge and the procedures used to arrive at it could only be judged in reference to some goal, to some purpose. Practicality, they argued, can only be defined in terms of practice for a certain purpose. According to the pragmatists' argument a method, including a method of defining concepts, is legitimate if such a method aids in the pursuit of useful knowledge. If the pragmatists' argument is accepted the legitmacy of a particular method rests, ultimately, on the subject's definition of utility. Unless a universal goal for human intellectual activity is defined usefulness, and thus legitimate methods for dealing with concepts, must remain relative to individualistic purposes.

One prominent pragmatic philosopher, John Dewey, challanged this individualistic interpretation of the pragmatic criterion of truth and knowledge. Dewey argued that human intellectual history had been a Quest for Certainty. This quest had, at first, taken place in the realm of pure ideas but had, since the birth of empirical science, been translated into a quest for control over nature, a control which would guarantee certainty in the empirical world. The standard, according to

Dewey, by which all knowledge should be judged, and by implication by which methodological procedures should be judged, is the knowledge's usefulness in extending control over the human enviroment.[7] It is from this argument that the standard cliche of the philosophy of science, that the goal of science is to "predict and control," was derived. Dewey and subsequent philosophers' definition of the goal of science as prediction and control led Lesek Kolakowski to remark that the whole anti-metaphysical doctrine, positivism, ended up, in its pragmatic expression, resting on a system of evaluation "as relative and closely bound up with a particular cultural background as any other."[8]

Although the pragmatists, as Kolakowski noted, partially undermined the original foundation of positivistic epistemology it was by accepting these pragmatic arguments that a methodological escape from the concept-data problem was advanced. Percy Bridgeman, a physicist, proposed that concepts be defined in terms of the "operations" used to empirically determine or measure them.[9] Bridgeman accepted the pragmatists' argument that a method, a procedure, is legitimate if it enables "the scientist" to obtain knowledge which will contribute toward the goal of "prediction and control." Whether an operational definition conformed to previous common-sense or theoretical meanings is unimportant as long as the operational definition enabled scientists to increase their store of empirical knowledge, knowledge which will increase the ability of humans to predict and control nature. Bridgeman did not actually effect a link between abstract conceptions and empirical data, the basis for a real solution to the concept-data problem; he merely argued that such logical linkage is unnecessary. The operational method

was not a true solution to the concept-data problem but, more correctly, an escape.

It was exactly such an escape that many empirical sociologists, laboring under the burden of a particularly difficlut concept-data problem,[10] were seeking. What seemed to happen at this early stage in the development of empirical sociology, the nineteen thirties, can be explained, in part, by what Abraham Kaplan calls the law of the instrument.

> Give a small boy a hammer, and he will find everything he encounters needs pounding. It comes as no surprise that a scientist formulates problems in a way which requires for their solution just those techniques in which he himself is especially skilled.[11]

Like small boys with hammers many empirical sociologists, the most notable example being George Lundberg, found that all sociological concepts needed to be operationally defined. These sociologists hammered with the operational method until they were left with a sociology limited in scope and meaning to an operational language.

The law of the instrument did not, however, completely dominate the early development of empirical sociology. Some sociologists rebelled against the rigid application of the operational method. They argued that operational definitions overly restricted the meaning of many concepts and made these concepts incapable of representing the broad and rich nature of sociological phenomena. Some sociologists also argued that the operationalists were not actually rejecting theoretical concepts for it is only in relation to such theoretically defined concepts that operational terms can be devised. These critics of rigid operationalism pointed out that the nature of the empirical world can not possibly define concepts; empirical data only has meaning in terms of

theoretical interpretation, a point amply illustrated by the conflicting interpretations two different natural scientists might give the same datum.

> We take for our case an atom of helium and ask a renound physicist and a distinguished chemist whether or not this particular atom is a molecule in fact. The chemist would reply that it is a molecule because it behaves like one with respect to the kinetic theory of gases; whereas the physicist would reply that it is not a molecule, because it displays no molecular spectrum. Presumably they speak of the same 'datum' although their replies are qualitatively different, and cannot be resolved on factual grounds.[12] (emphasis in original)

The rigid operationalists were also attacked on the grounds that empirical research would become fragmented if concepts were always being defined according to the demands of a particular research project. It is only by the use of a theoretical language that the results of a number of research projects can be summarized and related. Rigid operationalism, many critics maintained, would surely lead to what C. Wright Mills labelled "abstracted empiricism." The rigid operationalists were reminded, as C. Wright Mills put it years later, "social research of any kind is advanced by ideas, it is only disciplined by fact."[13]

These issues, the subject of debate between the rigid operationalists and their critics in sociology, were not resolved by argument. Various changes in American society beyond the halls of academia profoundly altered the sociological enterprise by creating an increasing demand for empirical sociological research. The effects of the Second World War on the United States military and the expansion of the administrative role of the federal government, due both to the war and to New Deal policies, created a favorable market for sociological knowledge.

Besides these two new sources of demand for sociological research the post-war boom greatly accelerated the growth of the American economy and thus the growth of American corporations. Corporate owners and executives became increasingly aware of the important functions sociological knowledge could play in the management of labor and the manipulation of market demand through advertising. These changing sociological factors created an increasing demand for the fruits of sociological research and, needless to say, sizable paychecks for those with social research skills. As empirical sociologists meet the demands for empirical sociological research their methodology was refined according to the pragmatic demands of the situation.[14] It was probably in this setting that the operational method received its present interpretation and use in sociology.

Although it is only possible to speculate about the process by which contemporary empirical sociologists came to interpret the operational method it is possible to outline their present interpretation of the method, the loose operational approach as it has been referred to here, on the basis of the evidence presented in the two preceeding chapters. The contemporary empirical sociologist begins his analysis with a theory, either previously developed or developed for the sociologist's immediate purpose, composed of abstract concepts with broad and general meanings. In order to empirically verify or test this theory either the theorist or the researcher, and there is some disagreement on this point, must specify certain indicators of the abstract concepts, that is, the abstract concepts must be operationally defined. On the basis of these operational definitions indicators are measured or determined

and the relations between them, as specified in the theory, are tested against the empirical data. On the basis of the results of such empirical tests conclucions are drawn concerning the original thoery, that is, concerning the relationships between the abstract concepts. The theory is then either considered supported, or it is modified or possibly even rejected. This is the usual interpretation of the operational method in contemporary empirical sociology and the interpretation that will be critically evaluated here.

Before beginning to critically evaluate the loose operational approach it is necessary to make a few remarks concerning the form this critique will take. The critique to follow will not consist of a step by step evaluation of the loose application of the operational method in relation to the five criteria for judging methodological procedures outlined in the introduction; simiplicity, reliability, validity, explanatory significance of results, and political meaning of results.[15] The issues of reliability, validity, and the explanatory and political nature of the results obtained by the procedures used, in fact, even simplicity are all interrelated and to a large extent inseperable. Because of this interrelationship and inseparability it would be misleading to attempt to evaluate the operational method against each separate criterion. The approach to be taken here will consist of, first of all, an assessment of the necessity for and presence of two levels of conceptual abstraction in empirical sociology and, secondly, an examination of the whole question of linkage between the two levels of conceptual abstraction including an evaluation of the usual advise given by sociologists concerning how such linkage should be determined. On the

basis of these points some advice concerning the use and interpretation of the operational method by sociologists will be offered.

The rigid operationalists had hoped to escape the concept-data problem by reducing the meaning of all sociological concepts to empirically measurable or determinable objects, phenomena, or qualities. According to the rigid operationalists, it would not be necessary to consider the question of how empirical data could be classified and grouped in order to be subsumed under a limited number of abstract concepts if concepts were defined synonymously with the operations used to measure or determine them. If an individual's intelligence is defined as that person's score on the Binet test divided by that person's chronological age then the concept-data problem as it relates to intelligence would be avoided. The original purpose of the introduction and rigid application of the operational method was to "free" sociologists from vague, and thus broad, imprecise, but theoretically meaningful, concepts.

While such a rigid application of the operational method might offer an escape from the concept-data problem, too much else must be sacrificed in order to gain that escape. Herburt Blumer has noted that the reduction in meaning that operationally defining often involves robs many concepts of their empirical significance.[16] Because of this possibility abstract (theoretically defined) concepts are necessary, as the contemporary empirical sociologists examined here seemed to acknowledge, if empirical sociology is be significant. In fact, as Blumer pointed out in the nineteen forties, even the rigid operationalists have implicitly acknowledged the need for conceptual meanings other than operational

definitions. The rigid operationalists have maintained that an operational definition is valid if the relevant scientists agree that the procedures, "operations," used to determine or measure the concepts are "valid." As Blumer has pointed out, such agreement can only be reached because the relevant scientists shared a similar preconception of the thing or quality being measured.[17] In fact, the rigid application of the operational method would be rather meaningless unless the employers of the method shared some theoretical definitions to guide their work.

However, just as the sociologist needs abstract concepts he also needs operational concepts. Unless theoretical ideas can be empirically tested, unless the sociologist can point out and determine what his or her concepts signify, sociology runs the risk of becoming lost in a world of conceptual elaboration and logical gymnastics completely divorced from the world as human beings experience it. Jerald Hage has correctly pointed out that the use of empirical concepts without the guiding presence of theoretical concepts will lead to "abstracted empiricism" which C. Wright Mills characterized as sociology "possessed by a methodological inhibition." "All of which means, in terms of the results, that in these studies the details are piled up with insufficient attention form; indeed often there is no form except that provided by typesetters and bookbinders."[18] Hage also warned against the use of theoretical concepts without the parallel use of empirical concepts for the purpose of empirical testing. Such an approach, Hage argued, would lead to "grand theory,"[19] which C. Wright Mills characterized as "drunk on syntax, blind to semantics,"[20] a "fetishism of the Concept."[21] As all the writers examined in the previous two chapters

have noted, the project of advancing knowledge of human beings and their environment necessarily involves the use of both operationally specified concepts and theoretical concepts.

Herbert Marcuse has accused social scientists of eliminating "the most seriously troublesome concepts," critical concepts, from their work "by showing that no account of them in terms of operations or behaviors can be given."[22] However, such elimination of concepts, if it takes place at all, is not the result of the application of the operational method as it is presently interpreted and used in sociology. The acceptance by the contemporary empirical sociologists examined previously of the necessity for a theoretical level of conceptual meanings would seem to suggest that not all of the theoretical reference of concepts being employed in empirical sociology need be "accounted for in terms of operations or observable behavior." In fact, Robert Dubin[23] and Jack Gibbs[24] acknowledge that many useful concepts in sociology can not be "accounted for in terms of operations" at all. If such a view has any credence among empirical sociologist then the use of the operational method is not a basis for the elimination of "troublesome concepts." It is not denied that concepts with critical content are eliminated from social scientific work as Marcuse claims; it is merely noted that if such elimination takes place it is not due to the use of the operational method as presently interpretated by sociologists.

Although the acceptance by empirical sociologists of the necessity for two levels of conceptions in empirical sociology makes it possible for sociological knowledge to be meaningful and, at the same time, empirically relevant such an acceptance does resurrect the problem that

the rigid operationalists had hoped to lay to rest. How can linkage, an "epistimic correlation" to borrow Northrop's language, be established between theoretically defined concepts and operationally defined concepts? This question, of how to establish linkage between the two levels of conceptions, is the concept-data problem as it has historically troubled empirical scientists and philosophers. Almost all of the contemporary empirical sociologists wirting on theory construction examined here recognized this problem for without such linkage verification of theories would be, to say the least, difficult. Unless it is possible to either establish or assume that an operational definition validly indicates a theroetically defined concept it is impossible to consider empirical research as tests, the basis for verification, of social theories. For this reason the contemporary writers on sociological theory construction examined here had to directly face this problem and attempt to arrive at a solution to it.

Most of those writers borrowed from the thought of the early sociological operationalists. Many of the writers on sociological theory construction proposed that if interested scientists could agree that an operationally specified concept validly represented a theoretically defined concept then that operational indicator does validly represent the theoretical concept. This solution rests on the assumption that all humans can be certain of their knowledge of things, not the things themselves. However, if many people agree in their knowledge of things, for example that an indicator validly represent what they "know" to be a theoretical concept's reference, then we can be a little more convinced that our knowledge corresponds to reality. The problem of valid-

ity then, and so the problem of establishing linkage, has been translated, by these writers, into a problem of reaching intersubjective agreement. Although this procedure of establishing the validity of operational definitions might aid in restraining the capriciousness of individual scientists it might also restrict the creativity of the individual "scientific imagination" militating against scientific advance. Thomas Kuhn pointed out in the course of developing his theory of "Scientific Revolutions" that scientists have historically tended to be intellectual conservatives and that scientific advance, "paradigm change," was usually the result of efforts by "very young men" or men who "were very new to the field."[26] It is quite possible that if these young men would have had to obtain concensus about the validity of certain procedures from their older and more conservative peers before employing such procedures (for example a new indicator of a theoretical concept) "paradigm change" might have been much more infrequent. Equating an indicator's validity with the ability to gain approval of its use from the relevant scientific community, the sociological community, might prove to impose an unnecessary restriction of The Sociological Imagination, and, as C. Wright Mills has point out, the purpose of both theory and methods should be the "release of the sociological imagination," not its restriction.[27]

However, such restriction of imagination might be the cost of a knowledge which can be of intersubjective relevance. One advantage of science, as classicly defined, is that the knowledge obtained according to its methods is communicable and can be verified by different subjects. It does not seem an unreasonable request then to require that the valid-

ity of indicators of theoretical concepts in science be accepted by numerous competent individuals. The conservative nature of the scientific community although at times a liability is also an asset, as Thomas Kuhn points out.

> In the normal mode of discovery, even resistance to change has a use . . . By ensuring that the paradigm will not be to easily surrendered, resistence guarantees that scientists will not be lightly distracted and that anomalies that lead to paradigm change will penetrate existing knowledge to the core.[28]

The demand that the validity of an operational definition, the link between it and the theoretical concept it is meant to represent, be based on whether "interested students and spectators" can agree that it is valid is not an unreasonable demand if the "interested students and spectators" maintain tolerance for creativity and inventiness in the selection of operational definitions.

The defining of validity as convention raises another important question besides the possible restriction of scientific creativity. Intersubjective agreement concerning an operational definition's, an indicator's, validity is reached when a number of scientists, in this particular case empirical sociologists, make the same judgement concerning an indicator. This judgement, as Hubert Blalock has pointed out, can not be made in any systematic way but must be based on "certain a priori untestable assumptions."[29] Because such judgement must be based on assumptions the selection of valid indicators, according to this position, must ultimately depend on the individual "good judgement" of a number of scientists. Ultimately, the two different approaches to establishing validity advanced by the writers on sociological theroy con-

struction examined in chapter V,[30] validity depending on concensus and validity depending on the good judgement of the scientist, depend on the same assumption, the "good judgement and scientific artistry" of scientists. Reduced to its common denominator, all the advice given by empirical sociologists examined here concerning the manner in which "epistimic correlations" are to be established between operational concepts and theoretical concepts is based on a trust in the good judgement of individual empirical sociologists. The important question then is what is good judgement.

One lasting and important lesson the pragmatists tried to teach both philosophers and scientists is that judgement is always made on some practical basis. It follows then that when empirical sociologists make a collective judgement concerning a specific indicator's validity they do so in reference to some practical criteria, and, as the pragmatists also pointed out, questions of method are resolved in reference to the goal of the knowledge gathering enterprise. The good judgement of empirical sociologists concerning the validity of operational definitions rests on those sociologists' idea of the goal of the pursuit of sociological knowledge. Good judgement, then, is probably defined by empirical sociologists as a decision in line with the generally accepted goal of the pursuit of sociological knowledge.[31]

It is impossible to make any sort of evaluation of the present interpretation and use of the operational method in empirical sociology without determining and evaluating the goal of contemporary empirical sociology. Given the pragmatic roots of sociological methods and the frequent confessions of purpose by many empirical sociologists[32] this

goal is not hard to determine. It is the familiar cliche of the philosophy of science "to predict and control."[33] When applied specificly to sociology that goal implies the desire to predict and control human beings, their social institutions and relationships. In other words, sociologists' methodological decisions, including judgements concerning the validity of indicators, are made in reference to the goal of predicting and controling human social behavior. In order to evaluate the operational method as it is presently used by empirical sociologists it is necessary to evaluate this goal by which "good judgement" concerning the selection of operational definitions is made.

The major question which is raised by the equating of a concept's validity with its acceptance within the relevant scientific community, in this case among empirical sociologists, is whether the basis on which judgement of an operational definition's validity is made by individual sociologists is consistent with the promise of sociology, as outlined in chapter I.[34] The answer to this question must be no. The goal of prediction and control, borrowed from natural science along with natural scientific methods, has much different implications when applied to the subject-matter of social science, especially in the present socio-historic setting, than when applied to the subject matter of natural science. C. Wright Mills pointed out how the acceptance of this goal involves serious assumptions by the sociologist.

> We, as social scientists, may not assume that we are dealing with objects that are so highly manipulable, and we may not assume that among men we are enlightened despots.[35]

In the socio-historic setting of the western world in the nineteen seven-

ties this goal of social scientific knowledge, prediction and control, becomes translated into the "bureaucratic ethos." Although, as Mills points out, the desire to predict could be a desire for prediction of "unintended regularities" and the desire to control could be a desire for "collective self-control" this possibly noble goal has come to refer to administrative control and prediction on the basis of such control.[36] This goal is translated by the very sources which support most social scientific research, "a military establishment, a corporation, an advertising agency, an administrative agency of goverment," or as Mills referred to them, "the non-democratic areas of society."[37]

By going to work for these "non-democratic areas of society" sociologists, both wittingly and unwittingly, come to concern themselves with substantive problems that are often problems of "administrative machines." The sociologist need not even recognize the goal of prediction and control in order to contribute to its acheivement if the sociologist defined his or her problem in such a way that information concerning it increases the efficiency, control, of the "administrative machine" which provides the sociologist with grants. For it is the centralized bureaucratic institutions, such as giant corporations and the bureaucratized state, which can both pay for and use the results of sociological research. The selection of indicators is necessarily tied to this goal, whether the goal wittingly or unwittingly guides the sociologist's work, because indicators will be selected that relate to administrative problems and are administratively useful. For example, a certain test of intelligence might be operationally defined as intelligence not because it seems to measure any creative ability

or mental adaptability but because it enables school administrators to predict formal educational success. The selection of indicators in reference to the "bureaucratic ethos" tends to define the knowledge obtained in very narrowly administrative terms and does nothing to aid in the advance toward, in fact, probably militates against the advance toward, the promise of sociology, to enable men and women to understand what is going on in the world and what is going on within themselves.

It might be argued, however, that many empirical sociologists never consciously acknowledge the goal of prediction and control and do not work under the constraints of the "bureaucratic ethos." In such cases, it might be argued, the good judgement of sociologists concerning the selection of indicators could better be trusted. Of course, as the pragmatists pointed out, judgement must take place on the basis of some practical purpose. In response to this pragmatic assertion it might be argued that the practical goal by which such judgement is defined is the goal of explanation and understanding. Operational indicators are, then, selected because of their contribution in obtaining knowledge which will help explain and make understandable human beings and their social milieu. Even if such a situation is widespread and such an attitude widely distributed among empirical sociologists all the problems involved in the use of the loose operational approach would not be solved. Like all methodological and theoretical decisions the selection of indicators and generalization from them can have important ethical consequences which can not be overlooked if the promise of sociology is to be fulfilled.

Just as institutions often define the goal of the sociological

enterprise so to the selection of indicators in the course of sociological research can also define or translate the goals and futures of institutions. Roger Nett and Gideon Sjoberg have pointed out how the selection of indicators "raises a host of political and ethical issues."

> It follows that broad and amorphous goals may come to be interpreted in terms of specific operational definitions provided by researchers. But to use concrete operations to define abstract goals raises a host of political and ethical issues. Thus, can universities, for example, judge (or rank order) their effectiveness in producing "educated men" according to such indicators as the ratings of their students on nationwide tests, the number of students who win special awards, and so on?[38]

Not only can the selection of indicators define institutional goals, but increasingly programs and reforms are evaluated on the basis of social research, research often using limited indicators of success. In other words, the selection of indicators in the course of social research may have important effects in shaping and directing various social institutions. The sociologists who are concerned with fulfilling sociology's promise can not overlook these implications of operationally defining abstract concepts.

By the development of operational definitions for the purpose of carrying out research concerning certain theoretical notions sociologists might also unwittingly contribute to the misshaping of public consciousness. More and more the results of sociological research and the opinions of empirical sociologists are being reported in the popular media. It is no longer unusual to hear the conclusions of an interesting sociological study or the opinion of some sociologist concerning a pop-

ular social problem over the airwaves or read of them in newspaper or in a popular magazines. The popular media is also where most men and women in the Western world receive their knowledge and images of social and political world affairs. As C. Wright Mills has pointed out, although modern men and women might be more aware than men and women in previous historical periods, they "live in second hand worlds." "The quality of their lives is determined by meanings they received from others," and those meanings come to them through the popular media, the distribution arm of the "cultural apparatus."[39] Results of research and opinions of sociologists are most often reported in theoretical language; seldom are the indicators used to arrive at the conclusions mentioned in popular reporting. The misshaping of public consciousness could easily occur when men and women without knowledge of sociological methodology come to attach to much significance and too broad an interpretation to results or opinions based on research into operationally specified and limited indicators of concepts. In fact, the operational indicator a social scientist might select for use in a particular research project might not be implied at all in the common-sense meaning of the concept.

This point might better be illustrated by a hypothetical example. It is often argued that cross school zone-bussing is necessary in many American communities because students attending all black or predominately black schools do not receive an equal education, in terms of quality, as students in all or predominately white schools. The justification for this arguement might be the conclusion of a sociological study that students from predominately black schools scored consistently

lower on intelligence tests than students from predominately white schools, and when students from the black schools transferred to white schools their relative intelligence test scores increased according to the length of attendance at the white school. Obviously, most black parents would support bussing proposals on the basis of this information. After all, this situation, unequal education, is incompatable with the democratic principle of equality of opportunity. However, it might also be that these parents are basing their support for bussing on a misinterpretation of the sociological evidence. The intelligence test used as a measure of intelligence and indirectly as a measure of the quality of education might not measure what the black parents consider intelligence, such as the ability to mentally solve problems. The intelligence test used might have been measuring the students incorporation of white middle-class symbols and meanings. The black parents would probably never be informed of the meaning and nature of the indicator used and may have supported a program on the basis of a misunderstanding of sociological research evidence based on operationalized indicators and reported in theoretical or common-sense language. Although the black students might have been more intelligent, as defined by the black parents, than the while students the research using the intelligence test would never have uncovered that fact. It would have reinforced the opposite opinion. This example may bear no relevance to the empirical circumstances surrounding the present controversy over bussing in the United States, but it does illustrate how the empirical sociologist's selection of indicators could have unforseeable social and political consequences.

As previously illustrated, whether conscious of it or not, the sociologist's selection of certain limited operational specifications for the purpose of measuring or determining theoretical concepts can have far reaching ethical and political implications. It does not seem necessary to reargue the whole issue of whether sociology should have a moral commitment. Let it suffice to say that if the promise of sociology is to be fulfilled the selection of operational indicators, as well as all other methodological decisions, must be made in reference to some goal of the sociological enterprise. As has already been noted the goal of prediction and control is incompatable with an intellectual activity committed to enabling modern men and women to understand "the quality of their being." As also noted, to proceed without any explicit goal is equally incompatable with the promise of sociology. Without an explicit goal the meaning of sociology, including its conceptual interpretation, will be made "behind the backs" of sociologists. This abdication of intellectual responsibility for one's work once it has left one's desk is an attitude that modern sociologists, and modern men and women can ill afford. The sociologist should not select his operational definitions in order to shape sociological knowledge as aids in predicting and controlling individuals nor should such selection be made in isolation from any explicit goal. The sociologist must select his or her indicators so as to fulfill the promise of sociology that C. Wright Mills outlined in The Sociological Imagination.

The applicability of this suggestion to the choice of indicators might better be illustrated by example. The concept "disjunction between goals and opportunities" was operationalized by William Rushing

in the article examined earlier to mean the subjective perception of opportunity of a son or daughter to attend college.[40] It is hard to imagine how the discovered relationship between this specification of disjunction and the rejection of societal norms, anomie, will aid men and women in understanding themselves and their social environment. This information could be, however, very helpful to the executives of a corporation or the administrators of the state. In order to control anomie, people's attitudes, one need either reduce the expectations of the people or convince them that more opportunity exists. If this concept was being specified consistent with the promise of sociology it would be defined as the objective opportunities, the financial possibility, for a child to attend college. If a relationship between anomie and goal-opportunity disjunction specified in this manner was found it could be very instructive for modern men and women. They would be able to see the relationship between the objective circumstances of their lives and their attitudes; they could more rationally determine where their feelings came from and whether they were justified. Such a specification would also limit the options of the centralized institutions in controlling individuals. Feelings of alienation, anomie, could only be controlled on the basis of this information by the elimination of the objective circumstances surrounding these attitudes. It should be clear from this example that the promise of sociology can be very relevant to the specification of indicators.

The introduction of such an explicit goal into the methodology of sociology does not involve a radical departure from the traditional methodological approach of empirical sociology. As has been argued

previously much present sociological activity is tied to the explicit goal of prediction and control, the "bureaucratic ethos." Of course the use of such an explicit goal for the guiding of methodological decisions would violate one of the core tenants of positivism, in the same way that Dewey violated a tenant of positivism by introducing the goal of prediction and control into positivistic epistemology; such an introduction would not really violate any of the practical principles of scientific research. The classical rules of evidence could still apply, and the loose operational approach could still be employed. The only addition to such practices is that they be employed in order to obtain knowledge that will help men and women understand what is going on in the world and what is going on inside themselves.

The sociologist, probably more than any other scientist, should recognize the validity of this suggestion. The sociologist should realize that the behavior of scientists, like all human behavior, is largely determined by the attitudes and values that scientists received through the process of socialization from other individuals and social institutions. Thomas Kuhn, among others, has convincingly argued that methodological practices are human conventions.[41] Roy Francis has noted that methodology is a moral code of behavior for scientists when "on the job."

> Methodology, including the rules of the game, constitutes the moral code of scientific behavior. On the basis of an accepted body of rules, one may properly judge the quality of research done by others (or by himself).[42]

All that is being suggested here is that added to this moral code of intellectual behavior for sociologists be the overriding principle that all methodological decisions be made with a conscious desire to fulfill

the promise of sociology.

The promise of sociology, as was pointed out in the introduction, is that sociology enable modern men and women, not just men and women who occupy strategic positions in modern society, to understand what is "going on in the world and going on within themselves."[43] In order to fulfill this promise sociologists must study social structures and their effects on the human personality not for the purpose of predicting and controlling human behavior, but rather in order to permit modern men and women more decision and freedom in shaping future history and their own personal lives. This was the message of C. Wright Mill's The Sociological Imagination.

> We study the structural limits of human decision in an attempt to find points of effective intervention, in order to know what must be structurally changed if the role of explicit decision in history-making is to be enlarged.[44]

In a sense sociologists should help extend "control" for as Mills suggests sociology should aid modern men and women in controlling the historical accidents and decisions which shape their lives, often behind their backs.[45] However, sociologists should not seek information for the purpose of making individuals more predictable and controllable but rather information that would increase human freedom. As Mills has pointed out, "in so far as men have some degree of freedom, what they do will not be readily predictable."[46]

Because these comments concerning the promise of sociology are relevant to all methodological and theoretical decisions they are directly relevant to the use of the operational method in sociology. As the purpose of this study was set out in the introduction the answering of

the questions outlined and the evaluation of the operational method as presently employed in sociology were done in order to lead to a "clear statement of a method for overcoming the concept-data problem," or to a rejection of the method presently employed.[47] This "critical methodology" will be concluded by offering some advise concerning how the concept-data should be treated by modern empirical sociologists.

As the contemporary empirical sociologists whose advise concerning the concept-data problem was examined in the previous two chapters advised and because of the reasons they gave, sociologists should not surrender the use of abstract theoretical concepts in the face of demands for precision and empirical relevance. The subject-matter of sociology; social structure, history, and their effects on human thought and action; is of a rich and complex nature. If sociological knowledge is to be more than particularistic, provincial, and limited its pursuit must include the use of abstract concepts in order to represent the rich and complex nature of sociology's subject-matter. While it might be necessary to redefine certain concepts borrowed from everyday usage for the purpose of developing sociological theory such concepts should be redefined in such a way that they can be used to explain a wide variety of spatially and historically diverse phenomena. Sociological concepts must be defined theoretically in such a way that their "systematic import" or abstract reference is preserved.

Although sociologists must employ abstract concepts they can not ignore the lessons of Hume and other empirical philosophers. A system of knowledge can be logically perfect but unless it is rooted in human experience it will be of no practical worth and may even be used

to draw conclusions in contradiction to the functioning of the empirical world. The sociologist must verify his or her theories and notions by empirical test if they are to be empirically relevant. In order to make these empirical tests the sociologist must specify empirical indicators of his or her abstract concepts. Theoretical concepts must be operationally specified if sociology is to offer summations of empirical circumstances. The abstract concepts of a sociologiscl theory must be defined according to the research design, the procedures used, and the population being examined in order to obtain sensory information, generally of a measurable quality.[48] Only by employing operationally defined concepts can empirical tests of sociological theories be made.

An important point which has been continually made is that once the need for two levels of conceptual abstraction has been recognized the need for a method of linking respective concepts at the two levels of abstraction must also be recognized. Without a method of linkage it would be impossible to draw conclusions about theoretical relationships based on research using limited empirical indicators of the theoretical concepts of concern with any degree of validity or self assurance. As has been pointed out previously and as Ernest Nagel has noted, "it is impossible to formalize with much precision the rules (or habits) for establishing a correspondence between theoretical and experimental ideas."[49] It is possible, however, to suggest some "impercise" rules that might help guide the sociologist in the selection of operational indicators of theoretical concepts. It is on this point, rules for establishing linkage, that the advise given here will diverge from or add to the advise given by the contemporary sociologists writing

on theory construction examined in the preceeding chapter.

It is true that the selection of indicators must depend, essentially, on the "good judgement and scientific artistry" of the sociologist(s) concerned. Of course, the sociologist must seek the opinions and criticisms of his or her intellectual peers and colleagues. That is a rule not only of scientific practice but of all intellectual practice which should not need repeating here. However, beyond this practical advise the sociologist must base his or her judgement concerning the selection of operationally specified indicators on some conception of the goal and purpose of sociology. It has already been pointed out that the use of the goal of "prediction and control" or the refusal to consciously acknowledge any goal in this regard might very possibly lead to knowledge whose meaning and possible uses would be inconsistent with the true promise of sociology outlined earlier. One's judgement concerning valid operational definitions in sociology should be in reference to some other conception of the purpose of the pursuit of sociological knowledge.

The selection of operationally specified indicators in sociology should take place in reference to the goal of developing a system of knowledge which will contribute to men and women's accurate understanding of the socio-historical circumstances which determine the quality and meaning of their lives. The use of this goal as a basis for the selection of operational definitions in sociology would have very practical influences over the selection of empirical indicators of theoretical concepts. Firstly, operational definitions that are meaningful to the general public should be selected.[50] Besides

merely being easily measured, in order to "get the job done," operational specifications should be understandable or explanable to the numerous men and women in whose behalf the sociologist should be acting.[51] Indicators often seem to be selected in the course of empirical research because they are administratively meaningful or convenient (the use of IQ tests as an indicator of intelligence), or because of the availability of certain types of data (census data). Although practical concerns might pressure the sociologist into selecting indicators on these basis such concerns should never override the most important concern, developing empirically verified explanatory frameworks which are meaningful to most men and women. It is not sufficient that the theoretical meaning of concepts and the demands of the research project, although both are necessarily of concern, or the desires of those who sign grant checks be the only concerns when selecting operational definitions. Sociologists must also concern themselves with the proper commitment of a knowledge of human beings and their social creations.[52]

This study has been an attempt to clarify and advance sociological methodology on one limited but important step in the research process, the development or selection of empirical indicators of theoretical conceptions. It is hoped that this study has contributed to sociological methodology by clarifying some of the methodological and philosophical issues behind the use of the operational method, by clarifying how the operational method is employed in contemporary sociology, and by suggesting how the method might better be employed. The most important suggestion made in this regard is that the operational

method always be employed in conscious regard to the promise of sociology as outlined by C. Wright Mills in The Sociological Imagination. Ernest Nagel has noted there are no precise rules for the linking of concepts. When faced with a decision without definitive methodological guidance the sociologist should let the ethical responsibilities of his profession guide his choice. For there is no necessity that sociological knowledge be the exclusive preserve of the admistrative elites of modern political and economic institutions. If sociologists would adhere to this suggestion with the same regard as they do many other methodological conventions, the present interpretation of the operational method for example, the meaning and uses to which sociological knowledge is put would be determined more by sociologists and less by his or her employers or the "accidents" of the setting and the sociologist's unconscious methodological decisions. Sociologists must not just concern themselves with immediate problems when developing operational definitions but, most importantly, with the way in which such definitions might influence the meaning and possible uses of the sociological knowledge obtained.

Notes

[1]Chapter I, p. 14.

[2]Chapter II, p. 25.

[3]Chapter II, pp. 26-28.

[4]Two such attempted solutions are presented in Chapter II, pp. 30-38, Immanuel Kant's Critique of Pure Reason and John Stuart Mill's System of Logic.

[5]These core tenants, as presented by Lesek Kolalowski, are presented in Chapter II, p. 24.

[6]The pragmatists' arguments are presented in Chapter II, pp. 38-47.

[7]See Chapter II, pp. 46-47.

[8]Chapter II, p. 48.

[9]Chapter III, p. 58.

[10]Reasons for the particularly troublesome concept-data problem in sociology are outlined in Chapter I, p. 4.

[11]Kaplan, Abraham, The Conduct of Inquiry, (San Franciso: Chandler Publ., 1964), p. 28.

[12]Hansen, James C., "A Dialectical Critique of Empiricism," Catalyst, 3 (Summer, 1967), p. 10.

[13]Mills, C. Wright, The Sociological Imagination, (New York: Oxford Univ. Press, 1959), p. 71.

[14]This argument is presented in more detail in Chapter III, pp. 80-84.

[15]Chapter I, pp. 14-16.

[16]Chapter III, p. 72-73.

[17]Chapter III, p. 78.

[18]Mills, op. cit., p. 55.

[19]Chapter V, pp. 139-140.

[20]Mills, op. cit., p. 34.

[21]Ibid., p. 35.

[22]Marcuse, Herbert, One-Dimensional Man, (Beacon Press: Boston, 1964), p. 13.

[23]Chapter V, p. 145.

[24]Chapter V, p. 154.

[25]Marcuse's accusation is probably true, concepts with critical content probably are eliminated from social sicence, however such elimination probably takes place at the theoretical level, due to the demands of behavioristic theory, or possibly before that in the realm of common sense usage, due to a sort of linguistic operationalism. While this subject is somewhat related to the subject of this study it is, generally, beyond the scope of this study. It should be noted that Marcuse seems to conceive of "operationalism" more boardly then it is being used here.

[26]Kuhn, Thomas, The Structure of Scientific Revolutions, Vol. II, no. 2 (Revised edition) of International Encyclopedia of Unified Science, ed. by Otto Neurath (Chicago: Univ. of Chicago Press, 1962), p. 90.

[27]Mills, op. cit., p. 120.

[28]Kuhn, op. cit., p. 65.

[29]Chapter V, p. 153.

[30]Another approach which should be mentioned is often referred to as the "instrumentalist" approach. According to proponents of this approach theories although useful as leading principles are merely intellectual tools and have no cognitive status. According to the instrumentalists, because theories are merely tools which lead the investigator to empirical knowledge the issue of validity, connecting the theoretical level of meaning to the empirical level, is meaningless. However, even instrumentalists must decide whether a theory is useful or helpful. The theory, the tool, is implicitly tested and as a leading principle must be related to empirical data. Even though validity may be logically meaningless for the instrumentalists, it is still an important practical issue. See Nagel, Ernest, The Structure of Science, (New York: Harcourt, Brace, and World, 1961), pp. 129-140.

[31]The range of good judgement probably varies with the status of the "judger." The range of good judgement is probably much more limited for a student than for a professor.

[32]For examples of these confessions see Chapter V, p. 138.

[33]Another commonly expressed goal of sociology is that of ex-

planation and understanding, as noted earlier. However, explanation and understanding is such a vague conception that it is practically useless for the guiding of methodological decision. One can seek understanding in order to control, in order to free, or in order to destroy and the obtaining of understanding for any of these purposes would probably involve quite different methodological decisions.

[34]Chapter I, p. 17.

[35]Mills, op. cit., p. 114.

[36]Ibid., p. 116.

[37]Ibid., p. 114.

[38]Sjoberg, Gideon and Nett, Roger, A Methodology of Social Research, (New York: Harper and Row, 1968), pp. 270-271.

[39]Mills, C. Wright, "The Cultural Apparatus," in People, Power and Politics; ed. by I.L. Horowitz, (New York: Oxford Univ. Press, 1963), p. 405.

[40]See Chapter IV, pp. 110-114.

[41]Kuhn, op. cit.

[42]Francis, Roy, The Rhetoric of Science, (Minneapolis: Univ. of Minn. Press, 1961), p. 8.

[43]Chapter I, p. 17.

[44]Mills, Imagination, op. cit., p. 174.

[45]Ibid., p. 174.

[46]Ibid., p. 117.

[47]Chapter I, p. 18.

[48]It should be noted that measurement may not be a necessary condition of conceptual definition if empirical tests are to be carried out. While this related probelm of measurement in sociology is beyond the scope of this study it should be noted that measurement, in some form, almost always takes place in sociological research. Even though a numerical value is not always assigned (quantitative measurement) distinctions of levels of quality are made (qualitative measurement). For example, in a study of the political power held by various groups in modern society distinctions among the various groups on the basis of the amount of power held may be made although no attempt at "quantifying" (numerically) power had been made.

[49]Nagel, op. cit., p. 100.

[50]By implication theoretical definitions should also be meaningful to most people. This is not meant to suggest that definitions of commonly used terms can not be refined for the purpose of accuracy and precision. However, such refining should not drasticly alter the meaning of the term so it is no longer recognizable to the general public. The use by social scientists of an exclusive language can only work to keep sociological knowledge forever from most men and women.

[51]Some statistical operations used to operationalize concepts might not be readily understandable, in full, by the general public. However, it is almost always possible to explain, in general terms, not only how such an operation works but, to an extent, its weaknesses.

[52]Having offered this advise it is necessary to review the way the term "empirical sociological research" was operationalized in Chapter IV. Firstly, the term was defined according to the demands (space, and ease of analysis) of this project. However, interested "students and spectators" should judge whether these articles are a valid indicator of empirical sociological research. This can be done by comparing the articles examined here to other research articles, in the volumes of the journals I examined for example. My judgement is open to scurtiny. Secondly, based on my judgement, the selected articles represent what most people who have an idea of sociology would consider "empirical sociology." Lastly, because this specification enabled me to later direct attention to the promise of sociology, in my humble way, I have tried to contribute to men and women's understanding of their world by directing the attention of sociologists to such an interest.

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