Quantitative Versus Qualitative Research: An Attempt to Clarify the Issue

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This paper will describe points of disagreement between quantitative research and qualitative, or interpretive, research. After a brief historical overview, the discussion will focus on how each perspective responds to three major and closely related questions: (1) What is the relationship of the investigator to what is investigated? (2) What is the relationship between facts and values in the process of investigation? and (3) What is the goal of investigation?

Educational researchers have recently devoted increasing amounts of time and energy to the issue of one method versus the other. Unfortunately, much of the discussion has tended to obfuscate rather than clarify. There has been a tendency to engage in polemics and, at times, name calling. We have all heard, if not seen in print as frequently or as bluntly, one side refer to the other as "bankrupt," "number-crunchers," or "storytellers." There has also been a tendency to see the two approaches, if not as interchangeable, certainly as complementary. The implication is that researchers may variously mix the two approaches for any particular research or use one at one time and the other at another time, depending on the nature of the problem at hand.

Both tendencies pose problems for anyone who desires a clearer understanding of the issue. Polemics and name calling do little to illuminate in any systematic and comparative manner points of contention or basic differences that may exist between the two methods. Similarly, the assumption that the two approaches are little more than alternative methodologies, whose varied employment responds simply to "what works" and not to epistomological considerations, must not be accepted at face value if we are to make the issue more intelligible.

The descriptive focus of this paper, as opposed to an approach of critical commentary at the philosophical level, means that the use of technical terms has been kept to a minimum. When these terms do appear, they are defined in a more general sense. The nuances and refinements common to more purely philosophical discussions have been avoided as much as possible. It should also be noted that while the three questions stated above are one way to penetrate the issue of quantitative versus qualitative research straightforwardly and systematically, they are not the only approach.

Historical Origins

Our present discussions about the methodology of educational research in particular and of social research in general are rooted in the late 19th century. The crucial question at that time was whether or not social scientists could and/or should "borrow" the methodology of the physical sciences, especially physics, to investigate the social and human world. The provocation for this concern (the unity of science question), which is still central to many current methodological discussions, was that the physical world was being mastered intellectually and materially to a greater extent than the social world. On the advocacy side of the question was a group of theorists often labeled positivists, which included among others Comte, Mill, and Durkheim. This group was working within an overall empiricist tradition as established by Newton, Locke, and others. On the other side were people who could be grouped under the label idealism (loosely applied), such as Dilthey, Rickert, and Weber, who found their philosophical origins in a Kantian tradition.

While the idea of taking a scientific approach to the study of the social world predates Comte, there is little doubt that his positivist philosophy was the 19th century's most forceful and direct expression of that position. In support of his arguments for a science of society, Comte developed two associated lines of reasoning. First, he said that society had gone through an inevitable evolution from the theological to the meta-

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physical to the present positive. In the positive stage knowledge is based on science and the scientific methods. Second, Comte said that there was a hierarchy of individual sciences, reflecting their order of emergence historically, from mathematics through astronomy, physics, and on down to sociology. Even though few people today accept the letter of his arguments in either area, the spirit of these ideas still has influence in that (1) we generally do think of science as having surpassed, and not merely as an alternative to, the other means of securing knowledge, and (2) we believe that all sciences, even though they differ in level of maturity, are on the same "track" because they employ the same methods and procedures.

Even though positivism in a full Comtean sense of what the position involves has little currency today, several points developed within this general school of thought are of contemporary importance to the quantitative perspective. For example, when Durkheim said that we should treat social facts as things, he was saying in effect that the objects of study in the social sciences should be treated in the same way physical scientists treat physical things. This means that if physical scientists can stand apart from their subject and think of it as having an independent, object-like existence with no intrinsic meaning, the same is true for social scientists. There are two elements involved here: the knower and that which is or can be known. On the basis of this separation, social scientists can adopt the role of observer of an independently existing reality.

Second, this school of thought claimed that social investigation was a neutral activity in regard to values, and accordingly, social scientists conducting research should (1) eliminate all bias and preconceptions, (2) not be emotionally involved with or have a particular attitude toward the subject, and (3) move beyond common-sense beliefs. This last injunction meant that social science must develop a neutral scientific language that would "rise above" context-bound and value-laden everyday language. Social science was to use this language and strictly confine itself to discussing the "what is" (that which is objective) of the social world and avoid the "what should be" (that which is subjective).

Finally, there was the idea that social science would serve as a basis for social engineering to improve society. In the spirit of Bacon, the knowledge derived from social investigation would eventually result in the same mastery over the social world that physical science had achieved for the physical world. Social science was, if not born, certainly nurtured with the idea that its justification was based on practical application. This desire for tangible results was of course associated with the prospect of discovering social laws. These laws would be like physical laws in that they would state the necessary and invariant relationships that existed between and among social objects. Furthermore, these laws, as formulated with the use of Mill's canons of inquiry, such as concomitant variation and differences, would allow for not only the explanation of social phenomena but also for the ability to discover causes and to make predictions. These related possibilities were seen as essential for any active intervention to improve society.

Shortly after the idea of using the scientific approach to study the social and human world took root, a countermovement, with a markedly different approach to the human studies, developed in Germany. Even though significant variations existed within this perspective, several basic ideas were elaborated that stood in contrast to those associated with the positivist movement.

Dilthey was among the first to challenge the positivist school of thought and in doing so gave a significant impetus to employing a different methodology for the social sciences. He argued that whereas the physical sciences dealt with inanimate objects that could be seen as existing outside us, this was not the case for the cultural studies. Here the subject concerned the product of human minds and was therefore inseparably connected to our minds with all the attendant subjectivity, emotions, and values. In this sense interrelationship of investigator and what was being investigated was impossible to separate, and what existed in the social and human world was what we (investigators and laymen) thought existed. In the cultural sciences we were the subject and the object of inquiry, and the study of the social and human was the study of ourselves (a subject-subject relationship).

Although Weber differed from Dilthey in many ways, his focus on social science as the meaning the participants assigned to social action led him to a somewhat similar position. Since researchers were human beings engaged in studying the meaning of the social action of human beings, they were both the subject and object of their own study. Social science was actually the pursuit of self-knowledge; in seeking clarity about why people selected and acted on certain values, we were ultimately seeking clarity about the meaning of our own conduct. We must, therefore, stand in a different relationship to our subject matter, if only because of interest, when compared with physical scientists.

The idealist movement could not accept as the goal of social science a search for a series of overarching causal laws. Dilthey, for example, argued that the complexity of the social world, changes over time, and cultural differences would make it impossible to discover laws as in the physical sciences. Instead he believed the emphasis must be on an attempt to understand the individual or type. The cultural sciences must be descriptive as opposed to explanatory or predictive and must concentrate on interpretive understanding *(verstehen)*. This process of *verstehen* involved the need to "live through," or recreate, the experience of others within oneself. To the extent this was done, the researcher grasped the essence of understanding. Dilthey perceived understanding as a hermeneutic process in which there was con-

stant movement between parts and whole (as in the interpretation of texts) with no absolute beginning and ending points. Such a hermeneutic perspective meant that human experience was context-bound, and there could be no context-free or neutral scientific language with which to express what happened in the social and human world.

Weber similarly focused on *verstehen* as the goal that made social science unique and separated it from physical science. *Verstehen* was what allowed social science to deal with that essential human aspect of our subjects. Much like Dilthey, he argued that to understand the meanings another assigned to his or her actions required that these meanings be placed within a context—nothing could be understood in the absence of context. In contrast to many idealists, however, he did allow that hypotheses could be checked empirically. Yet, he did not mean by this that causal laws would result. He believed that social reality was far too complex to permit this and that at best we could have laws applying to only a limited context for a limited time. Unlike Durkheim, he did not think it possible to have a definitive, objective science for all society that would eventually produce *the* system of laws.

Through much of the idealist movement ran the idea of value relevance: What individuals defined as significant for themselves and what researchers chose to study must be related to values. Rickert was one of the first to distinguish between the social and physical sciences in this regard. He noted that for the physical sciences the selection of objects for study was based on the features they held in common with the appropriate abstraction or generalization, but for the social sciences selection was based on both the values of the individuals involved and on those of the researchers. Weber posed a similar argument with one addition: He said that there was a difference between selecting a topic on the basis of values and making a personal judgment about the worth of the object after the selection had been made. This qualification notwithstanding, idealism did not allow for the dichotomous separation of facts and values as did the positivist movement.

Before turning to the three questions, one other approach to examining quantitative versus interpretive research must be noted. While the differences between the two approaches originated in the positivism-idealism debate of the late 19th century, contemporary discussions can be further analyzed within the context of scientific realism and idealism. In introducing these terms there is no intention of equating the idealism of Dilthey and Weber with the general idealist perspective or of equating positivism and realism. (In fact, certain varieties of positivism, logical positivism being one example, are actually antirealist.) What is important is that a number of the methodological prescriptions taken from the positivist movement, such as value neutrality, can be, and presently are, in most discussions of quantitative methodology, interpreted within a realist framework. Similarly, the methodological procedures advanced by Dilthey and Weber can be more easily grasped if seen as part of an overall idealist philosophical position.

If defined loosely to illustrate only the thrust of each school of thought, one may start by noting that realism is based on the idea that reality exists independent of us. Independent means that this reality exists whether or not we are aware of it or take any interest in it. This idea stands behind the concept of subject-object dualism. Within this philosophical tradition, ontological questions concerning "what is" can be kept separate from the epistomological questions about how we come to know "what is." According to the realist perspective, knowledge and truth are questions of correspondence—what is true is what corresponds to reality. Furthermore, the investigation of reality via the particular method we call scientific (hence scientific realism) may proceed independently of that reality; the activity of investigation does not affect what is being investigated.

Idealism, in contrast, argues that what exists is mind-dependent. The subject and the object, perceived by realists as two elements, become one to idealists, who perceive no reality independent of the shaping or creating efforts of the mind. To idealists the relationship of investigation to subject can be more accurately described as subject-subject rather that subject-object; what is investigated is not independent of the process of investigation. According to at least one version of an epistomological idealism, what is to count as knowledge or to be considered true is a matter of agreement within a socially and historically bounded context.

The Relationship of the Investigator to What is Investigated

The essential impact of this relationship can be isolated by posing two possibilities that define contrary positions. Social and human reality can be thought of as "out there," existing independently of our minds (a subject-object relationship), or as depending on the constituting activities of our minds (a subject-subject relationship). If the former position is taken, then physical and social scientists will have a similar relationship to their respective subjects: Both types of scientists deal with objects and the relationship between and among objects. Moreover, these objects exist prior to the interests or activities of the scientists.

From the idealist perspective of a subject-subject relationship this dualism of mind-reality is unacceptable. Even though there is a range of positions within idealism—from the belief that social and human reality are created (ontological idealism) to the milder conviction that this reality is shaped by our minds (conceptual idealism)—all the positions posit a degree of mind involvement with the subject that is not acceptable to the realist tradition. Idealism focuses on what we know and then moves to construct an "outer" reality from that point; whereas realism, reversing the direction, presupposes an independent reality

and then investigates how we are a part of that reality and how we can come to know that reality.

Because the subjects studied in educational research, such as aptitude and motivation, admittedly do not have a material existence, how can it be implied that they are like physical objects? While it is true that these topics are not three-dimensional or exist in space and time, this is not a telling point. What is important is not the nature of the objects but how they are treated, by researchers and by laymen alike. When educational researchers perceive their subject as "objects" in a propositional sense, they are acting similarly to physical scientists dealing with objects that are not directly observable. For example, when physical scientists accept the statement that an electron has certain characteristics, they are in effect treating the electron as a real and independently existing thing. A realist position by social researchers requires the same sort of commitment to their subject as real and existing "out there."

Whether one takes an idealist position or a realist position will influence how the research process is conceived and actually conducted. The idea that the process of investigation can be separated from what is being investigated, an idea crucial to the scientific process, is possible only within a realist perspective. In fact, realists will even argue that any blurring between researcher and procedures on the one side and the object of study on the other will present such serious complications as to render the study or investigation pointless. For idealists the opposite is true: The mind involvement of a constituted reality, and hence the impossibility of its existing as an independent reality, means that the process of investigation itself will affect what is being investigated. Accordingly, in the realist view an investigation is directed toward an external referent; whereas in the idealist view the process must be internal, a part of the investigator's active participation in shaping the world.

We can see this distinction more clearly at the level of instrumentation. To idealists, instruments do not have a standing independent of what they are designed to measure. They are extensions of the knowers and operate as an element in their attempts to construct or constitute reality. To realists, instruments are a way to achieve an accurate reflection or measurement of an independently existing object. In this context valid instruments are those that produce accurate representations, whereas invalid ones do not. Realists would see an intelligence test as measuring that bit of reality called intelligence; idealists would see the test as only another element in the process of constituting that particular bit of reality.

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The independence/mind-dependence dichotomy of social and human reality is also apparent in the language researchers use to discuss investigations and their results. The acceptance of an independent reality allows researchers to think and talk in terms of the discovery of things and their interrelationships. In this perspective reality exists not only independently of but prior to any interest or activity on the investigator's part. By extension, this means that should investigators cease to study something, these things would continue to exist and still be related to other things in the same way. The language and thinking of idealism are markedly different. Based on the idea that reality is made or at least shaped, proponents of this view believe reality can have no existence prior to the activity of investigation and would cease to exist if we should lose our interest.

According to the realist position, researchers should express themselves in a neutral, scientific language. To discuss reality in this way is to free it from the context-bound lay language. Science then is able to move beyond the level of common-sense descriptions and value-laden language. This means that investigations can potentially result in universal, accurate statements about the way the world really is. Of course, to idealists the idea of a neutral, scientific language is untenable because what is constituted as real can be expressed only with the language used in the constituting process (the language of everyday life). Translating this language into a supposedly scientific one will not lead to more accurate or less value-laden descriptions of reality but to the construction of an alternative version of reality.

Implied throughout much of the preceding discussion is the notion that idealism and realism advance different epistomological positions. The basic feature of realist epistomology is that it espouses a correspondence theory of truth. According to this theory, truth has its source in reality; a statement will be judged true if it corresponds to an independently existing reality and false if it does not. Further, the extent to which a statement corresponds to reality is established by empirical verification. For example, the truth of the statement that intelligence and self-concept are highly correlated in elementary-age school children can be tested with empirical methods of observation. Should these methods confirm or establish that the statement accurately corresponds to "what is," the statement will be accepted as true and vice versa.

In contrast to the correspondence theory are at least two idealist epistomological positions. The conceptual idealist point of view (reality shaped by the mind) sup-

ports a coherentist theory of truth: Without an independent access to reality we must remain at the level of constructing coherent schemes *about* reality. In the ontological idealist version (reality created by the mind) truth can only be socially and historically conditioned agreement: What is true is what we can agree on at any particular time and place. What is important in both versions is that the concept of correspondence is unacceptable. If there is no access to reality independent of our minds or if there is no mind-independent reality at all, correspondence is an inappropriate way to determine what is to be considered as knowledge and truth about the social and human world.

The implications of using these different approaches to truth can be seen when two or more contradictory statements have the same point of reference and each claims to be true. From a realist point of view, a choice must be made to accept one and reject the other or even to reject both in favor of a third option. This choice will be based on the application of empirical methods of observation, most commonly with the support of a statistical-technical analysis. Since these procedures are considered objective and the results are expressed in neutral scientific language, whatever is discovered about this independent reality must be accepted by all "reasonable" people. The realist theory of correspondence allows that competing claims can be appealed to the referent of an external reality.

In the case of idealism, no external referent exists against which various claims to truth can be weighed. Either access is blocked to this referent by our mind involvement, or if reality is mind created, the relationships between the reality created and what is to be claimed about that reality are purely internal. Thus idealism is not overly bothered by contradictory versions of the "truth," which may be seen simply as different ways of constituting reality based on different social and historical conditions. Given this perspective, a contradiction will be resolved not because one participant's views more closely correspond to reality but because the participants come to an agreement. In other words, agreement is reached not through an external referent but through a process of justification that is inescapably bound up with values and interests.

The Relationship between Facts and Values in the Process of Investigation

This relationship has been and remains one of the more complex and serious problems facing the social sciences. While the issue has been approached from numerous directions, discussion frequently focuses on the idea of objectivity. However, the term *objective* has been defined in various ways (e.g., as process, as characteristic). This definitional problem is compounded by the fact that both quantitative and interpretive researchers claim to be objective but mean very different things by it.

From the perspective of a quantitative approach to research, "objective" has its reference point in what is outside us or in the world of facts that stands independent of the knower. An investigation of this world is considered objective if the process and results are unbiased; that is, undistorted by the particular dispositions of and the particular situation surrounding the investigator. The phrase "the facts must dominate and will lead where they may," even though somewhat trite, is nonetheless an excellent expression of this type of thinking. Furthermore, method is very significant in that it is adherence to a series of established procedures which prevent the self from disrupting or distorting this "journey of the facts." Being objective, then, can be defined as seeing the world free from one's own personal place or particular situation in it.

An important corollary to this position is that what is discovered about the world via this method is considered public knowledge. This means that the same result will be found by any and all who adhere to the method and are thereby able to free themselves from the influence of their personal dispositions, values, situation, and so on. In fact, a basic criterion for separating what is considered objective from what is not is whether the findings can be duplicated by anyone using the same instruments and procedures (presuming a similar level of skill). Objectivity means that findings must be acknowledged as the way things really are whether or not the investigator is interested in or agrees with what is found. Because the facts stand independent of the knower and can be known in an undistorted way, they must have a powerful constraining influence on our beliefs about the world.

If the realist-quantitative version of objectivity focuses on the known, the idealist-interpretive version is concerned with the realm of the knower. Objectivity in this perspective requires that the following claim be taken as fundamental: Our view of the world and our knowledge of it are inevitably based on our interests, values, dispositions, and so on. Because idealism says that reality is to one degree or another mind dependent, we cannot "get outside ourselves" and conduct investigations divorced from our own particular place in the world. Investigating the social and educational world is a process that is socially and historically bounded; that is, our values and interests will shape how we study and discuss reality.

From the interpretive perspective, objectivity is therefore nothing more than social agreement: What is objectively so is what we agree is objectively so. This agreement is based on justification or persuasion, which is of course a question of values and interests; agreement is not a product of an external reality. If researchers see the world in the same way, it is not because the results of research compel agreement (where not to agree is to be irrational or not face the facts), but rather because they happen to have similar interests, values, dispositions, and so on. Agreement rests not on the duplication of results but on a commonality of perspective, which in turn produces similar results. In quantitative research facts act to constrain our beliefs; while in in-

terpretive research beliefs determine what should count as facts. In the former, facts and values are separate; in the latter, facts and values are inextricably intertwined.

While the complex fact/value issue could be discussed at length, only three more aspects will be briefly mentioned. First, many quantitative researchers accept the idea that values play a role in the research process. However, they view this role as a limited one that will only determine what particular line of inquiry is followed or what specific problem is selected. After that point, they believe, methodology comes into play, making the research objective so that independently existing facts take over and lead where they may. From the idealist perspective, it is little more than fanciful to suppose that we can shift back and forth between a normative side and a cognitive side as this approach to the fact-value relationship seems to require. For idealists this type of separation is simply not possible. Values are seen as an integral part of the research process, from the selection of what is to be investigated, to how the investigation is to proceed, to the meaning of the terms encountered in the investigation.

While idealists say that agreement is the only reasonable basis of objectivity, they do not mean this as a grudging concession or as a temporary problem that will eventually be solved by more sophisticated scientific procedures. On the contrary, they believe social research is meaningful only to the extent that it has a value base. The study of human beings is perceived as the study of moral actors—people acting on the basis of their own values and interests. For idealists, to adopt the detached attitude sought by quantitative researchers (presuming it is possible) is to fail to understand what our subject is all about. The only meaningful research, they believe, is that which goes "beyond" the fiction of neutrality or value freedom. What is seen as a limitation to quantitative researchers is considered an essential of social and educational research to interpretive researchers.

Finally, the charge of relativism, frequently leveled at both sides in different ways, requires comment. Quantitative research, by maintaining a separation of facts and values, and by claiming that standards of judgment can be held only in the former area, is often accused of producing, if indirectly, only inhumane research and researchers. The detachment associated with this approach has led many people to conclude that the process is little more than the manipulation of numbers, formulas, and so forth, that it is dehumanizing to participants and investigators alike. In the second case a frequent charge is that if what is to count as reality is based on values and interests and objectivity and is no more than social agreement, what is left to prevent a slide into relativism. If anyone can create their own little world, or reality, how can we sort out correct from incorrect and truth from fiction.

All that needs to be said about either accusation in this paper is that both tend to be overdrawn. In the first situation, the realists can easily respond by saying that there is nothing in an attempt to separate facts and values that automatically or necessarily makes one inhuman or inhumane. Furthermore, there are far greater threats to civilized, decent society than the one supposedly posed by quantitative research and researchers. In the latter situation, idealists will argue that the fear of the slide into relativism is nothing more than that—an excessive and misplaced emotional reaction. As human beings we are constantly striving for agreement; to abandon at the philosophical level the idea that there is a reality that will reconcile our differences is only to recognize the basic human condition: The burden of choice is always with us and it cannot be given away.

The Goal of Investigation

From the quantitative perspective the overall purpose of educational research is to explain, and by extension to be able to predict, the relationship between or the invariant succession of educational objects and events. The ultimate goal of this approach to research is the development of laws, which make prediction possible. These laws describe in neutral scientific language how that independently existing reality really operates. The laws are, by definition, universally applicable, regardless of time and place (given, of course, the state of knowledge prevailing at any particular time). There are two types of laws: laws of association and causal laws. The former type, which focuses on the functional dependence of events, states the discovery of a constant relationship in the magnitude of certain variables. The latter, on the other hand, are statements about the invariant succession of events.

The importance of discovering laws, especially of the causal variety, can be seen by noting how laws are the crucial element in what is called the deductive-nomological form of explanation. This form is as follows: Always if A occurs (a metal rod is heated), B occurs (it expands) = LAW; A occurred (the rod was heated) = CONDITION; B occurred (the rod expanded) = EVENT. With this approach an event is said to be explained if it can be subsumed under a law, as is the case here with the expansion of the metal rod. Furthermore, predictions follow the same logical form because this format will accommodate the slightly modified statement "if A occurs, B will occur" and so on through condition and event. The important point here is that to engage in this form of explanation and prediction, the logic of which is compelling because of its deductive form, it is necessary to discover the lawful succession of events.

A second form of explanation requires a brief comment because of its frequent use in the social sciences. This is the inductive form, which involves probabilistic explanations based on statistical laws. Instead of "if A occurs, B occurs," the form is "if A occurs, B probably occurs." In other words, instead of "all A's are B's" the form is "N percent of A's are B's." While statistical laws will allow for explanation in a number of ways, only one needs to be noted. This form closely approximates the de-

ductive-nomological form: If A occurs, B probably occurs; A occurs, B occurs with a certain probability or in a certain percent of the cases. This form is inductive as opposed to deductive because the event does not automatically follow from the law and condition as it must in the other form.

This desire to find laws and to modify and extend existing ones is what directs our empirical studies. This is not to say that every investigator has this purpose directly in mind for every single investigation. Rather, the overall idea is that the accumulation of evidence will allow us to "sort out" the educational world in a systematic fashion. In this way the quantitative approach to educational research aligns itself with how the scientific process operates in the physical sciences. In the well-known controversy over the question of the unity of all sciences, this perspective is obviously pro-unity.

Not surprising, the interpretive-idealist approach to research rejects the possibility that laws will ever by found, at least laws analogous to those set forth in the physical sciences. Some arguments have focused on the overwhelming complexity of the social world as the prime factor in our inability to discover laws. Others cite the reflexive nature of any statements researchers make about the social and educational area. What is meant here is that any prediction affects those about whom the prediction is made, thereby changing the situation. Furthermore, this problem cannot be allowed for, because to do so would change the prediction, which would in turn influence behavior, and so on (infinite regress). Another argument is that there are not now and never have been statements that could be called laws in any serious sense of the term, that what are called laws are really in many if not most cases no more than analytic statements (true-by-definition) without the synthetic character necessary for empirical testing.

From the interpretive-idealist perspective, the purpose of investigation should be *verstehen,* or interpretive understanding, and this requires a hermeneutical approach. *Verstehen* is a difficult concept to grasp and has, over the years, suffered from imprecise definition. A very basic definition centers on the attempt to achieve a sense of the meaning that others give to their own situations through an interpretive understanding of their language, art, gestures and politics. To understand in this way further implies that one knows what another is experiencing by engaging in a recreation of those experiences in oneself. At its core, the essence of understanding is to put oneself in the place of the other—something which is possible if one possesses a degree of empathy with the other or has the disposition to recreate the experiences.

This process of understanding can range from simple to very complex and usually has at least two "levels." First is the level of direct understanding, which involves the immediate apprehension of a human action without any conscious inferences about that activity. This constitutes the perception of the "what" of an action. At the second and more complex level of *verstehen* the investigator seeks to understand the nature of the activity and the meaning that the actor assigns to his or her own actions—the "why" of the activity.

To understand the "why" requires a hermeneutical approach by the investigator. Hermeneutics originally referred to the interpretation of text. In this circular process, the meaning of any particular part of a text, such as a word or a sentence, requires an understanding of the meaning of the whole and vice versa. Achieving a meaningful interpretation is a process of constant movement between parts and whole in which there is no absolute starting point and no absolute ending point. In the study of human activity or expression the same whole-part interpretive approach must apply: To understand a particular action requires an understanding of the context within which it takes place, and to understand the context within which it takes place requires an understanding of the particular actions.

Hermeneutics demonstrates that understanding cannot be pursued in the absence of context or of an interpretive framework. To interpretive researchers, the investigator of human affairs must always take into account the fact that meaning is socially and historically bounded, both for the investigator and the investigated. A hermeneutical approach is therefore employed to achieve an interpretive understanding of human activity, and this interpretation is expressed in the language of the situation rather than in a neutral scientific language.

Summary and Implications

In summary, organizing this discussion around these three questions highlights some of the differences between quantitative and interpretive research. To undertake investigations of the social and educational world from a quantitative perspective appears to be different from doing so from an interpretive perspective. Each approach sponsors different procedures and has different epistomological implications. One approach takes a subject-object position on the relationship to subject matter; the other takes a subject-subject position. One separates facts and values, while the other perceives them as inextricably mixed. One searches for laws, and the other seeks understanding. These positions do not seem to be compatible given our present state of thinking. This is not to say that the two approaches can never be reconciled, only that at the present time the actual divisions are more notable than the possibilities for unification.

This brings us to the question of whether or not any of the above makes a difference to practicing researchers. The answer is that a systematic engagement with this quantitative-qualitative debate does indeed make a difference at several related levels. At a general level this issue brings to the forefront the epistomological question of what is to count as knowledge. If researchers do not discuss this

question, they are forfeiting any participation in determining the basis for the authority of their knowledge. The point here is that practicing researchers should have as much, if not more, to say about this issue as anybody, including philosophers.

At another level, if it is accepted that we are faced with different, but equally legitimate, sets of assumptions, then the methodological practices of educational research will be different and/or will be interpreted differently. At the extreme, the methodology appropriate to one approach will be seen as irrelevant from the perspective of the other approach. In a milder sense, various elements and practices will be defined and interpreted differently, given the different perspectives. If objectivity is defined one way by quantitative researchers and another way by qualitative researchers, then the procedures each side engages in to attain it will be different.

Finally, at a day-to-day level, some issues of consequence pertain to the actual conducting and dissemination of research. Researchers must continually make judgments about what is good research as opposed to what is not—decisions which of course form the basis for the distribution of rewards within the profession. These judgments are played out in various arenas, from the publication of research results to tenure decisions to the proceedings of dissertation committees. The problem this quantitative-interpretive debate underscores concerns the basis on which judgments are made: Is there a set of criteria for judging good and bad quantitative research and, independent of this, a set of criteria for judging good and bad qualitative research? Or is there a "unity of science," which means only one set of standards is needed for evaluating all research efforts? In other words, if the two approaches really do not differ, or if one approach is clearly unacceptable as a way to do research, then only one set of standards may be needed to sort out the good from the bad. However, if these two approaches are felt to constitute distinct, yet equally appropriate perspectives, then different standards are needed, and it is unfair to judge qualitative efforts from a quantitative perspective and vice versa. That we have not satisfactorily come to terms with this question, at least from the point of view of many researchers, is not difficult to perceive.

Of course, if quantitative research in the social areas had achieved an intellectual and material mastery of its subject matter similar to that of the physical sciences, there would probably be no concern over competing approaches. Since this is not the case and is unlikely to be so in the near future, we must face up to the issue. How we go about the process of investigation carries with it serious epistomological consequences. These consequences go to the core of educational and social research. Rather than obscure the issue with polemics and name-calling or accept the unfounded assumption that the methods are complementary, we must insure that the problem is the subject of serious and extended debate, not only among philosophers, but even more important, among practicing educational researchers.

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This selective list of references was compiled based on two criteria. First, they tend to avoid the technical terminology that is present in the more purely philosophical treatments that touch on the issues discussed above. Second, they are works that do not conventionally appear in discussions of quantitative or interpretive methods.

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