Should Knowledge of Management Be Organized as Methods or as Theories?

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"If you wish to know, learn how to act." Heinz von Foerster

Philosophical Positions in a School of Management

More than most academic papers, this paper requires an explanation of the social context that gave rise to it. I am not a professional philosopher, but I teach the course in the philosophy of science for doctoral students in the School of Business and Public Management at The George Washington University. This course in the philosophy of science is the only course in philosophy that many of these students will have before receiving their "doctor of philosophy" degree. What we tell our students in this course is that before becoming a doctoral student, they acquired knowledge and used it to accomplish various tasks. However, in a doctoral program students are expected to contribute to the knowledge in their fields. So, what is knowledge? How is it organized? How does one make a contribution to knowledge?

As one would expect, different faculty members answer these questions in different ways. In order to help the doctoral students understand the various points of view they will encounter in their careers in the doctoral program, I have presented a diagram depicting my conception of the major points of view among the faculty in the school of management at the George Washington University (GWU). Figure 1 shows there are basically three groups that struggle for influence within the doctoral program. Faculty members can be placed in one of these three groups depending on how they answer two questions.

The first question is, "Is there a difference between the natural sciences and the social sciences?" Karl Popper said no. He proposed the doctrine of the unity of method and asserted that the same methods developed for the natural sciences could also be used for the social sciences. This is the majority point of view among faculty members within the school of management at GWU. Faculty members in the Department of Finance feel particularly strongly that Popper's view of the construction of knowledge should guide dissertation research. A smaller but vocal group of faculty members claims there is or should be a difference between the natural sciences and the social sciences, because social systems consist of knowing subjects. Most of these faculty members teach either organizational behavior or public administration. Although

those who say no to the first question are the majority among the faculty in the school of management, those who say yes have been in control of the doctoral program. Consequently, students have been encouraged to be innovative and to experiment with methods of research. As a result we have had a wide variety of types of dissertations.

A second question can be asked of those who believe there is a difference between the natural sciences and the social sciences, namely, "Should the philosophy of science be disregarded?" Most of the faculty members who answered yes to the first question also answer yes to this question. They have been influenced by Paul Feyerabend (1988). They claim that the classical philosophy of science was developed for understanding physical systems. But since we are attempting to understand social systems, consisting of knowing and competing subjects, the philosophy of science has little to contribute. One might then ask what these faculty members would put in place of the philosophy of science to guide doctoral students in understanding the nature of knowledge, the testing of theories, etc. They have little to say on this subject other than to point to the literature that depicts the wide variety of research done in the social sciences (Morgan, 1983). Personally, I answer no to the second question. I feel the appropriate response to the limitations of the present philosophy of science is to expand it by adding a new dimension – the amount of attention paid to the observer. I have written about this point of view, which is often called constructivism or second order cybernetics in several papers (Umpleby, 1990, 1992, 1997).

Figure 1 presents my view of the philosophical debates within the doctoral program in the school of management until recent months. However, I teach other management courses besides the philosophy of science. I teach the history of management thought, quality improvement methods, systems thinking, and cross-cultural management. In the 25 years I have been teaching management I have learned that practicing managers have very little interest in theories. Theories seem remote and abstract relative to their immediate concerns.

There are two ways to interpret the lack of interest in theories by managers. One may choose to believe the academics are correct in structuring knowledge in the form of theories and managers are not intellectually inclined. Or, one might decide managers know how to best structure knowledge to fit their purposes and philosophers have not yet explained how managers do this. Although managers often have very little interest in theories, I find they usually are quite interested in methods. Their eyes light up when presented with a method they feel they can use right away to improve the performance of their organizations.

Is there a difference between the
natural sciences and the social sciences?

Yes   No

Should we reject the   Popper's doctrine of
philosophy of science?   the unity of method

Yes   No

What should take its place?   Expand the philosophy of science
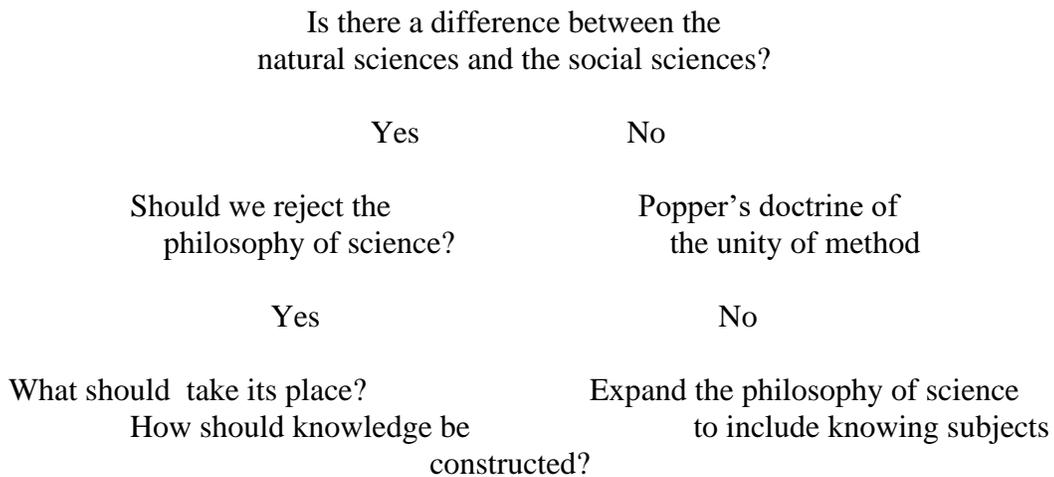How should knowledge be   to include knowing subjects
constructed?

Figure 1. Recent philosophical debates in the field of management concerning
theories

Nevertheless, most of the knowledge we teach in management courses is presented in
the form of theories. Doctoral students are taught that they should learn the theories
in their fields and test a theory in order to make a contribution to
knowledge. However, the great interest in methods among practicing managers and
their lack of interest in theories has led me to ask whether management knowledge
should perhaps be organized in the form of methods rather than theories. So I have
expanded Figure 1 into Figure 2 by adding an additional question at the top, "Should
management knowledge be organized in the form of theories or
methods?" Traditionally the answer has been theories. Several reasons for this choice
can be given. First, theories are the way the philosophy of science says knowledge
should be constructed. Second, academics are expected to develop theories. There
are journals for specialized management fields. Faculty members must publish in
these journals in order to be promoted. Third, structuring knowledge in the form of
theories is the way to win approval and legitimacy among colleagues in the university
outside the school of management. The creation and testing of theories is the way the
university in general operates, at least those fields that think of themselves as
sciences. And management is often viewed as applied social science.

Should knowledge in the field of management
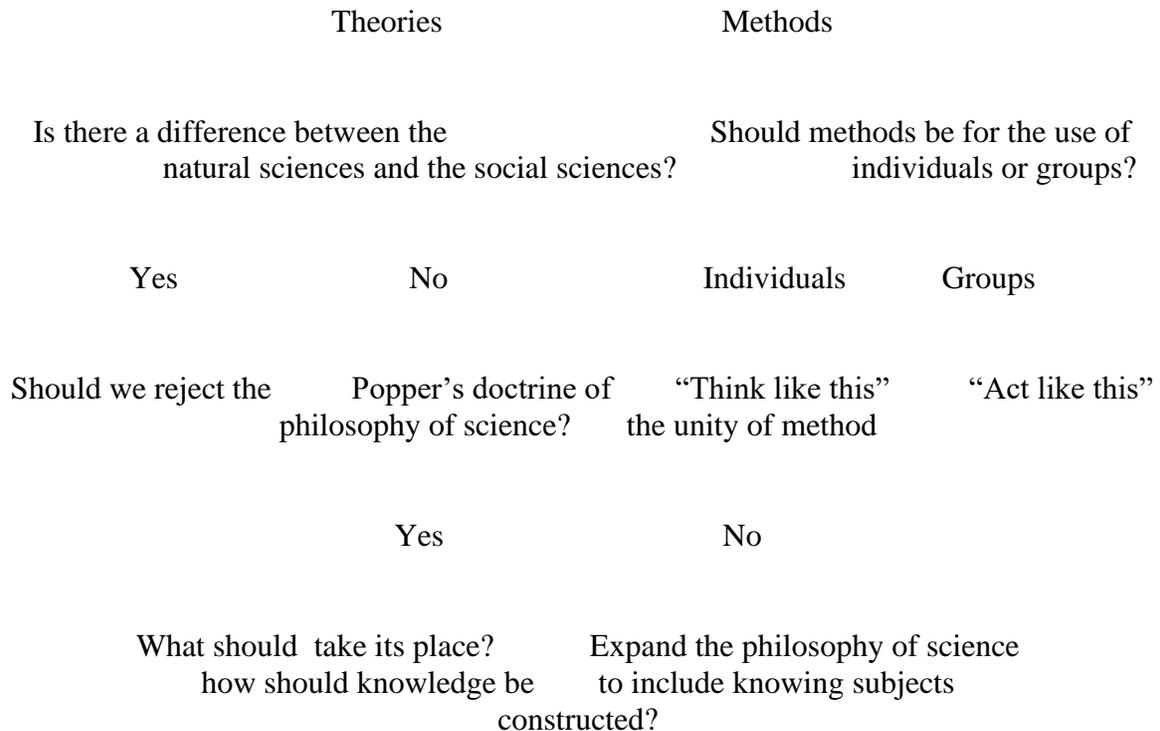be constructed in the form of theories or methods?

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                Theories                          Methods


    Is there a difference between the            Should methods be for the use of
        natural sciences and the social sciences?        individuals or groups?



        Yes                No              Individuals        Groups



    Should we reject the        Popper's doctrine of      "Think like this"      "Act like this"
        philosophy of science?        the unity of method



                Yes                          No



    What should  take its place?        Expand the philosophy of science
        how should knowledge be         to include knowing subjects
                    constructed?
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Figure 2. Constructing management knowledge either in the form of methods or in
the form of theories

If one chooses to answer "methods" to the question at the top of Figure 2, an
additional question could be, "Should methods be constructed to aid decision-making
by individuals or to help groups arrive at consensus on a course of action?" In the
field of management there is an extensive literature on both choices. Methods to aid
decision-making by individuals include decision trees, mathematical analyses,
computer simulations, expert systems, etc. Methods to help groups of people arrive at
consensus on a course of action include a variety of team building, group process, and
planning methods. The fact that a large literature on management methods already
exists tends to support the legitimacy of creating management knowledge in the form
of methods.

Quality Improvement Awards

There is another factor that has contributed to my interest in methods as an alternative
to theories. In the past twenty years quality improvement methods have become
widely accepted in the United States, Europe and other countries, following their
successful application and further development in Japan (Walton, 1986). Several
quality awards have been established – the Deming Prize in Japan, the Baldrige
Award in the U.S., and the European Quality Award in Europe. The criteria of these
awards have been widely accepted as a model of management by corporate

executives, government officials and other managers. The successful implementation of these criteria requires the use of methods. Basically the criteria say, "In order to manage an organization well, do these things." The results have been impressive. A portfolio of award winning companies consistently outperforms major stock indices. The widespread acceptance of a set of methods as the best available model of management by public and private sector managers in several countries is strong evidence that structuring knowledge of management in the form of methods has merit.

The criteria in the quality awards are reviewed each year and questions are added or removed by the judges to reflect current thinking on best practices. For example, a recent addition to the Baldrige Award is a question on whether the firm has an inventory of its information technology – hardware and software. This question is probably a result of the year 2000 computer problem. In contrast to university courses, which separate management knowledge into a variety of disciplines with an ever-expanding literature, these awards present an integrated, finite description of how management should be done. Executives in public and private organizations seem to favor an integration of knowledge in the form of methods whereas professors of management generally develop knowledge in the form of diverse, usually unconnected theories.

Within universities the idea that management knowledge should be constructed in the form of methods, resulting from consulting practice, rather than theories, published in peer-reviewed journals, has had to struggle against the larger, more well-known literature in the philosophy of science on theories. Whereas theories can be tested by experiments using widely accepted statistical standards, methods are accepted, rejected or modified based on experience documented in stories, anecdotes and case studies.   The financial performance of companies is another way of evaluating various methods of management.

A Philosophy of Methods

If one decides methods are the appropriate way to structure knowledge of management, what philosophy should guide the development of knowledge in the form of methods? For example, how are methods tested? Suppose someone invents a method of strategic planning, such as Ackoff's interactive planning (Ackoff, 1981). One person tries the method and has good results. This supports the feeling of confidence in the utility of the method. But a second person tries the method and has poor results. Why? How can the cause of the poor results be identified? Was the method flawed? Was the person's understanding of the method incomplete? Were the general management skills of the person underdeveloped? Was the method not suitable for the particular organizational culture?

Is there a philosophical literature to guide us in the selection of methods and the testing of methods, similar to the large literature on the testing of scientific theories? As it happens, there is a literature that proposes an alternative to the philosophy of science. Edgar Arthur Singer, Jr. was a philosopher at the University of Pennsylvania. He had two very capable students – C. West Churchman and Russell L. Ackoff. Singer noted that the philosophy of science suggests that knowledge be constructed in the form of if-then propositions – if the experimenter does A, then the experimenter should observe B, assuming all other variables are held constant. As an alternative to cause and effect, Singer suggested producer-product relationships (Singer, 1941, 1946). The example usually cited is an acorn and an oak tree. In order to produce an oak tree, an acorn is needed. But much more is needed – soil, water, sunlight, and a favorable climate for several years. The acorn is necessary to produce an oak tree, but it is not sufficient. Churchman and Ackoff tried to interest their philosophical colleagues in Singer's theories (Churchman and Ackoff, 1950, Churchman, 1971, 1979). They had little success. However, they found that business people were quite interested in their ideas. Both Churchman and Ackoff moved from departments of philosophy to departments of management. Ackoff in particular developed a series of methods to guide his consulting activities. William Roth, a student of Churchman and Ackoff has further developed the ideas of Singer, Churchman and Ackoff (Roth, 1999).

Most philosophers of science have used the idea of cause and effect relationships and if-then propositions. They use analysis and reductionism to understand complex systems. Knowledge is presented in the form of theories. Singer, Churchman and Ackoff on the other hand emphasize producer-product relationships and necessary conditions. They refer to synthesis as much as to analysis and to expansionism in addition to reductionism. Expansionism means looking up to larger categories to establish meaning rather than down to more narrow categories. In their practical writings Churchman and Ackoff presented knowledge in the form of methods rather than theories. Colleagues of Churchman and Ackoff who shared this view were Fred Emery and Eric Trist. Other management writers such as Beer (1986) and Checkland (1981) have also developed methods. Presently a few management schools are basing their curricula upon the idea that management knowledge should take the form of methods more than theories.

Science One and Science Two

Let us assume for the moment that these two ways of structuring knowledge, either as theories or as methods, can be regarded as two forms of science, where science is interpreted broadly as structured and tested knowledge. But before we look at the two conceptions of science, let me first distinguish two models that exist within each version of science.

Assume for a moment that within the classical conception of science there are two models. Model One is the model that an observer constructs of the system observed. A model is any set of propositions about cause and effect relationships. A model may or may not involve the use of mathematics. Model One is what we are referring to when we talk about a model or theory of some referent system. Model Two is a set of propositions about how the observer interacts with the system observed in order to construct Model One. Model Two explains how to collect data. Model Two is a set of procedures. It is not a scientific theory. Model Two is what we mean when we talk about "scientific method."

I have changed the words "scientific theory" and "scientific method" to Model One and Model Two in order to emphasize that both are sets of propositions. Normally we would say that Model One states what we know whereas Model Two states how we should act in order to improve our knowledge. But both are sets of propositions in the mind of an observer or actor.

The physical sciences tend to emphasize Model One. In the physical sciences most of the effort is focused on developing, ideally, mathematical models of the behavior of observed systems. Model Two -- how data is collected -- is less problematic and usually receives less attention. However, in the social sciences the emphasis is often reversed. How an observer obtains data receives a great deal of attention. There is much discussion of experimental groups and control groups and how the experimenter can eliminate or at least reduce the changes in the observed system caused by the experiment itself. Hence in the social sciences Model Two often receives as much attention as Model One. This different emphasis in the social sciences is related to the fact that quantitative theories, such as one finds in the physical sciences, are difficult to create in the social sciences, at least outside the field of economics.

Despite their differences, both of these cases can be regarded as examples of Science One. The end is Model One. Model Two is just a means to achieve the end. In Science One the observer and the system observed are separate. The observer is outside the system observed, and the purpose of the procedures in Model Two is to reduce, and if possible to eliminate, any effect of the observer or the experiment on the system observed. The goal is to acquire knowledge. This knowledge may later be used to change some system, but the role of the scientific observer is merely to acquire knowledge.

Table 1
Two Conceptions of Science

Aspects	Science One	Science Two

	Model One	Model Two
Philosophy	Cause and Effect	Producer-product
Form of Knowledge	Theories	Methods
Observer	Outside the system observed	Part of the system observed
Causality	If-then	Necessary conditions
Perspective	Reductionism	Expansionism
Orientation	Analysis	Synthesis
Approach	Observation	Participation
Activity	Description	Prescription
Goal	Reliability of knowledge	Agreement
Application	Forecast	Create or design
Criteria	Reproducibility	Usefulness

But suppose we push the distinction between Model One and Model Two even farther and imagine that the end is to develop Model Two whereas Model One will be different for each organization studied. Call this case Science Two. In Science Two the observer is not separate from the observed system but rather is a part of the observed system. Furthermore, the objective is not so much to accumulate knowledge in the form of theories but rather to change a social system. The scientist ceases to be merely an observer and becomes also an actor and participant. The growth of knowledge is measured not only by mathematical models of cause and effect relationships in observed systems but also by improved methods for interacting with the people and organizations the observer or actor is trying to influence. The purpose of observation expands to include intervention, and the aim is not only to develop theories but also to be an agent of social change. More emphasis is therefore placed on the observer's conception of himself/herself and on what actions are considered appropriate and useful. Methods, rather than theories, are what is transferable from one situation to another.

One way to understand Science One and Science Two is to contrast them with the legal system. Whereas Science One was originally developed to help us understand the natural world, law was developed over many centuries to help people create stable societies that protect individual liberties. Science Two has been developed, mostly in

recent decades, in an effort to make large organizations more effective in accomplishing their purposes. Science Two contains some features of Science One (e.g., knowledge is developed through experimentation) and some features of Law (e.g., the purpose is to regulate large social systems).

Table 2
Three Types of Knowledge

Science One	Science Two	Law
Scientists are highly educated. They have special training.	Managers sometimes have education in management. They need leadership skills.	Lawyers and legislators generally have a legal education.
Knowledge is codified in the form of theories.	Knowledge is embodied in the form of methods.	Experience is codified in laws and court judgments.
Knowledge is developed using scientific methods.	Knowledge is developed through experience, often consulting practice.	Laws and precedents result from elections, legislation, and court appeals.
The purpose is to describe how the world works.	The purpose is to help people work together to achieve common goals.	The purpose is to achieve political stability and to protect human rights.
Knowledge is preserved in scientific literature and taught in science courses.	Methods are learned and passed on by using them.	People are expected to obey laws. Laws are enforced by the police and courts.
Theories are steps in an endless search for truth.	Methods aid coordination, production of goods, and conflict resolution.	A body of laws, precedents, and judicial interpretations assure political and social stability.
Theories change through testing, experimentation, and invention.	Methods change through imitation, experimentation, and innovation.	Laws are changed through the political process.
Theories are accepted as the best availabe explanation of observations.	Methods are accepted as a means to improve group performance.	Laws are obeyed partly out of desire for a stable society and partly out of fear of punishment.

An epistemological justification for the change from Science One to Science Two is provided in the literature on second order cybernetics. This literature creates an epistemology based upon neurophysiology. The claim is that every observation is

made by an observer, that observations independent of the characteristics of the observer are not physically possible, and that a "reality" is constructed by each individual based on his or her experiences (von Foerster, 1981, von Glasersfeld, 1987). Since each individual's experience is limited, other people are necessary to test our views of "reality." "Objectivity" is replaced by "shared subjectivity." By working together people are able to create new kinds of organizations and societies.

Conclusion

I am proposing that knowledge in the social sciences, or at least in the field of management, should be organized in the form of methods rather than theories. I call this form of knowledge Science Two, because I view it as a way of structuring knowledge that is an extension of earlier conceptions of science. Science Two encompasses Science One in that knowledge of "how the world works" is incorporated in Science Two. However, Science One presents knowledge in the form of causal statements: If variable A is increased, then variable B will increase, assuming all other variables remain unchanged. Science Two presents knowledge in the form of injunctions: If you want these results, act in this way.   Furthermore, calling this way of knowing Science Two, rather than action theory or a philosophy of action or a philosophy of methods, emphasizes that this is a way of knowing that is an alternative to the classical philosophy of science. Science Two is a way of developing knowledge for fields that include knowing subjects, just as Science One is a way of developing knowledge for fields that usually do not include knowing subjects. I believe we shall more readily create more human lives and more human worlds if we emphasize the role of the subject, the observer or the actor in the creation of knowledge rather than assuming, as some conceptions of science assume, that the presence or absence of knowing subjects makes no difference in how knowledge is developed and organized (Caws, 1993).

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