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Methodological Foundations of Systems Methodologies

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In social systems science generally, and in management science particularly, recent developments in the variety of types of specific problem-solving methodologies (under the rubric of "hard" and "soft" systems approaches) have given an impetus to a line of inquiry, as well as debate on the nature of those methodologies. On the one hand, there has been the view that what we are witnessing is a form of "Kuhnian crisis." On the other hand, a complementarist view of developments has been argued and a contingency approach proposed. But one thing has been common among the competing views: a belief that the prospects for further advances in the design and application of those methodologies, and in resolving the current controversies, lie in serious attempts to reconsider and clarify the underlying metatheoretical assumptions and concerns. This paper is an attempt to contribute to such an endeavor. A brief exposition of three methodological foundations (namely, empiricism, hermeneutics, and critique) is made, not only with the purpose of highlighting the nature as well as the limits of their epistemological and ethical claims, but also as a basis for illuminating both the nature of contemporary work on systems inquiry, design, and problem solving and the ongoing debate on what constitutes appropriate criteria for choice of specific methodologies.

KEY WORDS: social science; systems; methodology; problem solving.

1. INTRODUCTION

For perhaps a number of ideologically compelling reasons, the social sciences sought, right from the outset, to develop in the image of the older, more established and "successful" natural sciences. To a very large extent, that image still remains the exemplar for the overwhelming majority of social

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scientists, who seem to see no important distinction between the nature of their objects of inquiry and that of the objects of the natural sciences. Even the (relatively) younger systems science (whose domain is unavoidably constituted primarily by social phenomena) did not succeed in escaping this temptation. But more recently (especially since the late 1970s/early 1980s), there has been a growing awareness of, and an open debate about, the inadequacies or inappropriateness of the traditional hard systems thinking and its approach to the study and design of social systems. Parallel with these debates, new systems "methodologies," predominantly at the practical level of real-world problem solving, have been rigorously developed. But the growing mood for methodological criticisms has not spared even these new directions in systems methods.

One thing which seems needed in any serious attempt at clarifying issues of controversy in these debates is a return to the metatheoretical basic assumptions and concerns that underwrite different problem-solving and inquiry methodologies [as, for instance, in the debate between Jackson and Ackoff, Churchman, and Checkland on the nature of soft systems thinking (see Jackson, 1982, 1983)]. It is the aim of this paper to contribute to the elaboration of such metatheoretical assumptions and concerns.

The paper seeks to make a brief exposition of the methodological foundations that underwrite different approaches to inquiry and problem solving in the domain of social science. The aim of such an exposition is to highlight the nature and (especially) the limits of different methodological claims and aspirations in social theory. In the process, a rationale for a self-reflective choice of specific methodologies (or methods) of inquiry and problem solving should unfold. Following Jackson's (1982, 1985a, b, 1987a), Jackson and Keys' (1984), Checkland's (1983, 1985), Flood and Carson's (1988, Chap. 6), and Banathy's (1984, 1986, 1987) seminal works on (specific) methodological choice, this paper also seeks to relate contemporary systems work on modes of inquiry and problem-solving approaches to their explicit or implicit methodological foundations. The paper concludes by pointing to the need for a critical methodological foundation. Critique does not deny the legitimacy of the human interests underlying empiricist and hermeneutic methodological foundations. Rather, it attempts, in the context of contemporary social formations, to transcend their alterable, historical, and essentially ideological limitations.

Section 2 seeks to clarify the formal distinction between method and methodology, concepts which, even if employed interchangeably in current usage (as in present systems literature), should be differently understood according to context. It is in that context that while methodological foundations refer to methodology in general, or metatheoretical assumptions and concerns, systems methodologies (or, more properly, methods) refer (logically)

to lower-level modes of systems inquiry and problem-solving approaches. Section 3 is an attempt to elaborate on a metatheoretical framework for methodology in general (or methodological foundations), first in terms of a philosophy of science and a theory of society (Burrell and Morgan, 1979) and then in terms of Habermas' (1972) interest constitution theory. This is followed, in Section 4, by a critical examination of empiricism, hermeneutics, and critique as three major methodological foundations corresponding to three forms of human interests: the technical, the practical, and the emancipatory interest. Section 5 relates the foregoing broad philosophic/sociological discussion to contemporary systems work on modes of inquiry and problem-solving approaches.

2. METHOD OR METHODOLOGY?

Giddens (1976) has described how throughout the nineteenth and well into the twentieth century, social science developed in the shadow of the triumphs of natural science, whose spectacular, dazzling, and convincing technological accomplishments drew the admiration of the "new" social science and kindled in its practitioners the dream of achieving "the same kind of sensational illumination and explanatory power already yielded by the sciences of nature" (p. 13). It was therefore only natural that the process of emulating the natural scientists' approach to the conduct of inquiry (the so-called "scientific method") should proceed with unquestioning and blind faith in its relevance and suitability for the study of human and social phenomena.

Given the nature of the objects of study in the natural sciences, it is perhaps understandable that the basic ontological question regarding the essences of things and phenomena did not seem to arise. In the scientific method (however defined) an ontological unity was assumed in the sense that all objects in the universe, regardless of whether these were inert, living, conscious, or rational beings, were taken to be of fundamentally and qualitatively the same kind. Thus the only meaningful questions of scientific inquiry centred on epistemology and methodology. Since the truth value of any claims to knowledge ultimately depended on the validation process embodying a set of communally controlled, universal rules and impersonal procedures, those rules and procedures not only became identified with the scientific method, but also were seen as exhausting the notion of methodology.

A distinction between methodology and method can be meaningful only where no ontological unity is assumed, with the consequence that the validity of different modes of inquiry and problem-solving approaches (i.e., methods) needs to be evaluated against a set of higher-order criteria (i.e., methodology)

that lie outside those methods. Despite the long-standing dominance of the scientific method in the social sciences, there has fortunately been a growing awareness that the social world is qualitatively different from the natural world and, in consequence, that the methodological unity assumption cannot be tenable (also see Flood and Carson, 1988; Chaps. 5, 6, and 10). It is this view that runs throughout the present paper.

From such an ontological position, methodology, as opposed to method, is viewed as representing a higher-order construct: a method of methods that examines systematically and logically the aptness of all research tools, varying from basic assumptions to special research techniques. A similar distinction is evident in the Parsonian sense of the terms, where methodology relates to the consideration of the general grounds for the validity of scientific procedures, while methods are best identified with research techniques employed in a particular research activity [e.g., case study, interview, questionnaire, statistical methods (see Gould and Kolb, 1964)].

The methodology of a science therefore represents its rationale for evaluating its theories or hypotheses (Christenson, 1983, p. 2). In a similar manner, the methodology of research provides the rationale for evaluating what it claims to be a research problem, its theoretical and observational propositions, and the kinds of proposals it suggests or implies. In this sense, methodology is necessarily normative, and for that reason, it is not surprising (as Christenson, 1983, notes) that positivists hold it in low esteem, deriding it as "unscientific" and "meaningless." Quoting Popper (1959, p. 51), Christenson adds, "The positivist dislikes the idea that there should be meaningful problems outside the field of 'positive' empirical science . . . . He dislikes the idea that there should be a genuine theory of knowledge, an epistemology or a methodology." But such a positivist dogma, as Christenson argues, does not enable positivists to avoid methodological commitments: it only makes them uncritical and unreflexive about the commitments they make. This may be characteristic of the more established natural sciences with a research tradition of demonstrated fruitfulness. In social sciences, however, the need for being self-conscious about methodology seems to be crucial. Quoting Samuelson (1962, p. 21), Christenson adds, "Paradoxically, the soft sciences that are still akin to an art benefit more from an explicit awareness of the canons of scientific method . . . than do the hard sciences, where doing what comes naturally will protect even a fool from gross methodological error."

The view of methodology as a metamethod seems to characterize the thinking of a number of recent writers on the problem of methodology in social science in general, and in systems science in particular. Viewing research as engagement, Morgan (1983) has, for instance, argued for an approach that sees "the research process as involving choice between modes of engagement entailing different relationships between theory and method, concept and

object, and researcher and researched, rather than simply a choice about method alone" (p. 18). In those terms, ". . . a much broader and self-reflective stance is required. A knowledge of technique needs to be complemented by an appreciation of the nature of research as a distinctively human process through which researchers make knowledge. Such appreciation stands in contrast to the more common view of research as a neutral, technical process through which researchers simply reveal or discover knowledge. Such an appreciation requires that we reframe understanding and debate about research in a way that goes beyond considerations of method alone" (Morgan, 1983, p. 7).

Mattessich (1978, p. 229) has similarly drawn a useful distinction between general and special methodologies. The former refers to the "sum-total of all rational ways of pursuing knowledge" and can therefore be regarded as a branch of philosophy. Special methodologies, on the other hand, "emerge either out of the needs of specific disciplines or out of a specific attitude towards reality." In systems science, Banathy's classification of "systems methodology" into three categories (cf. Jackson, 1985b) is highly illuminating. The classification represents a logical hierarchy, from practice, to theory, to metatheory levels of resolution. While the practical level includes systems methods as approaches to real-world problem solving, the theoretical level includes system methods as modes of inquiry for knowledge production. It is, however, the third metatheoretical level that constitutes systems methodology (in the formal sense) as the foundation or basis for determining the metacharacteristics of problem-solving and inquiry methods. The next section elaborates a framework for such methodological foundations at the metatheoretical level.

3. A FRAMEWORK FOR METHODOLOGY IN GENERAL

3.1. A Philosophy of Science and a Theory of Society

In a volume describing 21 different approaches to social science research, Morgan (1983) has outlined a framework for analyzing their constitutive logics or strategies. Overarching any social research are the constitutive ontological assumptions regarding the researcher's view about the existential nature of the social world and human subjectivity. Such constitutive assumptions define the basic underlying paradigm for a particular inquiry. Concretization of these foundational assumptions in terms of favored "metaphors," or images, through which the assumptions become meaningful, represents a particular epistemological stance, or a particular view of the possibility of knowledge about the social world. Thus, methodology or "puzzle solving"

represents a bridging activity that aims at forging a correspondence between paradigmatic ontological assumptions and the particular epistemological positions taken.

In Morgan's (1983) framework, ontology is clearly prior to epistemology. Beyleveld (1975) has noted that substantively the priority between ontology and epistemology may differ from what is posited in a formal structure. Morgan's (1983) framework is in terms of a one-dimensional characterization of the logic of research. This is the cognitive dimension that classifies research methodologies in terms of the subjective–objective dichotomy (Burrell and Morgan, 1979; Morgan, 1980; Morgan and Smircich, 1980). A second dimension, the ethical dimension, brings to the fore the "order–conflict" or "regulation–radical change" dichotomy as an issue separate from the subjective–objective dichotomy (Burrell and Morgan, 1979; Dahrendorf, 1967; Lockwood, 1956; Cohen, 1968). It is in terms of such a two-dimensional perspective that Burrell and Morgan (1979) present a general framework for the analysis of social theory. Figure 1 illustrates the framework and its classification of social theories into four paradigms: the "functionalist," "interpretive," "radical-humanist," and "radical-structuralist." The framework reflects the basic philosophical presuppositions or metatheoretical assumptions underlying scientific inquiry. First, it reflects a philosophy of science in terms of four basic assumptions related to ontology, epistemology, human nature, and methodology, along a subjective–objective dimension. Second, it reflects a theory of society in terms of a regulation–radical change dimension. Each of the four resulting paradigms generates theories, perspectives, and methodological approaches which are in fundamental opposition to those generated in the other paradigms.

Briefly, the functionalist paradigm is characterized by an objectivist (realist ontology, positivist epistemology, deterministic view of the nature of man, and nomothetic methodology) stance and a regulative ethical commitment that is concerned with providing explanations of the status quo, social order, consensus, social integration, solidarity, need satisfaction, and actuality (Burrell and Morgan, 1979, p. 26). The interpretive paradigm, while sharing regulative ethical commitment with the functionalist paradigm, counterposes

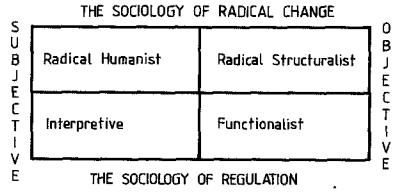

Fig. 1. Four paradigms for the analysis of social theory (from Burrell and Morgan, 1979, p. 22).

to it a subjectivist (nominalist ontology, antipositivist epistemology, voluntaristic view of the nature of man, and ideographic methodology) position, with an overriding concern for understanding the social world at the level of subjective experience and seeking "explanation within the realm of individual consciousness and subjectivity" (p. 28).

While the functionalist and interpretive paradigms share a common regulative ethical concern, the radical-humanist and the radical-structuralist paradigms counterpose an ethical commitment geared to seeking explanations for the radical change, deep-seated structural conflict, modes of domination and alienation, and structural contradictions characterizing modern society. Like the interpretive paradigm, the radical-humanist paradigm is subjectivist but it is committed to a critique of the status quo, seeking at the level of consciousness explanation for radical change, alientation, false consciousness, modes of domination, emancipation, deprivation, and potentiality (Burrell and Morgan, 1979, p. 32). The radical-structuralist paradigm, on the other hand, is objectivist but also committed to a critique of the status quo, a critique that emphasizes structural bases of conflict, contradiction, modes of domination, deprivation, radical change, emancipation, and potentiality (p. 34).

3.2. Habermas' Interest Constitution Theory

Laughlin *et al.* (1981) and Chua *et al.* (1981) have sought to critique and extend the Burrell and Morgan (1979) framework by incorporating Habermas's interest constitution theory, in terms of which the concerns of social theories are seen as reflecting either a technical interest for prediction and control (man–nature interaction), a practical interest for understanding (human communicative interaction), or an emancipatory interest (social relations of power, domination, and alienation). The technical interest constitutes empirical knowledge and parallels Burrell and Morgan's functionalist paradigm. The practical interest constitutes historical–hermeneutical knowledge, paralleling the interpretive paradigm. The emancipatory interest constitutes critical knowledge, paralleling the radical-humanist and -structuralist paradigms. These basic ideas in Habermas's interest constitution theory are summarized in Table I.

Laughlin *et al.* (1981) and Chua *et al.* (1981) argue that the two schemes are parallel, but fundamentally different, in that whereas Burrell and Morgan merely explain the different paradigmatic categories, Habermas explains and reconciles the interest categories in terms of their being individually necessary (although insufficient) as human species, universal and invariant (ontological) forms of activity—namely labor, human interaction, and authority relations (Habermas, 1972; Giddens, 1977; Keat, 1981; Puxty *et al.*, 1980). This is an

Table I. Habermas' Interest Constitution Theory (Adapted from Puxty *et al.*, 1980; Giddens, 1977)

Knowledge-constitutive interest	Basis of human interest	Type of interaction	Underlying paradigm	Methodological approach
Technical (control)	Labor (instrumental action)	Man–nature	Functionalist	Empiricism
Practical (understanding)	Communicative interaction	Man–man	Interpretive	Hermeneutics
Emancipatory (freedom)	Authority (power)	Man–self	Radical/ critical	Critique

important improvement over the interparadigmatic incommensurability position of Burrell and Morgan (cf. Beyleveld, 1975).

The three different kinds of knowledge imply different methodological approaches—namely, empiricist, hermeneutic, and critical methodologies. It is these methodologies that constitute metatheoretical foundations for lower-order methods in the form of modes of inquiry and problem-solving approaches. The next section is a brief attempt to elaborate on the three methodologies: empiricism (in terms of its positivist and structuralist variants), hermeneutics (in terms of its naturalistic and historical variants), and critique (or critical hermeneutics).

4. THREE METHODOLOGICAL FOUNDATIONS

In attempting to highlight the three methodological foundations that underwrite different modes of inquiry and practice, a focus on two issues is made. These are their underlying interest, and hence their claims about what counts as scientific (valid) knowledge, and the difficulties they face in those claims. It is upon a critical reflection on such claims and difficulties that a rational choice of a particular methodology in general, and of specific systems methodologies in particular, can be made.

4.1. Empiricism

Underwritten by a functionalist paradigm, the empiricist methodology takes the external social world as being made up of hard, relatively immutable social structures, or immutable deep-level generative mechanisms, whose existence is essentially independent of individual consciousness. Epistemologically, while the positivist position conceives of scientific knowledge as

constituted solely by empirical knowledge grounded in the explanation and prediction of observable phenomena, the structuralist position considers empirical knowledge as only a special case of a wider knowledge domain comprising the empirical (observed events), the actual (observed and unobserved events), and the real (actual and potential occurrences) (Bhaskar, 1979). Objective knowledge is thus defined in terms of theory neutrality (observer independence) and value freedom (ethical neutrality); and thus methodology reduces to merely a question of the appropriate method of validation (typically verification or falsification), which is seen to guarantee undistorted access to the objective phenomena under study. The overriding concern is order and regulation of social affairs in the interest of maintaining the status quo.

Given that positivism is the most powerful and influential variant of empiricism (cf. Beyleveld, 1975), its further elaboration seems warranted.

Positivism is not a unified epistemological/methodological position (Keat, 1981; Beyleveld, 1975; Christenson, 1983). Keat (1981) has identified at least four distinct claims or doctrines that have quite complex logical and historical relationships to one another. These are "scientism," "the positivist conception of science," "scientific politics," and "value-freedom." Briefly, scientism, a doctrine most closely associated with the "logical positivism" of the Vienna Circle, is the claim that science alone represents a genuine form of human knowledge, such that nonscience (e.g., religion, metaphysics, ideology, politics, ethics, etc.) represents pseudoknowledge or even cognitive meaninglessness or nonsense (Keat, 1981, p. 16). Habermas (1972, p. 4) describes scientism as ". . . science's belief in itself: that is the conviction that we can no longer understand science as one form of possible knowledge but rather must identify knowledge with science." Thus, although a logical positivist himself, Popper (1969) rejects this doctrine, arguing that while science could be distinguished from nonscience, that did not imply an equivalent distinction between sense and nonsense. More generally, as Keat points out, scientism has been criticized for being self-refuting since it is itself a philosophical, epistemological doctrine, and not, by its own criteria, a scientific one.

The second doctrine, the positivist conception of science, specifies what constitutes scientific knowledge: the explanation and prediction of observable phenomena through the demonstration that such phenomena constitute instances of universal laws that remain invariant in all regions of space and time. This doctrine restricts scientific ontology to the domain of what is observable. Within this doctrine, it is possible to distinguish "realist" from "instrumentalist" positions (Keat, 1981, p. 19). Realism holds science as providing statements about some theory-neutral real world and adopts a correspondence theory of truth. Instrumentalism, on the other hand, regards science as a device or instrument that is useful for certain purposes such as

technical control or prediction (cf. Friedman, 1953). In this case, the idea of truth is either rejected or pragmatically defined.

Scientific politics is the doctrine that advocates treatment of politics as an applied science (such as engineering or medicine). Fay (1975, pp. 22–23) explains:

> . . . If politics were to become an applied science, it is argued, its conjectural, arbitrary, emotional, and personal elements would drop out, and its arguments and decisions would assume the same neutral characteristics as those of engineering. In political arguments there would be, as there are in scientific arguments, reliable public standards of ascertainable truth, and therefore the possibility of a universally recognizable decisive solution to a particular problem. It is in this way that a social science would be able to eliminate the "anarchy of opinion" which characterizes political thinking.

While scientific politics seeks to "scientize" ends, the doctrine of value freedom opposes this, seeking instead a sharp distinction between means and ends, fact and value, science and politics. Keat (1981) explains how this separation involves two dimensions. First, the truth or falsity of a theory is independent of moral or political commitments or standpoints. Second, political issues or moral judgments cannot be justified solely by means of scientific knowledge.

It should already be evident that the relationships among the four major positivist doctrines are complex and that some are even contradictory. This has, according to Keat (1981), caused confusion and misunderstanding among critics of positivism. For instance, failure to distinguish between the doctrine of value freedom and the doctrine of scientific politics lies at the root of critical theorists' (cf. Horkheimer, 1972; Marcuse, 1968; Habermas, 1976a, b) mistaken criticism of Weber's (1949) methodological writings as representing both doctrines. Indeed, Keat (1981, p. 21) argues and demonstrates that, on the whole, the logical relationships among the four positivist doctrines show that the doctrines do not necessarily entail each other and that, as a result of failure to understand this, "There has too often been a frontal assault on a loosely defined, undifferentiated target called 'positivism,' or at least an assumption that, by successfully criticising one positivist doctrine, the others are there by shown to fail also" (p. 36).

While this may very well be so, it is nonetheless possible to point to certain difficulties in positivism without necessarily implying that it is a unified epistemological/methodological position. For our limited purpose, these difficulties are in relation to the possibility of a positivist methodology for social sciences. The fundamental difficulty in positivism is what Habermas (1972) calls its "false objectivism." The doctrines of value freedom and positivist conception of science jointly entail the notion of objectivism and objective knowledge, notions which have been central to the positivist idea

of science and scientific knowledge. Objectivism implies two related beliefs: first, that the objects of scientific knowledge exist independently of the epistemological framework on the basis of which they are investigated [i.e., theory-neutrality (TN) belief]; and second, that such knowledge is value-free, meaning that the validation of its claims is independent of the acceptance of normative standpoints [i.e., value-freedom (VF) belief] (Keat, 1981). Objectivism, as a product of TN and VF beliefs, can thus be seen to guarantee two important requirements for a science (conceived positivistically): the need for a consensus of interpretations among its practitioners and the demand that the knowledge be given a basis in certainty (Bauman, 1978). Historical hermeneutics addresses these difficulties.

4.2. Hermeneutics

Within the hermeneutic or interpretive methodology there exist two variants: the "naturalistic" methodology, also known as "hermeneutics as method"; and the historical–hermeneutic methodology (outlined below). While both represent a distinct ontological break with the empiricist methodology, from a natural world of hard, observable or real objects to a social world of subjective meaning and intention, the first variant, by maintaining objectivist aspirations in the production of knowledge, retains an epistemological unity with empiricism.

The *naturalistic methodology* includes a number of distinct interpretive approaches. Briefly, phenomenological symbolic interactionism seeks to explain how social order, as a real phenomenon, emerges through social action and interaction processes, from which shared meanings in turn emerge. It therefore seeks to understand how particular definitions and interpretations of the social world for ordered joint action are created and sustained within wider social contexts in which interacting individuals use a variety of practices and resources (Blumer, 1969; Denzin, 1970). Ethnomethodology, on the other hand, seeks to explain how actors employ various cognitive resources to order and make sense of their everyday activities and make those activities accountable to others. Order therefore does not exist independently of actors' accounting practices but must depend for its reproduction on actors' capacity to sustain the everyday common-sense suppositions, shared indexical expressions, and reflexive activities that characterize the routines of everyday life, all accomplished as if the social world were objective and factual (Garfinkel, 1967; Zimmerman and Wieder, 1970). Existentialism is preoccupied with a concern for the central lived qualities of individual human existence. Existential phenomenology seeks to understand the "life-world" from the point of view of those involved, using constructs and explanations

which are intelligible in terms of the common-sense interpretations of everyday life. The focus is on processes of "typification" through which intersubjective understanding becomes possible (Schutz, 1967). Transcendental phenomenology seeks to produce a form of knowledge free from all presuppositions. This "projection of human imagination" requires silencing experience provisionally, or "bracketing" factual reality, and seeking to penetrate to the level of "ideal essences," "the reality in consciousness" (cf. Burrell and Morgan, 1979).

Although objectivist, the naturalistic methodology nevertheless takes the view that social reality is distinctive in character. Thus, because social phenomena are ultimately acts of men and women and therefore contain a meaningful component which is missing from natural phenomena, they require a mode of analysis different from that of mere explanation. Social science therefore requires an interpretative approach, the analysis of *verstehen* as the method appropriate to "re-experiencing or rethinking of what an author had originally felt or thought" (Bleicher, 1980, p. 1). It thus seeks "the retrieval of purpose, of intention, of the unique configuration of thoughts and feelings which preceded a social phenomenon and found its only manifestation, imperfect and incomplete, in the observable consequences of action" (Bauman, 1978, p. 12).

Hermeneutics as method is represented especially in the works of Weber (1949), Dilthey (1976), and Betti (1955, 1962). Both Dilthey and Weber were concerned to bridge the gulf between idealism (emphasizing subjectivism) and positivism (emphasizing objectivism) so that the cultural (social) sciences could secure a firm knowledge foundation in terms of "objective" validity. As Burrell and Morgan (1979) observe, Weber's overriding concern was to provide causal explanations of social phenomena through the development of an objective science of sociology, which had to be "adequate at the level of meaning." Weber's notion of *verstehen* was little more than a tool for overcoming the empiricist deficiencies of ignoring the subjective meaning of social action. Similarly, Dilthey's concern was "methodical," devising ways or methods of generating objective knowledge capable of meeting the requirements of positivist science (Burrell and Morgan, 1979, p. 256), while giving full recognition to the distinctive subject–object relationship where "life meets life" (Bleicher, 1980). Betti (1955, 1962) developed these objective–idealist approaches further by arguing for "the possibility of *verstehen* as a methodically disciplined form of understanding" (Bleicher, 1980, p. 27). Betti's general theory of objective interpretation is geared toward facilitating the reappropriation of objective mind (meaningful forms) by another mind.

Historical hermeneutics or hermeneutic philosophy, as developed by Heidegger (1962, 1966) and Gadamer (1975a, b, 1980), is a rejection of objectivism in both empiricism and hermeneutics as method. As Bleicher

(1980) elaborates, hermeneutic philosophy sees the interpreter and object as linked by a context of tradition. This means that as he/she appraoches his/her object, the interpreter already has a preunderstanding of it, thereby being unable to start with a neutral mind. There can be no object in itself, or any *factum bructum*. The mere recognition of a fact is theory impregnated and guided by a number of anticipations (Bleicher, 1980, p. 102). Thus, meaning becomes not a property of entities but another "existentiale." Understanding is not the result of interpretation, in the sense of appropriation of meaning intended by another. Historical hermeneutics inverts this process—understanding leads to interpretation, the latter representing merely the working out of possibilities already projected in understanding.

In hermeneutics as method, the issue regarding the possibility of understanding in general is seen in terms of the "hermeneutical circle," "the movement of understanding from the whole to the part and back to the whole . . . (in order) to extend the unity of the understood meaning in concentric circles" (Bleicher, 1980, p. 78). The aim here is to avoid possible misunderstanding arising from the historicity (or historical situatedness) of the interpreter. Historical reality is seen in terms of unitary, discrete epochs, each with its own tradition or prejudices that constitute a closed "horizon" of understanding. The task of interpretation becomes the re-creation of the past in order to arrive at objective knowledge.

In contrast, in historical hermeneutics, the hermeneutic circle is regarded as an existential circle or ontological moment of understanding, which proceeds from a commonality that unites us with tradition. Thus, rather than regard the preunderstanding of an object of interpretation as a blemish and the resulting circularity as an inevitable but vicious circle which should be avoided, historical hermeneutics views the hermeneutic circle as a necessary expression of the dialogical process of understanding. Historical reality is characterized by openness of tradition. Through a process of dialogical relationship between the subject and the object (text) and the dialectic between question and answer, the corresponding traditions become integrated. Such a "fusion of horizons" leads not to re-creation of the past but to "a dialogical understanding that transcends both traditions."

Gadamer's notion of "effective history" reflects this "on-going mediation of past and present, which encompasses subject and object and in which tradition asserts itself as a continuing impulse and influence" (Bleicher, 1980, p. 266). Positivism, in its reliance on objectivist methods of interpretation, ignores the force of effective history, but "only that it (the force) will not go away as a result but makes itself felt 'behind the back' of the naive observer" (Bleicher, 1980, p. 111). Historical hermeneutics therefore demands an awareness of effective history, of hermeneutic situation, and that hermeneutic consciousness and experience can never be complete, being limited by our

historicality. The fusion of horizons also implies that hermeneutic experience is neither monological nor dialectical (in the Hegelian sense) but discursive or "dialogical." It is in this sense that language as the necessary medium for the fusion of horizons becomes ontologized by Gadamer in his theory of the universality of language. Thus dialogical understanding that emerges from the fusion of horizons represents the full realization of a conversation, the outcome of which is not only the interpreter's or the author's but common to both.

The significance of language or communicative interaction is thus central to historical hermeneutics. In addition, dialogical understanding becomes a necessary methodological feature since the way in which the object of inquiry (an objectivated mind) conceives of his/her own activities is itself a central part of social reality. Historical hermeneutics thus rejects the ontological, the epistemological, and the methodological unity of the sciences (Keat, 1981).

Historical hermeneutics therefore constitutes a fundamental critique of the possibility of objective knowledge, the central claim of empiricism and of the naturalistic methodology, both concerned with methodical procedures to derive truth as the correspondence between fact and proposition, based on the doctrines of theory neutrality and value freedom. Historical hermeneutics' notion of the existential/ontological circle, and hence the universality of hermeneutic experience and practical knowledge, shows the falsity of objectivist claims. In other words, if the subjectivity of the interpreter (social scientist), through the hermeneutic circle or the ontological–epistemological circle (Beyleveld, 1975, p. 211), is inherent in any interpretive activity because of the claim that there can be no direct perception of objects without presuppositions (preunderstanding, prejudices, etc.), objective knowledge is unattainable.

However, historical hermeneutics is in turn confronted with a formidable difficulty: its naturalization of tradition, authority, and language, thereby implying distortion-free communication situations. Critique addresses this difficulty, as discussed below.

4.3. Critique

Critique (or critical hermeneutics), as developed, for instance, in the works of Apel (1967, 1971, 1980) and Habermas (1970a, b, 1971, 1972, 1973, 1979) (cf. Bleicher, 1980), is an attempt to mediate the objectivity of historical processes with the motives of those acting within it, the aim being the freeing of emancipatory potential. The approach seeks to remove barriers to understanding that may be operative without the individuals or groups concerned being aware of them.

Bleicher (1980, pp. 148–151) describes this approach as a dialectical mediation of hermeneutic and explanatory approaches in the form of a critique of ideology. The methodological approach is based on a model of psychoanalysis, whereby a neurotic patient is helped to overcome his/her symptomatic behavior through the combined use of "causal explanation and deepened self-understanding." The task is therefore directed at rendering individual and social processes transparent to the actors concerned so that they can "pursue their further development with consciousness and will—rather than remaining the end product of a causal chain operative behind their backs." By incorporating both the explanatory and the interpretive tasks, critique articulates the critical concerns of both the radical-humanist and the radical-structuralist paradigms. Communicative distortions, false consciousness, and other ideological distortions are placed in the wider political, social–structural, and material conditions of existence. I now briefly highlight, from the viewpoint of critical hermeneutics, some of the difficulties positivist and hermeneutical methodologies face in their conceptions of social theory.

Starting with positivism, we have already seen the problem with its doctrine of scientism. We have also seen an historical hermeneutical critique of its objectivism which is central to its doctrines of value freedom and positivist conception of science.

Habermas (1972) has criticized the doctrine of value freedom through his theory of knowledge-constitutive interests. Empirical–analytic sciences are constituted by, and hence presuppose, the "technical" interest, which aims at the instrumental control of natural and social processes and which therefore cannot be considered ethically neutral. More generally, positivism's objectivism, by implying that empirical knowledge is objective, neutral, and rational, misrepresents and mystifies socially created, historically specific phenomena as natural, eternal, and unalterable. Critical theory and historical materialism see these features of positivism as contributing to a false conception of a false reality and therefore working to conceal, if not reinforce, the dominative, repressive, and exploitative nature of an historical system, such as capitalism.

In a similar vein, critique finds the concerns of historical hermeneutics uncritical of the content of its object of inquiry. Gadamer's (1975b, 1980) ontologization of language and naturalization of tradition and authority serve to legitimate the critical components in the understanding of meaning, thereby concealing or mystifying structural features of social control, domination, and power asymmetry (Habermas, 1970a). Thus,

> tradition, as a context that includes the system of work and domination, enables as well as restricts the parameters within which we define our needs and interact in order to satisfy them. That socio-historical processes should occur over the

> heads and even behind the backs of those carrying them, who may systematically be unable to give an accurate account of their individual actions and the motivations underlying them, points to an approach to social phenomena which transcends the scope of merely meaning-interpretative investigations. (Bleicher, 1980, p. 156)

The critique of historical hermeneutics points to its exclusive concern with the self-understanding of social agents. By excluding any consideration of the possibility of self-misunderstanding, ideology, and domination, it legitimates the status quo and precludes the possibility of critical self-reflection.

Thus critique presupposes criteria for distinguishing truth from falsity, without which the very notion of ideology becomes meaningless and at least two types of pernicious consequences follow: "First, we can no longer hope for a critical understanding of our interests since we lose the ability to distinguish true interests . . . from expressed preferences. Second, in the absence of such distinctions, prevailing power relations become the ultimate arbiters of interests" (Habermas, 1976b). A critical theory sees ideology as acting to conceal the essential aspects of a sociopolitical reality, such concealment not being accidental (in the sense of errors) but relating systematically to some set of social, psychological, and cognitive interests within a determinate historical context. Hence, because ideologies relate systematically to interests and historical realities, they can be criticized so as to provide knowledge about those interests and realities.

This implies that it is possible and necessary to develop a defensible theory of truth that underwrites both explanation and evaluation of ideologies, as in Freud's "id–ego–superego" construct or in Marx's concept of "mode of production." Related to this is the view that a theory of truth must somehow provide a conception of reason and rational action in terms of which certain forms of consciousness can be said to be ideological and judged to be irrational.

This implication poses a serious difficulty to critique in terms of the problem of truth-claim validation—the problem of how to provide standards to which the critique of ideology can refer in order to legitimize its procedure and justify its claims (Bleicher, 1980). Because critique seeks the true meaning of an ideology in relation to an historical context, it lacks the grounds on which to assert *a priori* criteria of its own truth. It must consider its own truth, in the same way as the inverted truth of ideology, as historically conditioned.

The way out of this difficulty is that

> because critique cannot develop formal, *a priori* criteria of what counts as ideology, the strength of a critical theory lies not in a body of theoretical statements from which empirical states of affairs might be inferred, but in a theory-dependent method that guides research into the meaning of a form of consciousness by relating it to its context of interests and realities,

and the philosophical implications are that

> in order that critical theory not undermine its own claim to a relative rationality, it must criticise a form of consciousness "immanently." That is, criticism gains its right to impute ideological meanings to a text insofar as the text is irrational with regard to its own criteria of adequacy. (Warren, 1984, p. 542).

The implication in programmatic terms for theory and practice is that three functions are necessary for critique (Habermas, 1973): first, the formulation and exposition of critical theories (such as Marx's historical materialism and Habermas's theory of communicative competence); second, the validation of critical theory through processes of critical self-reflection by those (targeted) social actors in need of enlightenment (using, for instance, models based on psychoanalysis); and third, the selection of appropriate strategies aimed ultimately at the progressive realization of universal enlightenment and emancipation (cf. Jackson, 1985a).

5. SYSTEMS METHODOLOGIES

In this section, the nature of systems methodologies is summarized in relation to their methodological foundations. Criteria for choice of specific systems methodologies are then discussed in terms of Jackson and Keys' (1984) and Banathy's (1987) formulations. The section concludes with a cautionary note in the interest of those who might forget the very contingent nature of some of the methodological implications arising from those formulations and recommendations.

5.1. The Nature of Systems Methodologies

In a comprehensive and critical analysis of systems methodological approaches, Jackson (1982, 1983, 1985a, b, 1987a) and Jackson and Keys (1984) have recently classified those methodologies within the Habermasian framework. Briefly, the functionalist paradigm and its empiricist methodology underwrite the "hard" systems methodologies, which include (a) the positivist approaches—classical operations research, systems engineering, and systems analysis (e.g., Hall, 1962; Jenkins, 1964); and (b) the structuralist approaches —organizational cybernetics, general systems theory, sociotechnical systems, and modern contingency theory (e.g., Beer, 1979, 1981; Miller, 1978). The interpretive paradigm and its hermeneutic methodology underwrite the "soft" systems methodologies, which include Churchman's dialectical inquiring systems approach and its development into strategic assumption surfacing and testing, Ackoff's (1981) interactive planning, and Checkland's (1981)

soft systems methodology (Churchman, 1971, 1979). Unfortunately, the radical/critical methodologies have not as yet significantly broken into the intellectual market of systems thinking to establish a distinctive and recognized approach. There are, however, three parallel developments taking place. The first is the emergence of a few writers critical of the present conservative orthodoxy of both hard and soft systems approaches. The second is the emergence of a small but growing number of voices explicitly "crusading" for critical systems thinking. Examples of both these developments include, for instance, the work of Bryer (1979), Hales (1974), Jackson (1982, 1983, 1985a, b, 1987a), Jackson and Keys (1984), Mingers (1980), Oliga (1986a, b, c, 1987a, b), Rosenhead (1982), Rosenhead and Thunhurst (1982), Spear (1987), Thomas (1980), Thomas and Lockett (1979), Tinker and Lowe (1984), Whitley (1974), and Wood and Kelly (1978) and the critical papers presented at the "Interdisciplinary Perspectives on Accounting" conference, University of Manchester, July 1985. The third and perhaps most significant development relates to the emergence of actual attempts to apply critical theory to real-world situations, such as involvement with work on social movements (Touraine, 1981; Melucci, 1985), the Open University's Cooperative Research Unit's involvement with work on worker cooperative organizations and democratic social management (Spear, 1987), the establishment of a Centre for Community Operational Research at the Department of Management Systems and Sciences, University of Hull (Jackson, 1987b), and critical field research on the problem of organizational control (Oliga, 1986b).

In the foregoing classification, the soft systems methodologies have been shown to be underwritten by the interpretive methodological foundations, but without making the very important distinction between the "naturalistic" methodology and the historical hermeneutic methodology. If we turn to Jayaratna's (1986) detailed and illuminating analysis in his "NIMSAD" framework, soft systems methodologies appear to involve, at almost every stage of analysis, the joint participation and dialogical processes of understanding between analyst and client. This would point to an historical hermeneutic foundation.

However, there are certain features of soft systems thinking that are equally compelling in seeing them as essentially informed by the assumptions and concerns of the naturalistic (interpretive) methodology. The processes of understanding and interpretation seem to be seen as activities essentially directed at recovering and reconciling the clients' multiple diverse and conflicting values, perceptions, and definitions of systems problems or "messes."

Thus, as Jackson (1985) notes, Churchman, Ackoff, and Checkland all pursue a validation approach for their methods on the basis of "respect for the point of view and aims of all the stakeholders affected by the intervention."

No social systems change can be justified except through the process of "open debate in which concerned actors achieve a consensus about the nature of their objectives and the changes they wish to bring about in the social system." Thus, as Jackson elaborates, Ackoff considers a researcher rational if his models bring about improvements in the clients' performance, but "by their own criteria." Checkland's methodology requires that improvements emerge in terms of feasible and desirable changes as perceived "by those involved in the problem-situation." Churchman advocates the need for the analyst to respect different points of view concerning goals to be attained; seeing the world "through the eyes of another" marks the start of a systems approach. Implicit in all these views is the naturalistic assumption that the possibility of an independent observer (analyst) arriving at "objective" knowledge of his/her clients' *Weltanschauungen* or "appreciative systems" is largely unproblematic. It is this possibility that historical hermeneutics denies.

5.2. Choice of Systems Methodologies

Although the methodological domain of critique, and arguably of historical hermeneutics, remains at present largely barren in systems science in general, and in management science in particular, those of empiricism and naturalistic hermeneutics have, since the 1970s, witnessed a vigorous development in the variety of types of specific methodologies. The need to understand the nature of this development has prompted a number of competing interpretations. Was it, as Dando and Bennett (1981) argue, a sign of competing "paradigms" and hence the making of a "Kuhnian crisis"? Or was it, as Checkland (1983, 1985) and Jackson (1987a) have more persuasively argued, more a sign of increasing competence and effectiveness in dealing with different concerns of management science and problem situations. In this sense, while soft systems methodologies take as central the problem of resolving conflicting *Weltanschauungen* in the interest of achieving a consensus over objectives, the hard systems methodologies presuppose the successful "dissolution" of that problem. As such, hard systems thinking reduces to a special case of the soft systems thinking, appropriate only in those problems situations where the presumption of consensus is unquestionable. It is this complementarist rather than substitutionist view of diverse systems methodologies that has provided a point of departure for the current systems work as well as debate on what criteria might guide methodological choice.

In discussing the choice of such criteria, it becomes understandable that the current work in that area, especially that by Banathy (1987) and Jackson and Keys (1984), should take a contingency approach. In the case of Banathy, the appropriateness of a particular methodology (or its "goodness of fit") is

Table II. Problem Contexts and Systems Methodologies [Adapted from Jackson and Keys (1984) and Using the Schema, in Parentheses, of Banathy (1987)]

Participants' relationship	System type	
	Mechanical	Systemic
Coercive	Mechanical–coercive Methodologies Yet to emerge	Systemic–coercive Methodologies Yet to emerge
Pluralist	Mechanical–pluralist (heuristic) Methodologies 1. Dialectical inquiring systems, e.g., SAST 2. (Double-loop organizational learning)	Systemic–pluralist (purpose seeking) Methodologies 1. Interactive planning 2. Checkland's soft systems methodology
Unitary	Mechanical–unitary (rigidly controlled) (deterministic) Methodologies 1. Classical OR 2. Systems engineering 3. Systems analysis 4. (Living systems process analysis) 5. (Management cybernetics)	Systemic–Unitary (purposive) Methodologies 1. Organizational cybernetics 2. Sociotechnical systems thinking 3. General systems theory 4. Modern contingency theory 5. (Living system process analysis) 6. (System design)

posited as being dependent upon four dimensions of the (design) inquiry: the system type, the nature of the design inquiry, the characteristics of the design problem situation, and the functional context of the design situation. Of these dimensions the system type is perhaps the most important. On the basis of four continua (closed vs open, mechanistic vs systemic, unitary vs pluralist, and restricted vs complex), Banathy constructs a model that displays five major system types—rigidly controlled (at one end of all the continua), deterministic, purposive, heuristic, and purpose seeking (at the other extreme). Corresponding to each system type are specific system methodologies that are judged to display the best fit (see Table II).

Jackson and Keys, however, predicate the appropriateness of different methodologies not on system types as such, but on the nature of different problem contexts. As we see later, there is an important difference between the two criteria of methodological choice. On the basis of differences between types of systems (mechanical vs systemic) *and* (perhaps more crucially) the nature of the relationship between participants (unitary, pluralist, or coercive),

Jackson and Keys identify six categories of problem contexts: mechanical–unitary, systemic–unitary, mechanical–pluralist, systemic–pluralist, mechanical–coercive, and systemic–coercive. The six problem contexts imply the need for six types of problem-solving methodologies, as summarized in Table II, where an attempt has been made to superimpose Banathy's schema upon that of Jackson and Keys. As discussed earlier, the emerging picture is that of the glaring poverty of systems thinking in critical methodological terms.

5.3. Methodological Choice: A Cautionary Comment

The contingency approach used by both Jackson and Keys (1984) and Banathy (1987) in developing their criteria for methodological choice is highly persuasive. But there is a danger in, for instance, beginning to take Banathy's system types as structurally given, as entities that have an existence and meaning independent of those concerned with solving the problem at hand. Indeed, this impression is likely to be gained from, for instance, Banathy's examples of system types—Are problems of government bureaucracies, small business, and industry typically deterministic in nature? Is it the system type as such or the nature of the problematic issues that is of crucial importance?

It is in that sense that the Jackson and Keys' choice criteria, which focus on problem contexts rather than system types, are less likely to lead to similar dangers. They emphasize that problem contexts are formed from the perceptions and interactions of participants, both actors inside the system and relevant observers outside. Problem contexts are not objective features of the real world (Jackson, 1987a). As such, an overreliance on the analyst's own definition and construction of a model of the problematic situation may be questionable.

The comments so far have focused on the nature of the contingent or explanatory variables. Further issues of interest might be concerned with, for instance, the clarity with which those variables or dimensions have been defined. Flood and Carson (1988) and Ellis and Flood (1987) have, for instance, noted that the perception of a traditional management scientist may be that he/she was working not in a "machine age" but in a "systems age." Also, there is the possibility that there may exist reciprocal interdependencies among contingent dimensions, thus rendering the influence of a specified dimension upon the appropriateness of a particular systems methodology difficult to understand. As Flood and co-workers argue, this is the context in which the soft systems thinkers might question the validity of a problem-context contingency, with its implied idea of "structured" problem situations. Even the die-hard structuralist proponents (hard systems thinkers)

might find great difficulty in discriminating between different problem contexts.

It is not within the scope of this paper to debate these issues further. However, at a more general level, the contingency framework, although very valuable, also needs to be treated with care. Contingency formulations tend to focus almost exclusively upon the contingent relationships, taking, by default, the variables (or dimensions) themselves as unproblematic, in the sense of *not* questioning how they arose and why they came to be what they are. This failure to problematize the origins of posited contingent dimensions can easily lead to the unfortunate tendency to "naturalize" those dimensions as inevitable and unalterable, thereby reducing the inquiry and problem-solving tasks to one of merely correctly pigeonholing unquestioned methodologies to their appropriate (but unquestioned) system types or problem contexts (cf. Flood and Carson, 1988; Ellis and Flood, 1987). If this happened, the insightful, methodological work done by Jackson and Keys, Checkland, Banathy, and others might, especially for practicing managers, degenerate into simply a mechanical, nonreflective "do-it-yourself" game of contingency match-making. Thus, the need for a critical, self-reflective approach to the whole question of methodological choice seems inescapable.

6. CONCLUSION

Current usage, particularly in the literature of systems science, identifies little, if any, difference between method and methodology. An attempt was made here to show that the distinction is epistemologically significant if one does not assume an ontological unity for all the objects of the universe.

Using Habermas' interest constitution theory, the paper elaborates on three methodological foundations (empiricism, hermeneutics, and critique) for social inquiry and problem-solving in general, unfolding in the process a hierarchy of epistemological criticisms. "Naturalistic" hermeneutics finds the empiricist doctrine of ontological unity untenable in relation to the social world. Historical hermeneutics finds the "objectivist" aspirations of naturalistic hermeneutics unattainable. Critique finds the historicist naturalization of tradition, authority, and language ideological.

In systems science, it is seen that the basic underwriting assumptions and concerns of the presently established systems methodologies have not "developed" beyond those of empiricism and naturalistic hermeneutics. Such a situation points to the glaring poverty of current systems thinking in relation to both historical hermeneutics and critical methodology. But even leaving this "underdevelopment" aside, the existence of a variety of both "hard" and "soft" systems methodologies poses its own problem—the question of appropriate criteria for methodological choice. Two important

contributions, among others, are discussed: one by Jackson and Keys, and their extension of Checkland's complementarist perspective, and the other by Banathy. Both are seen to be informed by a contingency-theory perspective, a valuable framework that provides important insights as well as the basic message that the validity or appropriateness of a specific methodology is crucially dependent on the nature of the problem situation under consideration. However, given the persuasive and potentially influential nature of those contingency formulations, the paper points to the need for a cautious approach. It is important to avoid the temptation to "naturalize" the so-called contingency dimensions into inevitable, unalterable structural features of social life.

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