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Social Ontology and the Dynamics of Organizational Forms: Creating Market Actors in the Healthcare Field, 1966-1994*

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Abstract

Social scientists have evidenced a long-standing interest in the cultural construction of ontologies — symbolic systems of categorization and meaning — but have yet to develop a widely recognized method for the empirical analysis of this process. Analyzing textual data from the area of health services research, this article illustrates a general framework that can be employed to isolate the tacit rules used to structure an ontology and identify changes in those rules over time. Focusing on the process of market reform in U.S. healthcare during the last thirty years, this study finds systematic variation in the dimensions used to differentiate discourse on organizational forms such as hospitals, health maintenance organizations, and nursing homes. Discourse in the sector suggests that the symbolic integration of forms along the dimension of accessibility during the heyday of welfare state policies has given way to symbolic integration along clinical and functional dimensions with the rise of neoliberal ideologies. These segregating and blending processes are discussed as a general response to uncertainty and the desire for ontological security among organizational actors.

The examination of ontologies has played a critical role in numerous classic and contemporary sociological theories. Ontologies are systems of categories, meanings, and identities within which actors and actions are situated. The objective of ontological analysis is to uncover the rules that bound the objects populating our natural and social worlds. Empirical inquiry along these lines traces its origins

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back to Durkheim's work on the connection between social and cognitive organization among Australian aborigines ([1912] 1995). More recent theories range from the micro-analytic level — e.g. Giddens's account of the need for *ontological security*, "confidence or trust that the natural and social worlds are as they appear to be" (1984:375) — to macro-analytic narratives offered by neoinstitutionalists, explaining the development of novel social objects (e.g., actors and action frames) in Western and world culture (Meyer, Boli & Thomas 1987). Related perspectives have been applied to a wide range of phenomena, including the making of markets (Abolafia 1996; Reddy 1984), the bounding of organizational forms (Pólos et. al. 1998; Hannan & Freeman 1989), and the construction of personal identities (McLean 1998; Taylor 1989).

Despite widespread interest in the "building blocks" of social reality, systematic empirical and theoretical work has often proceeded outside of sociology, in fields such as anthropology (D'Andrade 1995), psychology (Osgood 1957), and literary criticism (Barthes 1967). Sociological perspectives on ontology, by contrast, remain somewhat underdeveloped. In this article, I propose an empirical approach to social ontology that meets four criteria drawn from previous work in sociology and related fields. First, the approach must advance methods that are applicable to a wide range of social objects; it cannot limit itself to certain domains, such as the kinship or personality exemplars pervading early cognitive anthropology. Second, ontological analysis must take the historicity and variability of symbol systems into account — meanings may differ by time and / or social group. Third, lexical symbols, in and of themselves, are not as important to ontological analysis as the relations between them, or lack thereof (as Ferdinand de Saussure, [1916] 1966, once proclaimed, "there are only differences"). Fourth and finally, symbol relations should be understood in terms of a limited number of underlying dimensions, whose own salience may vary as the social rules for expressing symbol meanings change over time. In the words of one anthropologist, "models of how natives categorize the world should do more than account for what things get which labels; they should also account for the discriminations that individuals use to give things labels" (D'Andrade 1995:54).

While these criteria require a perspective on social ontology that is general, the research presented here will be grounded with a very concrete empirical application: the reconfiguration of discourse on American healthcare organizations in response to market forces between 1966 and 1994. This application has a number of significant merits as a test case for an empirical analysis of social ontology. It involves a particularly turbulent example of institutional change in American organizational history, one in which key actors, such as hospitals, have moved from the center to the periphery of the sector (Shortell, Gillies & Anderson 1995) and ontological presuppositions have shifted considerably (Alexander & D'Aunno 1990; Meyer, Goes & Brooks 1993; Scott et. al. 1999). Underlying these changes is a dramatic shift in institutional logics, from an era of federal involvement

(as typified by the Medicare and Medicaid acts of 1965) to an era of market reform. Naturally, this is a trend that is not only being felt in health care but also in numerous other sectors (such as in education and welfare programs). The substantive implications one might hope to draw are thus quite broad, since they reflect a general transition from a Keynesian welfare state to a neoliberal market economy. What has the impact of this transition been on the cognitive rules that are used to partition types of social organization?

The particular emphasis on an ontology of formal organizations (subsuming hospitals, health maintenance organizations, nursing homes, etc.) brings to mind other advantages. As I will review in greater detail, the theoretical literature on forms of organizing is quite extensive and has admitted to a number of perspectives. In referring to an organizational *form*, analysts suggest that certain populations of organizations can be defined in terms of similar “dominant competencies”—procedures for mapping production inputs into outputs (McKelvey 1982); that they share “a common dependence on the material and social environment,” thus occupying equivalent environmental niches (Hannan & Freeman 1989:45); or that constitutive perceptions of the organizations among general publics render them into relatively homogeneous categories (Meyer, Boli & Thomas 1987).

Of course, the actual boundaries of organizational forms are neither static nor, necessarily, clearly defined (Freeman 1978). In the health sector, even the definition of traditional provider organizations has not been unproblematic—consider the heterogeneity of functions commonly subsumed under the label of “hospital,” an organizational form that may treat psychiatric as well as physical ailments and that may provide short-term care as well as long-term therapy. As Hannan and Freeman (1989) have pointed out, the segregating and blending processes that surround forms of organizing cannot just be treated as white noise, but are theoretically interesting phenomena in their own right. An empirical social ontology must be well equipped to capture these dynamics.

A Social Ontology of Health Care Organizations

Before participants in a system of discourse can agree on knowledge claims, they must agree on the ontological distinctions of symbols that constitute those claims. This is especially true in U.S. health care, where newer organizational forms admit to complex and multiple meanings, and where the definitions of common values—such as quality, equity, and efficiency—have been debated extensively (Aday et. al. 1993). Boundaries of social symbols are likely to be especially fluid under such circumstances. The evolution of different types of health maintenance organizations (HMOs) serves as one relevant example. While HMOs have traditionally been divided into distinct models (so-called “staff,” “group,” “network,” and “IPA” forms), sharp differentiation between these models has become more of

a taxonomic convenience than an approximation of social reality (Miller and Luft, 1994). A continuum of managed healthcare plans now exists in the sector, and the development of "mixed model" HMOs combines characteristics of the other types.

Organizational boundaries in the sector have not just been blurred *within* organizational forms, but also *across* organizational forms. For instance, the growth of integrated delivery systems (Dowling 1995) has had a marked impact, linking diverse provider forms such as nursing homes, hospitals, and home health agencies (HHAs). In some cases, such linkages have become more determinative of the identity of an organization than what has traditionally been referred to as its "form."¹

What has been driving such boundary changes in health care? Commentators have long noted a cognitive shift in the sector, from a schema in which the sector was viewed as an arena of intrinsic market failure to one where market mechanisms flourish (Brown 1986; Alexander & D'Aunno 1990). Basic conceptualizations of this process have emphasized the growing number of for-profit organizations and the extent to which nonprofits have begun to "think like" their proprietary counterparts (Greaf 1988), adopting diversification and integration strategies in the process. By focusing exclusive attention on the tax-status of healthcare organizations, however, such characterizations may miss more subtle boundary dynamics affecting market (and ontological) development. As Marmor, Schlesinger, and Smithey (1987) note:

The ongoing debate over the proper ownership of health institutions has been complicated by an unfortunate tendency to equate profit-making with market-based allocations of services . . . There may be strong reasons to favor more or less use of markets in allocating some health services. But these can be separated in principle and practice from analyses of the appropriate role of for-profit and nonprofit health care. (222-23)

In this article, I argue that the increase in market-orientation among healthcare organizations during the last three decades can best be revealed through a detailed examination of constitutive schemata which are used to construct these social actors, rather than external characteristics such as tax status (see Scott, 1993 for a similar argument).² The dimensions of constitutive schemata are reflected in discourse among technical, managerial, and policy-oriented health professionals. Clearly, one ontological dimension — that differentiating profit from non-profit forms — has been blurred in the last thirty years. As I have noted, though, there are other dimensions which may be even more fundamental to market transformation. These dimensions, I suggest, are closely tied to the problem of uncertainty and its impact on health services delivery.

UNCERTAINTY AND ONTOLOGY

Theoretically, the connection between the dimensions of market transformation and social ontology can perhaps best be conceptualized in terms of Anthony Giddens's (1984) idea of "ontological security"—the need to introduce trust and predictability into everyday transactions through taken-for-granted categories of actors and actions. In substantive terms, the desire for ontological security among participants in the healthcare field translates into the following question: with what level of certainty can transactions in the healthcare sector be defined? The question can be divided into several dimensions of uncertainty: (1) Are insurers able to provide coverage which is well-defined in terms of health benefits and costs, or does this coverage suffer from uncertainties which are beyond the control of insurers and / or consumers? (2) Can insurers and provider organizations be assured that patients will be forthcoming about medical preconditions or habits which may adversely affect treatment? (3) Can patients be assured that insurers and provider organizations will be forthcoming about treatment options which offer cost-effective and high quality solutions to medical problems? These concerns are familiar territory to health economists, who have analyzed them under such rubrics as moral hazard and asymmetric information (Arrow 1963, 1971). Unresolved, the issues become a recipe for ontological insecurity. The emergence of market mechanisms in the health sector seems to be predicated on a reconstitution of medical organizations which adequately addresses these issues.

I propose to examine the process of market reconstitution as an instance of evolutionary ontology, using a temporal analysis of the symbol meanings associated with particular organizational forms — such as HMOs, hospitals, and the like. To this end, I begin by reviewing some general social and organizational theories of ontological meaning which can inform the analysis, then proceed to elaborate the specific dimensions of uncertainty underlying the emergence of market actors in the healthcare sector, and finally, return to a measurement framework which can capture basic ontological distinctions in the discourse of health professionals.

Social Scientific Perspectives on Ontology

It will be useful to begin by reviewing four general approaches to characterizing ontologies of symbols, connecting them to concrete methods for defining organizational forms as well as more specific treatments in the organizations literature. The four approaches include: (1) ideational theories, which revolve around ideal-type images which social actors associate with symbols; (2) verificationary theories, which are based on empirical methods whereby the inclusion of some instance in a meaningful superset can be determined; (3) referential theories, which are based on the extension (set of concrete instances) referred to by a symbol; and (4) relational theories, which assign meanings to

symbols based on the relations they exhibit with other symbols in ordinary language use.³

Ideational theories of symbol meaning are most familiar to social scientists in the form of Weberian ideal-types. A social actor has an idealized image or conception in mind when trying to define the meaning of some public symbol, though that ideal can only be communicated in a rough fashion. As a result, the actor may rely on real-world exemplars, but drop details which are tangential or incongruent with the ideal. In trying to define the meaning of "HMO," for example, early managed care advocates pointed to Kaiser Permanente as a prototype, noting its prepaid funding mechanisms and carefully defined enrollment population, but placing less emphasis on its characteristics as a staff-model HMO (e.g., the fact that it employs physicians directly) (see NEJM 1944).

Once a social symbol becomes fairly established, it may be possible to establish more stringent criteria through which any given object can be said to be an instance, or fail to be an instance, of that symbol. This corresponds to the application of a *verificationary* theory of meaning — the meaning of a symbol is the method of its verification (High 1967: 40). In the health sector, this type of meaning is advanced by economist Harold Luft (1981) when he establishes five criteria which serve as minimal requirements for an organization to be classified as a "generic HMO." The criteria are: contractual responsibility of the organization to provide or assure medical services, defined enrollment, voluntary enrollment, fixed payments on the part of the consumer, and risk-bearing on the part of the organization. It should be clear that the distinction between an ideational and verificationary meaning is a continuum, rather than a discrete separation. The ideational definition of HMO, focusing on Kaiser as a prototype, already embodies the seeds of a verificationary meaning, which are simply elaborated in Luft's "generic HMO" criteria.⁴

Referential theories of meaning turn the previous approaches on their heads, starting with an enumeration of concrete instances of a social symbol and then moving towards a definition. The referential perspective holds that some object is an instance of a social symbol simply as a matter of being named as such. At first, this denotational exercise may seem somewhat vacuous, since, in certain respects, it is a "non-theory" of meaning. However, it is implicitly used rather frequently by health service researchers and policy-makers (and, indeed, many social scientists) who rely on self-identification by participants or prepackaged data sets in defining the meaning of an object of analysis. Thus, it is possible for a hospital manager to obtain an HMO dataset from a consultant group, and define "health maintenance organization" as the superset of the empirical referents included therein. Naturally, those referents are only included in the dataset as a function of the verificationary theory of meaning (sampling frame) maintained by the consultants; but the hospital manager need not be familiar with that particular theory of meaning.⁵

The final theory of meaning which I will review is the *relational* theory (or use-theory) advanced by Ludwig Wittgenstein in his *Philosophical Investigations* (1958).

In this approach, meaning is derived as a by-product of the use of a symbol in everyday language — meaning results from the system of implicit rules through which intersubjective understanding between social actors is achieved. I refer to such a perspective as a relational theory based on Wittgenstein's well-known discussion of "family resemblances," focusing on games in particular:

Consider for example the proceedings that we call "games." I mean board-games, card-games, Olympic games, and so on. What is common to them all? . . . [I]f you look at them you will not see something that is common to *all*, but similarities, relationships, and a whole series of them at that . . . [W]e see a complicated network of similarities overlapping and criss-crossing: sometimes overall similarities, sometimes similarities of detail. I can think of no better expression to characterize these similarities than "family resemblances." (Wittgenstein 1958:31-32)

An application of the relational perspective can again rely on the HMO concept for expository purposes. Suppose that an individual has come across the HMO term several times in a series of pamphlets, though no formal (verificationary) definition, no ideal-type exemplars, and no list of instances have been provided. Nevertheless, the individual will still be able to attach some meaning to the symbol given its various textual contexts: an explication of the acronym in one pamphlet will suggest an organization which is active in the health sector, another text will reveal that HMOs represent a significant departure from older fee-for-service arrangements, etc. Additional meaning will be derived from the social context and authorship of the pamphlets. Based on the "meanings-in-use" of the symbol, the individual will patch together a representation of what an HMO might be, independent of any explicit definition — or even consistent invocation — of the various organizational models comprising the 'family' of HMOs.

The treatment received by the relational theory in the philosophical literature differs markedly from that of the ideational, verificationary, and referential theories. One reason is that the relational theory is seen as being fundamentally sociological. In his review of Wittgenstein, for instance, High (1967:62) emphasizes that meanings-in-use "cannot be appreciated in isolation from our 'natural history' and the social matrix of our language-using activity or 'form of life.'" Although other theories of meaning certainly have sociological implications, the relational theory places these implications at center stage. Meaning arises out of a social and temporal context (Bloor 1983).

IMPLICATIONS FOR MODELING THE CONSTITUTION OF ORGANIZATIONAL ACTORS

From the preceding discussion, it will be clear that no one perspective can depict all of the nuances of ontological meaning. Our understanding of the meaning of a symbol is likely to incorporate components from all four perspectives, and the

extent to which it does so may vary with the institutionalization of the symbol. Nevertheless, I will assign a privileged position to Wittgenstein's theory of meaning because it is most conducive to three of the sociological requirements outlined at the outset — it readily accommodates historical and cross-sectional variability, it is inherently relational, and it suggests that surface meanings formed by links between signifiers are a function of a deeper structure of rules whereby intersubjectivity is accomplished. Despite these advantages, the relational approach has been invoked far less than other perspectives on meaning in delineating organizational forms. With the exception of John Mohr's and Francesca Guerra-Pearson's (1996) recent study of welfare agencies and the work of Joseph Porac and colleagues (1989) on strategic taxonomies, the majority of organizational theorists have (*implicitly*) been content with verificationary, referential, or ideational definitions.⁶

Organizational ecologists, for instance, have long invoked verificationary meanings in defining forms. The programmatic statement by Hannan and Freeman (1977: 935) used a genetic metaphor, suggesting that "if we are to identify a species analogue, we must search for . . . blueprints; these will consist of rules or procedures for obtaining and acting upon inputs in order to produce an organizational product or response" (cf. McKelvey 1982). This verificationary theory, focusing on internal organizational attributes, was later replaced by an external verificationary theory focusing on the common resource and social environments of organizational forms (Hannan & Freeman 1989). Empirical progress has mainly proceeded with the latter approach, operationalizing niches in terms of human resources (McPherson & Rotolo, 1996), material resources (Ruef, Mendel & Scott 1997), or knowledge networks (Podolny, Stuart & Hannan 1996). Yet a third verificationary strategy has been advanced by network analysts, emphasizing the pattern of resource or communication flows among organizations as indicative of forms (DiMaggio 1986; cf. Laumann & Knoke 1987).

In the absence of formal criteria for distinguishing organizational forms, theorists have often fallen back on simpler referential or ideational definitions. The referential perspective is common among analysts doing quantitative research — a form (or population) is defined by an enumeration of actors included in one or more data archives under a common name. A referential approach to circumscribing forms was already evident in Stinchcombe's (1965) seminal account, often cited by sociologists as inspiring contemporary interest in the historical embedding of organizational forms. What may be forgotten in the process, though, is that Stinchcombe's analysis of forms is explicitly tied to his *imprinting* argument, suggesting that forms tend to retain those structural characteristics which they bore when the form first emerged (1965). Thornton and Tuma (1996) have pointed out that there may be substantive and methodological problems with such static boundary delineations. Moreover, a referential definition fails to capture (*a*

priori) the “segregating and blending” processes which are central to accounts of population dynamics (Hannan & Freeman 1989).

In contrast to verificationary and referential approaches, the ideational perspective on organizational forms is most conducive to qualitative analysis — in particular, case studies methods. An individual organization can be selected as a prototype example of a form and attempts made to generalize theoretical insights from that case to the population. Alternatively, a problematic boundary example can be chosen in order to illustrate a hybrid organization which combines aspects of two or more populations (Albert & Whetten 1985). In either type of case study, detailed qualitative studies may yield new insights about what it means for an organization to have some form or to be a participant in some industry. Nevertheless, any given ideational interpretation on the part of the analyst may itself be highly subjective and contested.⁷

The relational perspective on ontology departs from these others insofar as it is an intrinsically social constructivist approach. As we have seen, the ideational, referential, and verificationary perspectives can also be treated as exercises in social construction, but need not be.⁸ With the Wittgensteinian approach to forms, however, the analyst is inevitably pulled into the discourse of participants in a field in order to reveal the “meanings-in-use” associated with these forms. This has long been the ostensible aim of neoinstitutional approaches to organizational analysis, with their celebrated emphases on myth and meaning (e.g., Meyer & Rowan 1977), though one which has been noticeably absent in empirical applications (as lamented in Mohr & Guerra-Pearson 1996). A relational perspective asks: How are discourse participants drawing an implicit differentiation of organizational forms through invocation of the forms in everyday language? What are the *tacit* rules which govern this process of signification?

The relational perspective can be implemented in either a qualitative or quantitative fashion. Careful examination of individual texts can serve to illuminate the evolution of an organizational form’s meaning-in-use. Naturally, this strategy can also be pursued with other perspectives, as our earlier HMO examples demonstrate. What is perhaps more unique about the Wittgensteinian approach is the quantitative strategy it suggests. If one takes connections between symbols as being links in a discourse matrix, then network analysis or scaling techniques can be used to identify which forms have comparable meanings-in-use (in the sense of having similar links to other symbols). I will review the methodological implications of this strategy shortly.⁹ Before doing so, we return to the substantive matter of market actors and discuss how the relational perspective may illuminate this particular socio-ontological shift in the healthcare field.

Constituting Market Actors

Applying a relational perspective to the health sector, one expects to see that the meanings-in-use associated with clinics, hospitals, HMOs, etc. will have shifted, so as to reflect the constitutive development of market actors. As was suggested initially, this rhetorical shift can be seen as a response to the problems of uncertainty and ontological insecurity. In order to parse the role of uncertainty further, it will be useful to invoke some basic ideas from theories of markets as applied to health care.

In conventional theories of risk-bearing (e.g., Arrow 1971), the existence of an efficient market requires the availability of transaction contracts which are contingent on participant behaviors or externalities (both present and future). For example, if an insurance company is providing indemnity health coverage to a client, the contract would need to be contingent on the possibility that the client may take up smoking, since this possibility will affect the risks borne by the company. If this contingency is not written into the contract, a problem of *moral hazard* results. Here, moral hazard refers specifically to hidden actions; i.e. actions which may impinge on a contract but are unknown to the participants when the contract is drafted (Guesnerie 1989). Of course, negative externalities must also be considered as a feature of moral hazard. In the healthcare sector, for instance, physician behavior may play a significant role in affecting the costs borne by insurance companies and the public, especially when there is a tendency among practitioners to favor expensive, though perhaps unnecessary, technologies.

In considering the failure of contingent contracts, moral hazard can be distinguished from *asymmetric information*, which is a problem of hidden knowledge rather than hidden actions. We can again consider the indemnity insurance example, with the notable exception that the client *knows* that he is a smoker when he applies for insurance coverage but chooses to hide this knowledge from the insurance company. Although analytically distinct, the case of asymmetric information has the same consequence as moral hazard from an economic standpoint. It leads to uncertain and inefficient market transactions.

The traditional organizational landscape of the health sector was one where problems of moral hazard and asymmetric information were rampant. The contractual participants to indemnity insurance had little control over the actions of physicians and nurses, who often had a major impact on contract contingencies (Starr 1982). Furthermore, neither providers nor insurance companies could do much to monitor or promote beneficial health practices among clients, given the patchwork of independent organizations serving various medical needs. Market failure was thought to be an intrinsic feature of the sector.

Seen in terms of organizational boundaries, I argue that the rhetorical solution to market failure has proceeded along two lines. First, the perceived effects of moral hazard have been reduced by reconstituting organizational forms in a manner that blends risk-bearing and non-risk-bearing (provider) forms. This *functional*

integration serves to blur the distinction between insurance carriers, HMOs, government funding programs, etc., on the one side, and hospitals, clinics, private practices, etc., on the other. Functional integration is typically seen as the defining feature of “managed health care” reforms in the sector, which emphasize the combination of financing and delivery activities (Harden 1994). Promoters of these reforms argue that this type of integration ameliorates negative externalities by removing incentives which may have previously encouraged physicians and allied health professionals to provide unnecessary medical care. In turn, this change is seen to reduce uncertainties on the part of both insurers and patients as to the costs of health care and the risks of overtreatment. Functional integration also permits greater data gathering and risk assessment with respect to hidden actions within patient populations, providing regular feedback from medical practitioners to insurance personnel.

I expect that functional integration will be reflected in professional discourse, with changes in the meanings-in-use associated with different forms. Discussions of hospital activities may start to refer to health plans or HMOs which have been started by hospitals. Discussions of insurance carriers may begin emphasizing a more active role in terms of monitoring providers or acquiring medical groups. These subtle changes are likely to be missed by referential or verificationary definitions of forms, and may be obscured by ideational definitions which focus on prototypical characteristics. However, they should be captured by a relational approach to the ontology of arrangements in the sector.

The second part of the rhetorical solution to market failure concerns provider uncertainty resulting from asymmetric information — in particular, hidden knowledge on the part of other providers or prospective patients. In order to reduce this source of uncertainty, organizational forms may be reconstituted in a fashion which allows monitoring of patients through a range of successive medical contexts. Such *clinical integration* is expected to reduce the separation of organizational arrangements which concentrate on extended-care (e.g. nursing homes, home health agencies), acute-care (hospitals), and primary services (medical groups, solo practitioners). Proponents of clinical integration argue that it ameliorates uncertainty by simplifying the sharing of medical records and healthcare personnel across clinical contexts (Mick 1990). Reflecting this type of integration, professional discourse may suggest that an increasing number of hospitals own nursing home facilities; or that insurance carriers are building incentives into acute-care contracts which encourage covered individuals to visit primary care physicians regularly. Again, a relational perspective is required to capture these diverse meanings-in-use.

In reaction to this social constructivist position on the emergence of market actors, a social realist might contend that clinical integration and functional integration are not just “rhetorical strategies” but solutions that deal effectively with the uncertainty presented by asymmetric information and moral hazard. A simple

counter-argument can be provided based on substantive considerations. Even if one accepts the contention that uncertainty on the part of larger medical providers, risk-bearing organizations, and purchasers has been reduced by clinical and functional integration, it is unclear whether the same can be said for more isolated actors in the medical field. Recent debates concerning managed healthcare arrangements would suggest that many patients (and solo practitioners) tend to believe that information asymmetries now tilted against them are worse than they have ever been. In some cases, the combination of risk-bearing and provider functions (functional integration) can lead to incentives on the part of managed care organizations to reduce quality of treatment. And clinical integration may lead to privacy concerns when shared patient records serve as a basis for invidious eligibility screening. Insofar as individual patients or practitioners lack the ability to monitor hidden knowledge on the part of healthcare organizations, the ostensible conditions for market failure seem as ripe as ever. Paralleling the previously noted trends in functional and clinical integration, then, one can also speak of a potential decline in *access integration* — i.e., linkages between provider, funding, and government organizations which ensure that patients have proper access to health care.

Given these considerations, it seems appropriate to refer to a reconstitution of organizational forms along clinical and functional lines as a “rhetorical strategy,” suggesting a transition to market orientation without implying that an efficient healthcare market necessarily exists in an objective sense. We are now prepared to examine some empirical evidence for these intuitions, applying Wittgenstein’s model of meaning to a sample of discourse among health professionals covering the period from 1966 to 1994.

Data and Method

DATA

The textual data (*corpus*) for this analysis was extracted from MEDLINE, the largest and most systematic database of machine-readable text in the medical area. Over a thousand professional journals and proceedings published between 1966 and 1994 were scanned with a search engine for content related to the domain of health services research and policy.¹⁰ The journals subsumed publications targeted at physicians and allied health professionals (e.g., *The New England Journal of Medicine*, *Journal of the American Medical Association*, etc.), those targeted at facility managers and business consultants (*Modern Healthcare*, *Health Care Management Review*), and those oriented toward policy professionals and social scientists (*Milbank Memorial Fund Quarterly*, *Journal of Health Politics, Policy, and Law*). A subset was extracted based on the following criteria — (1) texts must include at least one of

the metathesaurus items referenced by the lexicon (see Table 1); (2) they must appear in English-language journals; and (3) they must either be published in the United States or appear in international journals which offer coverage of the American healthcare sector. The resulting database features 32,052 texts — including articles, conference proceedings, editorials, etc.

Concepts in the lexicon are classified into two ontological groups — *organizational forms*, which comprise both provider and risk-bearing organizations, and a subset of *activities* which are performed by health organizations apart from the provision of medical services. Organizational forms were included if (1) they had a direct correspondence to Medical Subject Heading (MeSH) terms in the Metathesaurus of the National Library of Medicine (NLM); and (2) these MeSH terms were instituted at some point during all four time periods. Substantively, these two criteria lead to the inclusion of forms which enjoy widespread recognition in the discourse (i.e. what some organizational scholars [Scott 1995] have referred to as “cognitive” legitimacy) throughout the period of study.¹¹ While the list of forms is not meant to be exhaustive, it does provide a snap-shot of the arrangements most often discussed in the health services literature. The activities in the table are included to help clarify the interpretation of the institutional rules which organize the meanings of forms.

Since the lexicon concepts correspond to MeSH terms, they allow us to employ the detailed subject codes already entered by NLM coders based on the content of texts. It should be noted that, in contrast to many other textual sources, the codes applied to the MEDLINE articles are highly reliable and consistent due to the serious (often life-or-death) nature of bibliometric searches in the medical domain. All changes over time in the codes are clearly registered in the Metathesaurus.

PERIODIZATION

The corpus of texts is subdivided by time periods in order to address temporal variation in the meaning of forms. The periodization chosen reflects historical dynamics in the policy paradigms of the sector — (1) the initial period, 1966-79, beginning just after the passage of the Medicare / Medicaid acts, represents the heyday of the Keynesian welfare state and gradual decline of federal intervention in the sector; (2) the next period, 1980-83, represents a paradigm shift, culminating in the implementation of the Prospective Payment System in October of 1983;¹² (3) the third period, 1984-91, represents the incremental entrenchment of market reform and a business-oriented mentality; and (4) the final period (1992-94) represents the attempt to restore the role of government in the sector (esp. via the Clinton Health Security Act) and the backlash it triggered (see Skocpol 1996).

TABLE 1: Lexicon of Symbols included in the Analysis of Health Services Discourse

Concepts	Alternative Signifiers
<i>Organizational forms</i>	
Academic medical centers	Hospital, university, schools, medical
Ambulatory care facilities	Ambulatory care; outpatient clinics
Community health centers	
Group practices	
Health care financing administration	Medicare; Medicaid
Health care systems	Multi-institutional systems; Hospital shared services
Health maintenance organizations	
Home health agencies	Home care services
Hospitals	
Insurance carriers	
Nursing homes	
Prepaid health plans	Blue Cross; Blue Shield
Private practice	
<i>Activities</i>	
Education, medical	
Eligibility determination	
Financing, organized	Financing, construction; financing, government
Health promotion	Health education; patient education

MEASUREMENT

Wittgenstein's model of meaning can be operationalized in terms of the co-occurrences of symbols in texts, a method which Carley (1993) calls map analysis and which linguists have long referred to as collocation analysis (Smith, 1990). Co-occurrences do not capture specific relations or valences among symbols; instead, they measure more general features of meaning associations and discourse domains. Indicators based on co-occurrences can suggest how similar the meanings-in-use of two symbols are, based on their patterns of association with other symbols. Such indicators map onto the program of Saussurian linguistics, treating similarities and dissimilarities as the central features of signification.¹³

One basic index for collocation analysis is the Jaccard similarity ratio. This metric generates a symmetric pairwise index of similarity between two symbols by taking the number of texts in which the symbols co-occur and dividing that number by the total number of texts containing either or both symbols. The index ranges

from 0 (indicating no co-occurrence) to 1 (indicating maximal co-occurrence). Unfortunately, the Jaccard ratio has the disadvantage that it tends to underestimate the strength of association between two symbols when one symbol is relatively rare within a given corpus and the other is relatively common. For example, if there are 20 instances of co-occurrence between “community health center” and “health promotion,” and the total counts for each individual symbol are 50 and 500, respectively, then the Jaccard ratio is .038 — rather low, considering that 40% of the texts which discuss community centers also discuss health promotion. An obvious alternative would be a simple asymmetric measure based on ratios of co-occurrences to total occurrences — yielding .40 in the case of community health centers, .04 in the case of health promotion. However, this asymmetric operationalization has problematic consequences for the multi-dimensional scaling procedure which I will review shortly; furthermore, the substantive interpretation of meaning asymmetries is unclear.

Another symmetric collocation index can be proposed which incorporates the desirable aspects of the ratio measure:

$$s = \left(\frac{\alpha}{\beta} + \frac{\alpha}{\gamma} \right) / 2 \quad (1)$$

where α is the number of symbol co-occurrences, and β and γ are the total number of individual occurrences for each respective symbol. The measure simply yields an average of the individual co-occurrence ratios ($[.40 + .04] / 2 = .22$, in the previous example).¹⁴

A weighted version of this measure will be applied for all of our empirical analyses. The weights are designed to capture differences among texts in the strength of association they ascribe to symbols. For instance, some texts may discuss two symbols as major topics, suggesting a strong association in their meanings-in-use; in other texts, two symbols will be discussed as minor topics, suggesting a weaker association. Topics are designated as major or minor based on the coding protocols of the National Library of Medicine (NLM). For our purposes, co-occurrences between symbols which both serve as major topics (“major-major” co-occurrences) are assigned a weight of 1.0, major-minor co-occurrences are assigned a weight of .75, and minor-minor co-occurrences receive a weight of .5.

A discourse matrix is generated for each time period by calculating the collocation index for all organizational forms and functions in a pairwise manner; i.e. every discourse matrix contains one cell which reflects the frequency with which texts discuss both hospitals *and* health promotion, one cell which reflects the frequency with which articles discuss both hospitals *and* academic medical centers, and so forth. In all, there are four period matrices, each including 17 symbols and 136 individual cells (i.e., [289 total cells - 17 for the main diagonal]/ 2 = 136 cells).

STATISTICAL METHODOLOGY

Given a series of discourse matrices, the task of an ontological analysis is to locate social objects in a “phenomenological space”—one which distinguishes the forms according to various underlying criteria—and to identify how this space evolves over time. To this end, multidimensional scaling (MDS), a technique familiar to cognitive psychologists and network analysts, will be employed (see Kruskal & Wish 1978, for a general overview). In typical cognitive psychology applications, subjects are asked to judge the dissimilarity of various symbols and MDS is used to generate a low-dimensional stimulus space representing these judgments. In modeling an evolutionary ontology of organizational forms, the methodological task is analogous, with the notable exception that judgments are not elicited for individuals but for aggregates of individuals across different time periods (see Laumann & Knoke 1987 for a previous application of MDS to the health domain).¹⁵

When a single matrix of co-occurrences is considered, classical MDS (Kruskal & Wallis 1978) can be applied to construct the geometry of a Euclidean discourse space. Since I wish to consider a series of matrices over time, I will employ an extension of the classical model, called *weighted* multi-dimensional scaling (also known as individual scaling or INDSCAL). In this approach, temporal differences between matrices are reflected in the changing salience, or weight, of solution dimensions (Arabie, Carroll & DeSarbo 1987). For my empirical case, a higher weight (> 0) within some time period suggests that a given dimension is more important in differentiating organizational forms during that period than it is for all time periods combined; conversely, a lower weight (< 0) suggests that a given dimension is less important in differentiating forms than it is for the aggregate time span under study.

Input data values $\delta_{ij,k}$ are given in the form of symmetric co-occurrence matrices, with i and j indexing rows and columns (respectively), and k indexing time periods. In the present context, i and j range over the number of symbols ($i, j = 1 \dots 17, i \neq j$) and k ranges over the number of time periods ($k = 1 \dots 4$). The analysis attempts to find a set of linear functions F_k , which map input co-occurrences (δ) into distances in an output matrix ($d_{ij,k}^*$):

$$F_k(\delta_{ij,k}) \approx d_{ij,k}^* \quad (2)$$

Estimated distances between symbols in the resulting phenomenological space are defined in terms of weights w_{kr} , indicating the salience of each dimension r in time period k (Arabie, Carroll & DeSarbo 1987:17-18):

$$d_{ij,k} = \sqrt{\sum_{r=1} w_{kr} (x_{ir} - x_{jr})^2} \quad (3)$$

with x_{ir} and x_{jr} corresponding to the coordinates of symbols i and j in the r th dimension. Thus, the INDSCAL result is divided into two components, one being a base-line matrix X of symbol positions in the solution space, another being a matrix W of dimension weights for the time periods. The solution space can be seen as "stretching" and "contracting" based on the period weights.

The goodness-of-fit and dimensionality of the solution is often evaluated with an S-stress measure. The S-stress varies from 1 (indicating the *worst fit*) to 0 (indicating a perfect fit). Using an ALSCAL (alternating least squares scaling) procedure, the S-stress measure is defined as:

$$SS_{\text{stress}} = \frac{1}{N} \sum_k^N \left[\frac{\sum_i^{} \sum_j^{} (d_{ij,k}^{*2} - d_{ij,k}^2)^2}{\sum_i^{} \sum_j^{} d_{ij,k}^{*4}} \right] \quad (4)$$

where N is the total number of time periods. This measure assumes that the data analyzed by the ALSCAL algorithm are matrix-conditional (Takane et. al. 1977:28).

Results

Preliminary analyses were undertaken to consider the number of dimensions structuring the phenomenological space and the ontology of organizational forms. Based on considerations of interpretability and S-stress values, a three-dimensional solution space was selected as being both substantively meaningful and providing a reasonable model fit (S-Stress = .2664).¹⁶ The dimensions suggested by the analysis are:

(1) Functional (Risk Bearing / Non-Risk-Bearing) — a continuum of organizational forms extending from those which are responsible for insuring patients, providing reimbursement, or financing health care in other respects to provider forms which have traditionally not been involved in risk-bearing activities.

(2) Clinical (Extended/Acute/Primary Care) — a continuum of organizational forms extending from those in which clinical or funding responsibilities are oriented toward long-term or chronic treatment to those which tend to address acute or primary care needs.

(3) Access (High Risk / General Populace) — a continuum of organizational forms extending from those in which an organizational form is involved with high risk patients and / or public health concerns to those which cater to a general patient population.

A detailed breakdown of the individual symbols and their locations in the solution space is provided in Table 2. The mean R^2 of the MDS model over the three periods is .32. Considering dimension 1, we find that health maintenance

organizations, insurance carriers, prepaid health plans, financing activities, and the Health Care Financing Administration (HCFA) are clustered toward the positive (risk-bearing) side. Traditional provider forms, such as hospitals, ambulatory care facilities, etc., are ranked toward the negative (non-risk-bearing) side of this continuum.¹⁷ The second dimension relies on a more clinical differentiation of organizational forms, associating positive coordinates with those forms which are related to extended healthcare functions and the associated gatekeeping processes (i.e. eligibility determination). Aside from provider forms such as nursing homes and home health agencies, we also find that HCFA — which administers the Medicare / Medicaid programs — and prepaid health plans are identified as insurers that cater to elderly or disabled individuals who may require extended care. The organizational forms which rank along the other end of this dimension (e.g. private practices, group practices, community health centers) often have a strong orientation toward primary care, while those clustered in the middle (hospitals, insurance carriers) are oriented toward the delivery and funding of acute care. The second dimension thus suggests a spectrum of clinical contexts, ranging from primary to acute to extended healthcare delivery.

The third dimension overlaps with the second to some extent, insofar as patients receiving extended care may be located in high risk categories as well — thus, nursing homes and HHAs are clustered toward the positive (high risk) side of this dimension. However, other “risk managing” organizational forms, such as community health centers and academic medical centers, simply provide health education and primary care access to at-risk indigent patients, while avoiding any extended care role. These last two organizational forms are also concerned with public health and epidemiological matters, which constitute another crucial aspect of risk management in the healthcare field. At the other side of the spectrum, one finds organizational forms which are oriented toward fairly general patient populations, such as private and group practices and HMOs.

Given the relation between uncertainty and ontological security, the three dimensions structuring the ontology of organizational forms are quite revealing. Integration of forms along each of the dimensions serves to reduce a different type of uncertainty. Functional integration, the blending of risk-bearing and traditional provider forms in dimension 1, can be seen as reducing the effects of moral hazard in the sector. As reviewed earlier, the traditional separation of physicians and other providers from risk-bearing organizations (e.g., insurers) has yielded negative externalities in the sector, insofar as providers could not be motivated to control costs and reduce unnecessary care. The rhetorical solution provided by functional integration simply combines the risk-bearing and non-risk-bearing forms in order to remove these externalities.

Similarly, clinical integration, or the blending of extended care, acute care, and primary care forms in dimension 2, is seen to reduce information asymmetries enjoyed by consumers over providers and insurers, allowing healthcare

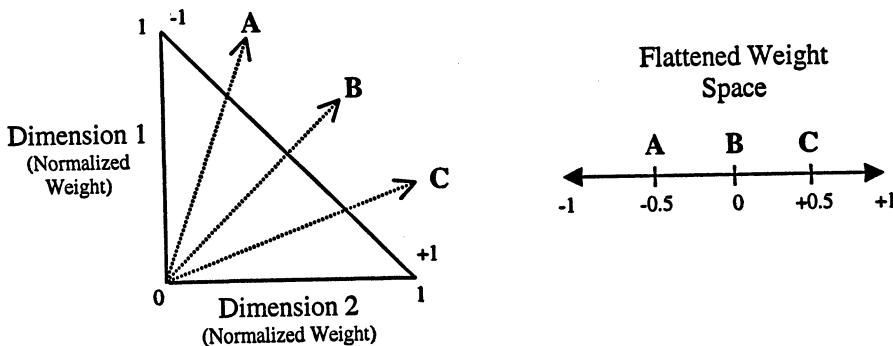
TABLE 2: INDSCAL Analysis of Symbol Ontology Based on Meaning Differentials, 1966-94

Symbol	Dimension 1 <i>Functional</i> (Risk-Bearing/ Non-Risk- Bearing)	Dimension 2 <i>Clinical</i> (Extended/ Acute/ Primary)	Dimension 3 <i>Access</i> (High-Risk/ General Populations)
<i>Organizational forms</i>			
Academic medical center	-.4945	-1.3561	.8299
Ambulatory care facility	-1.7069	-.1875	-.5018
Community health center	.0658	-1.5518	.7630
Group practices	-.4579	-.5229	-1.5726
HCFA (Medicare / Medicaid)	.6544	1.3040	-.2041
Health care system	-1.8386	.3342	-.1495
HMO	.3855	-.0135	-1.5679
Home care (HHAs)	-.5221	1.4158	.9078
Hospital	-1.2159	.2057	-.1750
Insurance carrier	1.7903	.3827	-.6669
Nursing home	-.6436	1.3158	1.1107
Prepaid health plan	1.1434	.7161	-1.2210
Private practice	-.0730	-.8481	-1.5402
<i>Activities</i>			
Education, medical	-.1168	-1.3187	1.0025
Eligibility determination	.6255	1.5648	.7586
Financing	1.2570	-.3668	1.2285
Health promotion	1.0013	-1.0738	.9980
<i>Overall dimension weight</i>	.0932	.1193	.1048

organizations to track patients in a variety of medical contexts. Once the transaction costs affecting the flow of information between these contexts have been eliminated, providers and insurers have increased knowledge concerning the physical state of patients entering each context and any hidden variables that can affect the quality or costs of treatment.

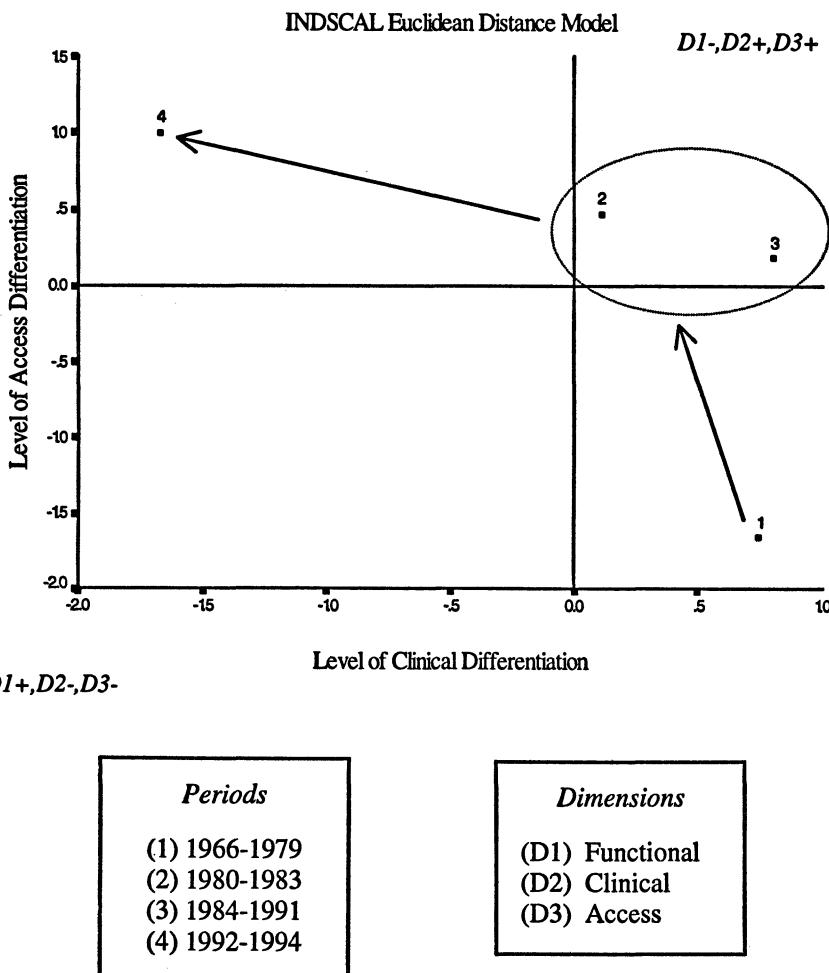
Access integration, or the blending of risk managing and other organizational forms in dimension 3, likewise reduces information asymmetries — though in this case, integration tends to ameliorate potential disadvantages of consumers in patient-provider and patient-insurer relationships. When health maintenance organizations, private practices, and the like are affiliated with risk-managing forms such as academic medical centers, community health centers, or home health

FIGURE 1: Hypothetical Example of MDS Weight Space



agencies, there is often an increased commitment to ensuring that concerns about public health and access for at-risk patients are addressed.

To what extent is integration or differentiation along these dimensions reflected in historical changes within the professional discourse? While the base-line matrix of symbol positions in Table 2 gives us a sense of the general ontology of organizational forms, the matrix of dimension weights can be examined to analyze integration and differentiation processes over the four time periods. First, a *flattened weight space* must be constructed to represent the relative historical salience of each dimension. In order to understand the basic geometry of the weight space, it is worth considering an interpretation of a hypothetical two-dimensional example (see Figure 1; cf. Norusis, 1990: 450). The possible values on each weight dimension are normalized to the [0,1] range. Three periods are shown in the diagram, with the weights for each period displayed as vectors (A, B, C) extending from the origin. Vector B represents a hypothetical scenario in which both dimensions are equally important, vector A weights dimension 1 more heavily, and vector C gives primary consideration to dimension 2. The flattened weight space is constructed by considering the intersection of each of these vectors with the hypotenuse of the right triangle formed in conjunction with the normalized weights for dimensions 1 and 2. Assuming that the flattened weight space is allowed to vary from -1.0 to +1.0, vector B would intersect the weight space at the 0.0 point. Substantively, this corresponds to the point where the period-specific discourse structure most closely approximates the historical average witnessed over all three time periods. By contrast, vectors C and A intersect the weight space at points +0.5 and -0.5, respectively. Substantial movement among the three points is indicative of what neoinstitutional theorists (e.g. Scott et. al., in press) have termed profound institutional change — a process in which the dimensions differentiating various

FIGURE 2: Flattened Period Weights

spheres of organized social activity are blurred and restructured. Such institutional change is commonly associated with the proliferation of new organizational forms, the demise of old ones, and rapid shifts in the status order of field participants.

Dynamics of integration and differentiation also follow directly from the hypothetical flattened weight space. Suppose that we find that an ontology of organizational forms is weighted using vector A during an initial time period but that it is weighted using vector C during a subsequent period. This suggests that the relative importance of dimension 1 in differentiating organizational forms has

decreased — or, conversely, that integration along this dimension has increased — while the relative importance of dimension 2 in differentiating organizational forms has grown. From this simple example, it should be noted that one of the original dimensions (1) is effectively omitted from the flattened space, since it can automatically be determined by the relative importance of the other dimension. For instance, if the relative differentiation along dimension 2 is maximized (+1 score in the flattened space), the relative differentiation along dimension 1 is necessarily minimized.

By extending this method to the actual three-dimensional solution space for forms of healthcare organizations, we arrive at the weight space shown in Figure 2. In this representation, the axes refer to level of clinical differentiation (extended versus acute versus primary care) and access differentiation (forms that manage high risk populations versus those oriented toward the general populace). Functional differentiation is the omitted dimension — its level can automatically be determined from that of the other two dimensions. In particular, functional differentiation is maximized when the differentiation of organizational forms along clinical and access dimensions is minimized (lower left-hand corner of plot); or, conversely, it is minimized when the other dimensions are maximized (upper right-hand corner).

In the 1966-79 period, we note that the level of clinical differentiation is relatively high, playing a major role in separating organizational forms and functions within the discourse, while the access dimension shows lower differentiation (higher integration).¹⁸ This corresponds to the paradigmatic mindset of a policy of federal involvement, in which many organizational forms were seen as playing a role in managing at-risk patient populations — especially, the elderly and indigent. Fostered by federal initiatives such as the Regional Medical Programs networks and other health planning endeavors (May 1967), affiliations between risk-managing organizations (esp. medical schools and community health centers) and forms directed at the general populace were common. On the clinical side, a traditional differentiation of primary, acute, and extended care arrangements was the norm during the era.

By the second and third historical periods (1980-91), substantial institutional change had occurred, with integration of access demonstrating less salience. Policy-makers were becoming disenchanted with health planning endeavors and the risk management they entailed. At the same time, the discourse continued to reflect fairly conventional clinical distinctions of organizational forms. By the time of the abortive Clinton Health Security Act, though, renewed institutional change had occurred, with a sharp decline in the differentiation of the discourse in clinical terms and some increases in differentiation by the orientation of forms toward access. The integration of organizational forms along the clinical dimension is one major feature of newer arrangements, such as integrated delivery systems (Dowling 1995).

Changes in the differentiation of the omitted functional dimension can also be derived from the figure. We find that there is a marked tendency toward a discursive blending of risk-bearing and non-risk-bearing forms after the decline of federal involvement policies (1980-91). This is represented in the plot as an increase in the differentiation of accessibility functions, without any real change in the differentiation of clinical functions. Movement inside the upper right-hand quadrant of the graph points to an integration of forms along the omitted (functional) dimension. This reflects such policy impacts as the liberalization of federal HMO regulations and introduction of so-called "selective contracting" in a number of states, which promoted the rapid growth of managed care arrangements in the 1980s. More recent professional discourse, however, has mainly stressed clinical integration.

Discussion

The exploratory MDS analysis suggests an interesting line of inquiry for theories of social ontology. Different eras in the history of a field often seem to be associated with ideologies that reflect the integration of functions along different dimensions. During the era of federal involvement, there was a drive to integrate risk management functions, aimed at the elderly and indigent, with more traditional provider roles aimed at general patient populations. Historically, this orientation first arose out of Lyndon B. Johnson's "War on Poverty" and "Great Society" programs, but continued to thrive throughout much of the 1970s as part and parcel of a research and policy framework maintained by professionals in the field. The 1980s gave rise to new paradigms, ones in which the integration of risk-bearing and health delivery functions figured more prominently. While this integration had long been legislatively anticipated by the 1973 HMO Act and its amendments, it was not until the *Gestalt* shift of constitutive perceptions that newer forms such as health maintenance organizations began to prosper (Brown 1983). During the most recent period of the managed care revolution, there has been a drive toward clinical integration. Spurred by challenges from renewed federal involvement (e.g. the Clinton initiative), advocates of managed care arrangements have sought to demonstrate how a market-oriented system can provide a clinical continuum of medical and monitoring functions — continuity which is normally seen as one of the great assets of national health programs.

The implications for the constitution of organizational forms are clear. When the dominant ideology of a field suggests that organizational forms should integrate functions along some dimension, we can expect the discursive differentiation of forms to decrease along the same dimension. From a phenomenological standpoint, meanings-in-use reflect an underlying system of rules (or, in Wittgenstein's terms, a *language game*), indicating which differences between social objects can be ignored

and which ones suggest incommensurabilities. These systems of rules have an evolutionary character. In one period, the proposal that hospitals could assume some of the functions of HMOs (e.g., by launching their own managed care plans) may seem preposterous; in another period, the difference between the two forms may seem far less drastic.

I have noted that uncertainty may be one master logic which provides a foundation for ontological change. As Giddens points out, constitutive schema must define objects in a way that allows uncertainty to be minimized in social interaction. Contrary to economic accounts, which stress contractual mechanisms among "undersocialized" actors, and functionalist sociological accounts (e.g., Parsons 1960), which stress the normative mechanisms employed by "oversocialized" actors, there are a range of dimensions along which organizational forms can be embedded in order to manage uncertainty (see Granovetter 1985). In the healthcare field, the Parsonian image is perhaps most appropriately applied to the period of professional dominance (before the mid-1960s), when trust in the authority and ethical stance of physicians ameliorated perceptions of uncertainty on the part of third-party payers and patients (see Freidson 1970). Concerns about healthcare delivery increased with the emergence of a paradigm of federal involvement in health services. The victims of uncertainty, in this paradigm, were seen to be the underprivileged and the aged; revised constitutive schemas stressed closer collaboration (access integration) of community and academic medical centers, on the one hand, and hospitals, clinics, primary physicians, etc., on the other. With the rising flood of discourse about "market failure" in the 70s and early 80s, the focus of uncertainty shifted to tax-payers, insurance policy holders, and risk-bearing organizations who had to contend with moral hazard and information asymmetries. These dilemmas led to the successive adoption of new constitutive schemas, emphasizing functional and clinical integration.

What is noteworthy about this chronology is that uncertainty has been a ubiquitous feature of the healthcare sector, though various ideologies have stressed different aspects of it. The problem of market failure, and the constitution of managed care arrangements as a solution to it, is only the most recent iteration in the process. In the words of one familiar organizational analysis, the causal connection between the problem and solution can be seen to be reversed (Cohen, March & Olsen 1972); managed health care may have been a "solution in search of problems," which seized on the ever-present dilemmas of cost escalation and uncertainty, molding them in the form of market failure. While functionalist accounts can represent the rise of market arrangements as a requisite solution to problems of moral hazard and information asymmetries tilted against insurers, neoinstitutional and Marxist accounts can emphasize that this transition has had decidedly dysfunctional consequences with respect to individual consumers and physicians. Our analysis suggests that both accounts are correct depending on the dimensions of uncertainty which one attends to.

More generally, I hope to have indicated how an empirical approach to social ontology might shed insight on phenomena aside from market emergence. Applied to textual or oral discourse, the Wittgensteinian framework is generalizable to virtually any system of socially articulated symbols. This is especially relevant for historical research, in which conventional social scientific survey data may be difficult to obtain. Rather than asking social actors directly about their ontological meanings, the framework allows these meanings to emerge from discourse.

Following this line of attack may ultimately prove fruitful in returning to the questions raised by Durkheim regarding the reciprocal interaction of cognition and culture, on the one hand, and social structure on the other. Considerable elaboration of the present framework is required, however, to address these questions. The exploratory analysis has focused exclusively on professional discourse, ignoring causal interactions with structural indicators of market orientation, such as facility privatization or linkages among organizations which minimize various dimensions of uncertainty (cf. note 2). Such interactions need to be examined in future research. On a more theoretical level, the relationship between discourse and social structure also raises classic issues about the exercise of agency. To what extent are different professional groups able to translate their discourse into practices which redefine organizational forms? In contrast to the simple longitudinal design presented here, this question requires greater recognition of cross-sectional heterogeneity in the rhetorical orientations of various professionals groups.

Notes

1. For instance, Ruef, Mendel and Scott (1998) have found that home health agencies (HHAs) which are created by hospitals enter demographic markets which are quite different than those entered by autonomous HHAs. If an organizational form is defined by its resource niche, then autonomous and vertically integrated HHAs could well be classified as separate forms.
2. Unfortunately, we are not in a position to analyze the causal pattern between discourse and social structure at this stage — e.g. do market-oriented changes in discourse generate behavioral trends toward privatization among healthcare organizations (or vice versa). We can only suggest that the health services discourse affords greater transparency in an examination of market reform.
3. A thorough discussion of these theories of meaning, with particular emphasis on the relational model, can be found in High (1967).
4. One expects that precise verificationary meanings will most often be provided in regulatory discourse (such as the U.S. government's lengthy definition of federally qualified HMOs), while ideational and less precise verificationary meanings will be employed in professional discourse.

5 Referential meanings are also commonly invoked among the lay public. Consider the new employee who realizes that his benefits package includes a choice of several HMOs. Asked what a health maintenance organization is, he may simply point to an enumeration in the benefits package literature and state, "These are HMOs." Why are they HMOs — they are named as such.

8. This is not to say that certain perspectives in organizational theory — such as Weick's (1995) sensemaking relation-based, and activity-based definitions of boundaries. Again, this typology is orthogonal to the perspectives reviewed here, though one should be careful not to confuse the relation-based definition usually advocated by network analysts — focusing on social relations — with the Wittgensteinian perspective — focusing on signification (semiotic) relations.

9. See Jepperson and Swidler (1994) and Mohr (1998) for discussions on the measurement of meaning.

10. The search engine used includes both the Aries MEDLINE Knowledge Finder and customized programs developed by the author.

11. Excluded are forms which emerged late in the game, such as preferred provider organizations (PPOs). Such exclusions are based exclusively on methodological concerns, owing to the fact that our analytic techniques are not yet able to deal with time-varying symbol sets. Also excluded are forms which have existed throughout most of the time frame, but lack cognitive legitimacy (e.g., end-stage renal disease centers). These exclusions are made on both methodological grounds — owing to the fact that references to these forms in the discourse may be too limited to permit meaningful analysis — and substantive grounds — owing to the fact that the boundaries of these forms are often inherently blurred.

12. The Prospective Payment System (PPS) shifted Medicare from retrospective reimbursement of costs to prospective payments linked to diagnosis. It is widely credited with the decentralization of decision-making processes in the sector (ProPAC 1989).

13. In the present context, "co-occurrences" refer specifically to two or more concepts from Table I which have been registered by NLM coders as major or minor topics in the same article, editorial, or other text.

14. Within the statistical literature, the metric is typically referred to as the Kulczynski 2 similarity measure (Norusis 1990:389). It corresponds to the average conditional probability that one topic will be referred to by a text given that another is referenced.

15. Both quantitative and qualitative alternatives to the MDS approach can be suggested. Network-oriented quantitative options, such as blockmodels, suffer from a number of shortcomings, including their reliance on boolean input matrices and the fact that they partition symbols into mutually exclusive subsets rather than a continuous stimulus space. Qualitative alternatives — focusing on fine-grained textual analyses of relation-based, and activity-based definitions of boundaries. Again, this typology is orthogonal to the perspectives reviewed here, though one should be careful not to confuse the relation-based definition usually advocated by network analysts — focusing on social

relations — with the Wittgensteinian perspective — focusing on signification (semiotic) relations.

16. Kruskal and Wish (1978) review a graphical scree procedure for diagnosing dimensionality based on S-stress values. The solution presented here represents a substantial improvement over the two-dimensional result, which had an S-stress of .3557.
17. Note that the actual signs in the INDSCAL solution space are arbitrary, in the sense that all values could be multiplied by -1, producing a “mirror-image” along each dimension of the space (Arabie, Carroll & DeSarbo 1987:22). Thus, differences in the coordinates of organizational forms along each dimension are of interest, not whether a particular form is assigned a high or low coordinate per se.
18. The salience of these dimensions is evaluated relative to the historical “average” over the entire time frame being analyzed (1966-94). Thus, none of the weights can be taken to suggest that a given dimension is more or less important during some period in an absolute sense; rather, a dimension is more or less important than the standard set by the historical average.

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