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Individuals and Organizations: Thoughts on a Micro-Foundations Project for Strategic Management and Organizational Analysis

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Abstract:
Making links between micro and macro levels has been problematic in the social sciences, and the literature in strategic management and organization theory is no exception. The purpose of this chapter is to raise theoretical issues in developing micro-foundations for strategic management and organizational analysis. We discuss more general problems with collectivism in the social sciences by focusing on specific problems in extant organizational analysis. We introduce micro-foundations to the literature by explicating the underlying theoretical foundations of the origins of individual action and interaction. We highlight opportunities for future research, specifically emphasizing the need for a rational choice program in management research.

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Introduction

Traditionally, some of the most troublesome issues in the social sciences have been those that relate to analytical levels and units of analysis (Machlup, 1967; Klein et al. 1994). Notably, for more than a hundred years, economics (e.g., Menger, 1883; Hayek 1952; Arrow 1951; Dosi 1995), sociology (e.g., Durkheim,1962; Lazarsfeld and Menzel, 1970; Coleman 1990) and the philosophy of science (Popper, 1957; Satz and Ferejohn, 1994) have witnessed a debate as to whether individuals ("micro") or social collectives ("macro") have explanatory primacy. This debate has raged under the label of "methodological individualism" versus "methodological collectivism." The issue and debate carry very substantial theoretical and explanatory implications; for example, what are the relations between micro and macro levels? Do we always need to invoke micro-level explanatory mechanisms when trying to explain some macro-level phenomenon? Is it legitimate to rely on aggregate constructs as part of the *explanans* — or, are these only present in the *explanandum* of an explanatory structure? Although it is surely possible to conceptually separate the methodological domain ("How should theories be constructed and evaluated?") from the ontological ("What exists in the world?), the issue and the debate also carries substantial philosophical implications, and furthermore, very different philosophical positions may be, and have been, invoked to defend the respective positions. Further related questions include – What is the ontological status of aggregate social entities (e.g., organizations)? In what sense can organizations be said to exist independently of individuals? Is it meaningful to ascribe intention and actions to organizations?

Clearly, these issues are also of immense relevance for theory-building in organizational theory and strategic management. However, while considerable, recent attention is being paid to "levels issues", "multiple level analysis" and the like in management research (e.g., Klein et al. 1994; Dansereau et al., 1999), strategic management has seen no, or few, efforts to reconcile micro and macro-levels, or more generally, efforts to build micro-foundations (though see Coff 1999; Lippman and Rumelt 2003a&b; Foss and Foss 2005).[1] There are three possible reasons for this. First, one may speculate that the lack of micro-foundations is perhaps based on an implicit agreement that such discussions are best left at the level of the base disciplines (e.g., psychology at the individual level). That is, it can be argued that strategic

[1] In contrast, economics has for more than three decades witnessed much fundamental theoretical inquiry has been devoted to establishing micro-foundations for macro-economics. The "micro-foundations project" implies the building of rigorous mathematical models that demonstrate how individual action and interaction may produce economy-wide consequences (Leijonhufvud, 1968), that is, mimic the real aggregate movements of the economy as captured in time series of central variables (Lucas, 1977).

management and organization theory is by definition a collective or firm-level discipline, and thus the key questions of interest should be pursued at this level (without consideration for other levels). Or, second and conversely, the inherently pluralistic nature of management studies may preclude building specific micro-foundations, given the potential equivalency assigned to all levels. That is, no particular level deserves emphasis, and each level (for example - individual, organization, network, or industry) offers a different (though, as we will discuss, contradictory) and complementary approach to thinking about organizations and their performance. Or third and finally, the empirically driven character of strategic management perhaps crowds out this sort of methodological, theoretical, and philosophical inquiry.

Whatever the reason for a lack of "micro-foundations project" in strategic management, and organizational analysis more generally, this paper is written with the belief that the time has come for opening a discussion that cuts across strategy, organization theory and management, and which centers on many of the issues that have been at stake in the classical discussions in social science and philosophy concerning levels and units of analysis (cf. Felin and Hesterly, 2006). Specifically, to broadly foreshadow both our underlying premise and conclusion, this essay begins with the following increasingly forgotten assumption (Felin and Foss, 2005). That is, organizations are made up of individuals, and there is no organization without individuals. There certainly seems to be nothing quite as elementary; yet, this elementary truth has been lost in the increasing focus on structure, routines, capabilities, culture, institutions, and various other collective conceptualizations — with rather negative consequences for theory-building, empirical work, and managerial practice. Our contribution then is to highlight the need to *explain* the individual-level *origins*, or micro-foundations of collective structures as they arise from individual action and interaction, while extant work seems to take organization, and structure more generally, for granted. Furthermore, we delineate extant work in a succinct framework, and highlight promising future directions which take individual-level considerations, or micro-foundations, seriously. More generally, we outline three pillars of a rational choice program for management, by highlighting theoretical work in sociology and economics, in hopes of providing promising methodological and theoretical foundations for the next generation of management theory.

We should note that our efforts here generally are complementary with quite recent calls for "micro-foundations" and we specifically further build on this research project (e.g., Felin and Foss, 2005; Foss and Foss, 2005; Felin and Hesterly, 2006).[2] However, at the risk of repeating what has been published and said elsewhere, we focus on *new* issues and extensions that need further consideration and

[2] Gavetti (2005) has also called for 'micro-foundations' for management theory in a recent article, though highlighting somewhat different, though arguably complementary, theoretical elements.

clarification. The unique contribution of this chapter is to offer a systematic and thorough exposition, building on Coleman's (1990) classic meta-theoretical discussion and his overall framework, specifically in applying the framework to the notion of organizational capabilities and highlighting extensions by way of calling for a rational choice program for strategic management and organization theory.

This chapter is structured as follows. We begin by first briefly highlighting problems in the present work on organizational capabilities by providing a general conceptual figure illustrating critical questions which remain unanswered, specifically the lack of micro-foundations and causal mechanisms (*Organizational Capabilities: A Lack of Micro-foundations*). As the general problems highlighted in this first section have recently, quite extensively, been discussed elsewhere (specifically see Felin and Hesterly, 2006; Felin & Foss, 2005), the section will remain purposefully succinct to avoid further repetition. Next we position the above discussion and associated problems (lack of micro-foundations and causal mechanisms) in the context of a meta-theoretical discussion utilizing the general model of social explanation developed by the sociologist James Coleman (1990). We consistently apply this framework throughout this paper (*Metatheory: Mechanisms, Explanation and Analytical Levels*). Our *first* use of the Coleman model is to show in which sense the recent emphasis on structure, capabilities, and the more general taken-for-grantedness of "organization," in management studies is a manifestation of methodological collectivism and why this is problematic (*Organizational Capabilities and Methodological Collectivism*). The *second* use of the Coleman model is to develop implications for research into the building of explicit micro-foundations for routines and capabilities. We explicate important research issues in the building of micro-foundations for organization-level phenomena and outline *desiderata* for such theory-building. We furthermore argue that theory-building should be founded on rational choice theory rather than on theories of individual behaviour, which is reactive, routinized, etc. We specifically highlight three key pillars of a rational choice research program, namely 1) rationality, 2) choice, and 3) causal mechanisms; thus providing the rough and preliminary foundations for a much-needed rational choice research program for management research. Some concluding observations are made on building micro-foundations (*Building Foundations: Implications for Research*) and on revisiting strategy's disappearing mandate (*Conclusion*).

Organizational Capabilities: A Lack of Micro-foundations

Strategy scholars have converged on *organizational* capabilities as the key construct for the understanding of firm-level heterogeneity and performance (Eisenhardt and Martin 1999; Winter 2003).[3] As suggested by Figure 1 – extant work has focused on making the link between organizational or firm-level capabilities and collective-level outcomes (see dotted box in Figure 1). A central argument of capabilities-based work is that *organizational* routines or capabilities are the fundamental units of analysis, and that the *organization* should be conceptualized as the central repository of routines and capabilities (e.g., Nelson and Winter 1982). The extant organizational capabilities approach is explicit about the need to focus on the collective as the key level of analysis, which for us highlights the need for micro-foundations, providing us an important point of departure from extant work and the unique contribution of this chapter. As a brief example of the present emphasis on the collective, Zollo and Winter (2002) explicitly define capabilities as "learned and stable pattern of *collective activity"* (Zollo and Winter 2002: 340, emphasis added). The emphasis on collective constructs has lead to a corresponding neglect of the levels of individual action and interaction (Felin and Hesterly 2006; Felin and Foss 2005). As Argote and Ingram (2000: 156; emphasis added) lamented, to the extent that there has been progress in studying knowledge as the foundation of competitive advantage, "… it has been at the level of identifying consistencies in organizations' knowledge development paths and almost never at the level of human interactions that are *the primary source of knowledge and knowledge transfer*." However, neglecting this "primary source" means that we (strategic management and organizational scholars as well as managers that act on the prescriptions of the capabilities view) miss potentially important individual-level information.

Insert Figure 1 about here

Put differently, while links between organizational capabilities and outcomes have been made in extant work (see Figure 1), critical questions as to the underlying individual-level foundations and origins of these capabilities seem to be lacking. Two specific problems are worth highlighting in light of Figure 1 (matters presently remaining *outside* of dotted box). First, while extant work has tended to, in effect,

[3] Our arguments also apply to work that makes use of notions of routines, dynamic capabilities, competencies, core competences, and other of the numerous aliases of, or concepts related to, the concept of capabilities.

round out individuals from the analysis (Felin and Hesterly, 2006), can we theorize individual-level origins for collective constructs, in this case capabilities? Second, an absolutely fundamental problem has arisen in the form of various theoretical "black boxes" in our theories. Namely, how exactly do individual actions, abilities, and choices aggregate up to the collective level? What are the underlying causal (and social) mechanisms? These and other questions provide the general premise for our subsequent discussion. While our efforts here require a meta-theoretical (and perhaps metaphysical) detour of sorts into some key philosophical and ontological matters, we hope the reader will tolerate this, as these underlying questions are quite fundamental to strategic management and organization theory, and in large part, have been neglected.

Metatheory: Mechanisms, Explanation and Analytical Levels

Mechanisms and the Individual Level

Any theoretical (and consequently empirical) effort to explain organizational phenomenon (the *explanandum*) has to make a choice (though the choice is often made only implicitly) that concerns the level at which explanation takes place, that is, the analytical level at which the important components of the *explanans* are located. A classic distinction in social science research is made between the collective and the individual level. This question, of course, has divided disciplines, and even led to some of social science's most infamous in-fighting (Hayek, 1943; Popper, 1957) in the form of the opposition between methodological individualism and methodological collectivism. Nonetheless the questions and concerns remain equally valid and applicable to not only social science in general, but strategic management and organizational studies specifically.

We here take the position that the explanation of collective phenomena must ultimately be grounded in explanatory mechanisms that involve individual action and interaction, that is, methodological individualism (cf. Hayek, 1952; Ullman-Margalitt, 1978; Elster, 1989, 1998; Boudon, 1998a).[4]

[4] In its most extreme form, methodological individualism asserts that in explanations of social phenomena reference is allowed *only* to individuals, their properties and their (inter)actions. Thus, at no point in the explanation can reference be made to supra-individual entities as in any way causal agents. No "shortcuts" by making reference to aggregates are allowed anywhere in the explanation. On this program, explaining, for example, the current strategy of Shell must always ultimately involve making reference to the mental states of all relevant organizational stakeholders and how these mental states produced particular actions that over time combined to produce current Shell strategy. If practicable, all explanation in such a scheme essentially becomes painstaking historical explanation. However, obviously, this is a highly problematic research strategy, if taken to its logical conclusion. First, it runs into problem of historical regression, because it is not clear where the explanatory chain should stop. Second, it runs into a complexity problem associated with accounting for the mental states and actions of all relevant organizational stakeholders. As Hayek (1945) reminded us, these kind of "particular circumstances of time and place" usually cannot be "concentrated in a single mind." At any rate, we do not subscribe to an extreme

Methodological individualism has been defended in numerous ways. For example, it is sometimes defended by invoking a deeper argument of ontological individualism, according to which only individuals, and not collectives, are acting entities. While we have sympathy with this argument, our argument is rather epistemological. We take it to be the ultimate aim of scientific endeavours in the social science domain to identify and theorize the causal social mechanisms — the "cogs and wheels" (Elster 1989: 3) — that generate and explain observed associations between events (Bhaskar,1978; Hedstrom & Swedberg, 1998). We associate this view with scientific and methodological realism (Harré 1970; Bhaskar 1978; Foss 1994). It differs from the traditional covering-law model of explanation of Carl Hempel and others, because the covering-law model does not imply an insistence on identifying genuine causality. In contrast, causality is central in a mechanisms approach. Thus, to the mechanism-oriented social scientist, the discovery of how human action and interaction causally produce collective level phenomena is what science is all about (e.g., Cowan and Rizzo, 1996).

We also take it to be implicit in a mechanism-oriented scientific inquiry that explanatory black boxes be eschewed in principle. The modifier is necessary, because one reason for allowing some black boxes to enter explanation is explanatory parsimony (Hedström and Swedberg 1998:12; also see Coleman, 1990: 16).[5] Economists and strategic management scholars perform somewhat related explanatory operations when they construct firm-level arguments. This type of shorthand can be permitted, as long as it is understood that it is nothing more than pragmatic shorthand. The problem in contemporary strategic management is that it is much too often forgotten that, for example, talk of *firm-level* capabilities is precisely that - explanatory shorthand for underlying individual-level action and interaction . Or, even more worrying, capabilities and similar constructs imply a break with the methodological individualism that we see as fundamentally aligned with a mechanism-based approach to explanation and an endorsement of methodological collectivism that is at variance with a focus on causal and social mechanisms in explanation.

A General Model of Social Science Explanation

To clarify and put notions such as methodological individualism and collectivism or "individual-level" and "collective level explanation," into a broader and consistent perspective, consider Figure 2 which

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methodological individualism, but admit a role for collective concepts in explanation as in Agassi (1960).

[5] For example, under competitive conditions, decision-makers in firms only have a very limited feasible behavioural repertoire. If they do not choose an element of this set, they will not survive. Thus, a structure (i.e., competitive conditions) can substitute in an explanatory sense for a much more complicated explanation involving individual action and interaction (for a related approach, see Satz and Ferejohn 1994).

builds on the insightful conceptual model of the sociologist James Coleman (1990; also see Coleman, 1986). Coleman's conceptual model to our knowledge is the best and most concise effort to capture meta-theoretical matters and problems relating to micro-macro relations, and levels more generally, and thus provides an apt unifying tool for our purposes (cf. Abell, 2003). The framework provides the general overall organizing focal point for much of our discussion, and will be briefly explicated.

Insert Figure 2 about here

The figure begins from a distinction between the macro-level and the micro-level. For example, the macro-level may be the organizational level while the micro-level is the level of individuals. (Higher levels, such as networks, could perhaps also be discussed in conjunction with this framework, though for our purposes we focus on the individual as the micro-level and the organization as the macro-level). As shown, there are links between macro-macro (arrow 4) and macro-micro (arrow 1 and 5), micro-micro (arrow 2), and micro-macro (arrow 3). The figure also makes a distinction, between what is to be explained (i.e., the *explanandum*, or, dependent variable) and that with which explanation takes place (the *explanans*, or, independent variables), as indicated by the direction of the arrows. Ultimately, the aim is to be able to explain some macro-level phenomenon (placed at the top-right corner). In order to do so, the analyst must make use of theoretical mechanisms implied by the arrows. For example, he can use explanans that involve arrows 1, 2 and 3, which would be the choice of the rational choice social scientist. Or, he can make use of arrow 4 or 5, which would be the choice of the structural-functionalist sociologist.[6]

Coleman's model implicitly builds on the mechanism-oriented approach to social science explanation that we have very briefly discussed (and will further explicate below). The arrows in Figure 2 are boxes that, as it were, may be filled out with theoretical mechanisms that the analyst chooses. To put some brief explanatory meat on the bare bones of this framework, consider using the Coleman framework to analyze the effects on the use of a certain resource to an increase in the price of that resource. This type of analysis could begin with arrow 1, that is, from the impact that the economy-wide price of the relevant resource

[6] We should note that arrow 5 is not in the Coleman (1990) formulation of the diagram. It was suggested to us by Peter Abell. Arrow 5 allows for the *direct* influence of social structures on actions postulated in more extreme streams of sociology, such as structural functionalism. In these streams choice is not seen as an outcome of deliberation relative to constraints (i.e., arrow 2). Thus, arrow 1 and 2 cannot fully capture such approaches to social theory.

has on the decision situations of individual agents. The rise in price affects the economic conditions that decision makers face, and this gives rise to various adaptations, notably, less will be used of the now more expensive resource, by the individual (arrow 2), as well as on the (collective) level of the economy (arrow 3). However, whether the decision-makers react in a maximizing or a bounded rational manner is not something the framework is explicit about. And whether the adjustments that result in less of the input takes place through smooth rational processes of adaptation or through selection processes (i.e., those firms that do not use less of the now more expensive resource becomes less profitable and eventually are weeded out) is not something the framework says anything about either. Thus, the framework in itself produces few restrictions on the particular mechanisms that the analyst can choose.

However, we argue that *one* crucial restriction can immediately be placed on the framework. Specifically, while the framework does indeed feature an arrow 4, that is, a mechanism or set of mechanisms that are solely located at the collective macro level, and makes no contact whatsoever with the level of individual action; this is included purely for illustrative purposes (i.e., for illustrating the explanatory approach of collectivist streams in social science). While we have no problems with placing the *explanandum* on the collective level, we reject the attempt to place *all* of the *explanans* on that level. The reason for this is that there are *no* conceivable mechanisms on the social domain that operate solely on the collective level. There simply are no mysterious macro-level entities directly producing macro-level outcomes. While this is how we may reason for purposes of shorthand (e.g., "aggregate investments drove much of last quarter's growth in GNP", "industry conditions determined the strategy of this strategic group" etc.), macro conditions (i.e., the top-left corner) only impact on macro outcomes (the top-right corner) indirectly, namely through mechanisms 1,2 and 3 (we suppress arrow 5 for the moment). The implication is that if an *explanandum* in the social science context is placed on the macro-level (top-right corner), explaining it means choosing explanans that make use of one of these three sets of arrows (and their underlying mechanisms): [3], [2,3] or [1,2,3]. This is, however, an implication that is not reflected in much sociological work, and, unfortunately, also much work in management.

Examples: Collectivism in Management Research

Much social science research, including research in strategic management and organizational analysis, has however, rather unfortunately, operated on this level (that is, at the macro-macro, or arrow 4 level), with previous "social facts" determining future social facts. These social facts have taken on various labels — culture, structure, environment, institutions, and so forth — and are generally highlighted as the key independent variables strongly determining overall collective (and individual) outcomes (e.g., behaviour

and learning). Much of sociology indeed explicitly builds on models which operate only at the social fact and collective level (cf. Boudon, 2004).[7] For example, institutional theory heavily emphasizes the role of exogenous, taken-for-granted institutions in determining organizational structure (Meyer and Rowan, 1977). The causal modelling explicitly focuses only on arrow 4-type explanations; thus, collective myths (in the form of, for example, *pre*-existing structures) are adopted given the need to establish legitimacy, in short, social facts determine social facts. Or, to put it differently, overwhelming environmental uncertainly leads organizations to imitate structures and strategies of others and to take on the form of their immediate environment (DiMaggio and Powell, 1983).

Another example of macro-macro type explanations is much of the capabilities approach in strategic management (Kogut and Zander, 1992; Teece, Pisano and Shuen, 1997), and more specifically the work originating in organizational routines (Nelson and Winter, 1982; cf Felin and Foss, 2006). This literature asserts that performance differences between firms are driven by efficiency differences that may somehow be ascribed to collective constructs, such as routines, capabilities, competencies, and the like (also see Henderson and Cockburn, 1994). In all of this, virtually no reference is made to individual action and interaction (as noted by Felin and Hesterly, 2006, in fact, individual essentially are assumed to be homogeneous and randomly distributed). In fact, while Nelson and Winter (1982: 72) make a *metaphorical* link between individual skills and organizational routines, this analysis explicitly remains at the level of a metaphor, and more generally dismisses with individual-level explanation. Nelson and Winter of course recognize that they are making strong abstractions in emphasizing the collective level (over the individual), and even highlight that they are not completely happy with the choice (1982: 83), but nonetheless in its present form capabilities remain defined as collective-level constructs, independent of individuals (Zollo and Winter, 2002).

More generally, there are two sets of theoretical mechanisms linking individuals, capabilities and firm-level outcomes that are unaccounted for in the capabilities approach as presently conceptualized (see Figure 3).

Insert Figure 3 about here

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[7] Even much of mainstream economics is not always immune from methodological collectivism. As Austrian school economists have argued for years (e.g., Lachmann 1973), much of macroeconomics was, and to some extent still is, methodologically collectivist.

As indicated by the Figure, neither the mechanisms linking individual actions to capabilities, nor the mechanisms linking capabilities to organizational-level outcomes have been satisfactorily identified. The former mechanism concerns how capabilities originate from individual actions and interaction (cf. Felin and Foss, 2005). We are not aware of a single contribution to strategic management or organizational theory that convincingly shows how organization-level capabilities may emerge from individual actions and interaction. A similar problem arises in connection with the link from capabilities to organization-level outcomes, such as competitive advantage. Superior routines or capabilities or dynamic capabilities are somehow postulated to be the direct cause of such outcomes. Such notions are labels for sequences of individual actions that are postulated to fit into patterns that are organization-specific and repetitive (Dosi et al. 1999). However, all the emphasis is on the postulated pattern rather than on why individual actions taken together should produce patterns (and continue to produce and reproduce such patterns). To understand this would require that analysis began from considering the individual, for example, looking at what it is that incentivizes or motivates individuals to take those actions that are consistent with routinized behaviour. However, this issue is deliberately suppressed by Nelson and Winter (they simply assume that routines represent truces – 1982: 107), and by subsequent writers in the capabilities view. Effectively, individual action is blackboxed in these approaches.

If pressed on the issue of the missing individual, these kinds of approaches will often formally recognize that individuals of course are present. However, the response effectively takes place by introducing a fifth explanatory mechanism, pictured as arrow 5 in Figure 2. This goes *directly* from collective structures, institutions, etc. to individual behaviour.[8] Thus, individuals are formally recognized but they are portrayed as mere "actors" that embody the role that is dictated by the collective-level environment (as in structural-functionalism). From a methodological individualist perspective, this does not amount to building satisfactory micro-foundations, as any individual-level considerations are superseded by such factors as culture, and environment, routines, capabilities, etc. That is, while individuals and managers certainly do get mentioned in the theoretical development, nevertheless the assumption is that heterogeneity in collective context, environment, and situation drives organizational-level, as well as, individual-level outcomes (if indeed the latter mechanism is considered at all).

In short, in collectivist approaches, micro-foundations are missing, as questions such as, *where* structure

[8] While the methodological individualist does not deny that institutions (e.g., the law, incentive systems, etc.) influence human actions, he will balk at the way in which the mechanism implied by arrow 5 portrays actors as puppets that are somehow being directly manipulated by overall societal forces, and will insist on the higher degree of voluntarism implied by the use of mechanisms contained in arrows 1 and 2 (i.e., institutions matter to individual action because they influence various individual conditions, but they do not directly cause action).

originates from in the first place (arrow 3, Figure 2/3), *why* certain collective structures are adopted, and *what* are the underlying individual-level considerations (arrows 2 and 3), remain unanswered in theorizing that solely remains at the collective-level. Institutional theories are an apt example of arrow 1, 4 and perhaps 5-type explanations, and they have also increasingly been utilized in strategic management research (e.g., Lounsbury and Glynn, 2001; Oliver, 1997), they are nonetheless only one example of this type of explanation.

While we are admittedly painting with a quite broad brush, more generally *behavioural* models also place similar, strong causal, emphasis on various higher-level facts (generally, "the environment") determining lower-level individual behaviour (for quite explicit links between sociological and behavioural theories see e.g., Homans, 1974 or Hummell and Opp, 1968). The key independent variables and causal factors of behavioural models include "the environment," various external stimuli, or more generally cultural arguments. For example, in Cyert and March's classic *Behavioral Theory of the Firm*, significant emphasis is given to the environment as the determining factor of organizational (and implicitly individual) behaviour (also see Bromiley, 2005), and further behavioural antecedents are found in Simon's work, which argues that most individual and organizational behavior can be traced to some kind of "environmental stimulus" (March and Simon, 1958: 139). March and Simon (1958: 141-142) further place emphasis not only on environmental stimuli, but also on situations and associated programmatic and routine behaviour in organizations. However, the older behavioralist school (i.e., March and Simon, Cyert and March) emphasizes the starting point of the individual (thus giving considerations to arrows 1, 2 though perhaps not 3), even if this was an individual strongly influenced by environmental stimuli. We are concerned that this emphasis has vanished almost entirely in more recent work, as more recent behavioural approaches seem to have moved much more toward a strong environmental (and related cultural) argument (Greve, 2003).

More generally our arguments in terms of the Coleman diagram and its applications both to strategic management specifically, and organizational analysis more generally are captured in Table 1. Table 1 is simply a summary of our arguments, and we will use it as a further organizing tool for this section, though will not refer to it subsequently.

Insert Table 1 about here

To further digest and summarize some of the above discussion - theories of organization that give strong

emphasis to arrows 1, 4 and 5 generally do not give *causal* consideration to lower levels, in fact even completely disregarding them, as lower levels inherently are determined by higher level causes. An apt way to summarize the theoretical emphasis in arrow 1-type explanation is the notion of "organizations as strong situations" (Davis-Blake and Pfeffer, 1989; also see Pfeffer, 1997). Thus, contextual and environmental factors receive significant emphasis as the predominent theoretical engines. The general questions of interest focus on determining what these contextual factors are and how they cause individual behavior. Cultural arguments most obviously are emphasized in this type of analysis. Arrow 1, 4 and 5 type explanations are so pervasive in both strategic management and organizational analysis that any questioning of their validity may seem suspect to most scholars, but we will nonetheless argue that emphasis in these areas is misplaced as micro-level explanations inherently are more theoretically sound. Or, to make the preceding sentence less controversial, it seems that arrow 3-type, micro-foundational explanation has been neglected relative to macro-foundational work. While we have emphasized research in organizational analysis, which gives emphasis to arrow 1, 4 and 5 type explanations, strategic management similarly makes strong assumptions about the need to place emphasis on explanation at these, higher levels. For example, organizational culture is one explanatory variable often cited in the resource based view as a key source of competitive advantage (e.g., Barney, 1986). More generally, Henderson and Cockburn (1994), in an article which has been highlighted as one of *the key* (both theoretical *and* empirical) works in the resource-based view (Barney, 2001; for further discussion see Felin and Hesterly, 2006), explicit emphasis is placed on various organizational factors as the determinants of individual-level outcomes (that is, arrow 1-type explanation). Much of the literature on organizational capabilities also places heavy emphasis higher levels such as networks and alliances as the key determinants capabilities and outcomes (Dyer and Singh, 1998). Thus, in strategic management there is similarly a strong emphasis on arrow 4 and 5 type explanations.

Finally, knowledge, capabilities, and associated resource-based arguments have also placed some emphasis on arrow 2-type explanations. Arrow 2 explanations focus on individual interaction and associated outcomes. For example, March (1991) in his classic simulation of organizational learning focuses on interaction and socialization as the key determinant to individual and consequently organizational learning. While interaction and socialization certainly seem like plausible theoretical mechanisms, how and why exactly interaction or socialization causes learning remains unaddressed.

Some Reasons Why Micro-foundations Are Critical

The above discussion and present arguments in strategic management and organization theory raise more general methodological questions about where analysis should start. Our discussion thus far certainly has

tipped our hand in terms of the type of explanation that we advocate, though a more formal discussion we believe is instructive. Coleman (1990: 1-23), in similar fashion, in a meta-theoretical discussion asks whether social science explanation should start with collective and external, and individual-level and internal explanations. Insights may perhaps be drawn from both perspectives, but given the need for theoretical parsimony, and as a first approximation, which approach is more persuasive and theoretically (and methodologically) sound. Coleman gives three reasons why individual-level, internal explanation is theoretically more robust, and we further extend these insights into strategic management and organization theory. That is, using the Coleman framework as a tool, we highlight why micro-level explanation improves on collective-level explanation. We discuss three reasons and explicate them further below. First, observations, and quite importantly, interventions, are more naturally made at lower, individual levels (rather than higher levels, if at all possible). This argument implicitly appeals to the kind of mechanism-based oriented explanation that we alluded to earlier (and will discuss further below) and more generally provides for a more practical and humanistic approach to theorizing given the more ready prescriptions (cf. Hedstrom and Swedberg, 1998). Second, collective level explanations leave theories open for alternative explanations. That is, individual-level factors may precede collective facts which may subsequently be presupposed by theorists, which however inherently mis-specifies collective models. Third and finally, individual-level explanations are more stable as organizations inherently are resultant of the actions of component parts, that is, individuals. We will briefly discuss each of the above reasons in turn below.

Observation and Interventions Made at Lower Level

The question of intervention provides an interesting challenge to collective level theories, how specifically would an organization for example develop a capability (or more generally change)? Scholars have recently in fact posed this question, and again the theory inevitably relies on individual-level factors, but in so doing creates a data-theory disconnect as the theory remains at the collective level, but underlying observations and potential interventions at the individual level. For example, Song et al (2003) argue and show that capabilities can be developed by hiring particular individuals from other organizational settings, thus questioning the "collective status" of capabilities in the first place. More loosely, if we were to observe any organization, we inherently would be observing specific individuals, rather than the whole of the organization in any meaningful way. This of course gets lost in the broad general use of aggregate and organizational-level language and empirical data showing various financial and strategic actions of firms over time, but explicating the underlying abilities and motivations of the individuals seem critical to truly explaining collective-level outcomes. To use Coleman's (1990: 3)

language:

> An explanation based on *internal analysis* [individual and micro-foundations] of system [organization] behaviour in terms of action and orientations of lower-level units is likely to be more stable and general than explanation which remains at the system level. Since the system's behaviour is in fact *resultant* of the actions of its component parts, knowledge of how the actions of these parts combine to produce systematic behaviour can be expected to give greater predictability than will statistical relations of surface characteristics of the system"

Obviously, this is not to say that aggregate data cannot be used, but when making strong theoretical statements based on "reduced form" correlations at these high levels of aggregations, strategic management scholars should be aware of the nested individual action and interaction that generally gets lost in the process. The available data in effect begins to drive the theoretical development, rather than the other way around, and more importantly, as argued by Coleman, more robust theories of collectivise are developed by starting at the lower level.

More generally, the matter of intervention provides a rather stringent, further litmus test for matters such as organizational change. Hypothetically, if we wanted to radically (to use an extreme case to highlight) intervene in an organizational setting to change it (whether strategy or structure, and associated performance outcomes), it would seem logical that the most radical forms of change would involve changes in the underlying individuals who make up the organization. Management practice of course seems to verify the logical intuition behind the link between the need to focus on individuals in organizational intervention, for example, in cases of top management team turnover and more generally in matters such as hiring and retention. Interventions thus, while perhaps generally applicable to the organization as a whole, in effect are as good as, and effective as, the underlying response at the lower, individual level. This "other side" of capabilities, perhaps even the 'soft underbelly' of capabilities (given the lack of work in this domain), seems largely unexplored as emphasis remains at organization-level practices (cf. Henderson & Cockburn, 1994) rather than their individual-level origins and the underlying characteristics and choices of the individuals responding to potential higher level organizational practices.

Alternative Explanations

In offering only a *collective* level approach of organizational capabilities, many alternative explanations from lower levels are quite readily apparent. The capabilities literature in fact has recently begun to note this problem, as scholars point to the capabilities themselves being rooted in specific individuals, rather than the organization (e.g., Lacetera et al., 2004; Song et al., 2003). That is, another apt litmus test in fact

is whether the mobility of particular individuals (Felin and Hesterly, 2006) leads to the respective knowledge decay or building. Early contributions to the organizational capabilities literature in passing even note that individual-level alternative explanations are quite readily apparent (Henderson and Cockburn 1994: 79-80), though subsequent theorizing and empirical work has taken a quite strong collective stance. The one specific mechanism that these ideas suggest is that ”more capable” individuals may create and self-select into particular organizational settings (cf. Stern, 2004), and thus as collective work generally does not (or is not able to) control for individual-level *a priori* factors. Specifically, the underlying assumption is that individuals are randomly distributed (and thus can essentially be treated as homogeneous) into organizational settings thus warranting the emphasis on heterogeneous collective practices. Thus, in terms of our Figures, emphasis remains on the mechanisms in arrow 1, 4 and 5 type, though underlying micro-foundations as to the origins of practices remain unexplored. Put in light of Figure 2, focusing on arrow 2 and 3-type explanations may provide underlying micro-foundations for explaining the origin and development of organizational capabilities, for example, by addressing such important questions as: Who is attracted to a particular organizational setting and why, what characteristics and abilities do they bring to the setting?[9]

Organizations and Strategies Resultant of Individuals

A final point, closely related to the above, supporting the need for individual-level theories and micro-foundations is the fact that any collective structure is fundamentally resultant of individual-level actions and composition. That is, we logically cannot conceive of “organization” without the individuals that make it up. This upward relationship thus suggests that some emphasis should be placed on factors related to processes of “organizing,” that is who and why certain individual organize (cf. Olson, 1971). Despite well-known warnings of problems associated with anthropomorphizing, there is still quite a bit of action and behaviour attributed to the organization itself, rather than the individuals, which comprise the collective.

. Many behavioural models of organization theory and strategic management ascribe overwhelming importance to the environment, particularly in more recent formulations (e.g., Bromiley, 2005; Greve, 2003). While we do not want to rule out the kind of mechanisms indicated by arrow 1 in Figure 2, we stress that strategic management inherently is interested in purposeful action on the part of managers, and

[9] This brings self-selection into the picture (cf. Felin and Hesterly 2005). An explanation of organizational heterogeneity in terms of self-selection may abstract completely from interaction among individuals and the possibly “emergent” effects thereof. In this explanation organizational capability is a genuine epiphenomenon of individual actions.

we cannot therefore from this perspective let managers be mere puppets at the mercy of aggregate "environmental" or collective forces. Similarly, in capabilities work on the theory of the firm, that has taken its inspiration from Nelson and Winter (1982), there is a strong underlying argument that routines and capabilities very strongly influence individual actions (arrow 5 in Figure 2). Unfortunately, this leaves it unclear how routines and capabilities originates and change as a result of individual action and interaction (the left hand arrow in Figure 1) (cf. Felin and Foss, 2005). Besides, while routine behaviour may perhaps dominate the organizational landscape (Nelson and Winter, 1982), it nevertheless does *not* necessarily follow that this routine behaviour is what deserves the most emphasis in theoretical work, nor does it follow that routines automatically are the key source of what differentiates firms.

More General Arguments

It is quite arguable that the capabilities approach and other collectivist currents in contemporary management thought are founded on an implicit assumption of strong individual homogeneity and malleability by heterogeneous context, situation, and surroundings (for this argument, see Felin and Hesterly, 2006). If such malleability indeed is the case (linked with the associated assumption of the random distribution of individuals), then individuals can in effect be rounded out, as they simply passively "mediate" the causal mechanisms going from collective constructs such as capabilities to collective outcomes. Individuals are not — strictly speaking — left out of the explanation; they are just not very important, and primary emphasis can be placed on the collective level. Little would be lost of the explanation if it was simply to take place in terms of the mechanisms represented by arrows 4 or 5 in figure 2 (rather than in terms of arrows, 1,2 and 3). However, arguing that individuals *a priori* are homogeneous and malleable directly conflicts with established theoretical and empirical arguments from the cognitive sciences emphasizing the role of *a priori* knowledge (Spelke et al., 1992). In short, individuals clearly bring abilities and propensities with them into organizational settings (Arrow 3 in Figure 2), which strongly influence which outcomes can be realized. Such underlying factors are marginalized by the preoccupation with the overwhelming determinance of pre-existing structure.

On the other hand, arguing that individuals are heterogeneous does not imply that the collective level is non-existent or unimportant. Rather, it suggests the importance of *explicitly linking* the individual and the collective levels, that is, in unveiling the mechanisms represented by at least arrow 3 in figure 1, and possibly also arrows 1, and 2. As indicated already, overall surprisingly little serious analytical attention has been dedicated to this task, although a few scholars have strived valiantly to establish the relevant links (e.g., Argote 1999). In the following, we outline research implications of a micro-foundations program in strategic management and organizational analysis.

Building Micro-Foundations: Implications for Research

Building Bridges Between Levels

Unfortunately, the general methodological individualist admonition that aggregate phenomena ultimately be accounted for in terms of individual action and interaction leaves open exactly what "action" and "interaction" means. The purpose of the following is to identify and discuss in some detail the set of mechanisms at various levels (including behavioural assumptions) that is relevant for building foundations for routines and capabilities. Furthermore, the discussion will show how the choice of such foundations is influenced by how capabilities are conceptualized, whether the starting point is in a *homo oeconomicus* model or a *homo sociologicus* model of behaviour, etc. Thus, we shall seek to identify possible research strategies, and identify the available conceptual toolbox.

Underlying psychological assumptions and models of human nature are absolutely fundamental to theorizing for strategic management and organizational scholars, as these assumptions provide the foundation for much of what can subsequently be said and theoretically developed (March and Simon, 1958: 9-11; also see Simon, 1985: 303). Unfortunately, these underlying assumptions often receive little attention, perhaps given the immediate need to get to the business of organization-level theorizing.

However, equally important is how to build from the individual (micro) level to the organizational (macro) level, that is, to theorize the mechanisms implied by arrow 3 in Figures 2 and 3. This has traditionally been a troublesome part of the social sciences (cf. Hayek 1937; Arrow, 1951; Coleman 1990). As already mentioned, the "bridging" becomes simple if all individuals are assumed to be essentially homogenous. Strikingly, this explanatory trick is characteristic of both (formal) economics and (functional-structuralist) sociology, though otherwise the two disciplines or theories are quite obviously completely different. To the sociologist, the assumption of homogeneity is a license to let all behaviour be influenced and formed by structures. To the economist, the assumption of homogeneity is useful because it allows him to take one agent as representative of the whole economy and treat the allocational decisions of this single agent as a representation of the aggregate allocation problem. Both procedures strongly reduce the complexity of the analytical problem of showing how individual action and interaction produces aggregate phenomena.

However, both approaches, while often utilized in organizational analysis, fundamentally trivialize the problem of understanding how organization-level phenomena, such as capabilities, originate from the actions and interactions of heterogeneous individuals (or how these capabilities are changed or maintained). While the assumption of individual homogeneity may assist the formal modelling of the

economist, it is a too strong an affront to realism for most purposes of management theory to take the behaviour of organization X to be fully represented by the actions of a "representative employee" NN. Abstracting from assumptions about individuals and how they interact gets us dangerously close to the untenable kind of collectivist explanation represented by arrow 4 in Figure 2. This reasoning results in our first implication for research:

> **Research Implication 1:** *Building micro-foundations for organizational phenomena, such as organizational capabilities (explanandum,) implies that explicit assumptions be made about both how individuals and their interaction (explanans) produces the explanandum .At a minimum the micro-foundations therefore involve identifying mechanisms that are represented by arrow 3 in Figure 2.*

Thus, the micro-foundations project would usually seem to involve two demanding undertakings: First, making assumptions about individuals (e.g., nature see Simon, 1985: 303), and second, given these assumptions, exploring the action and interaction of individuals to see if the *explanandum* can conceivably be produced as a result of this interaction. For example, the "no fat" modelling methodology of game theory (Rasmussen, 1989) prescribes making the minimal (but precise) assumptions about rationality, information, and interaction that makes it possible for the analyst to derive the *explanandum* as an endogenous outcome of rational actions in equilibrium. Theorizing arrow 3 may be highly complicated. Or it may be conceptually simpler particularly when the *explanandum* is an outcome of willed, rational design. For example, the existence of organizational incentive system may be explainable in terms of a CEO or top management team designing and implementing the system. However, even the best designed system is almost bound to produce unforeseen effects at the organizational level. Whether these are effective to the organization also depends on the information, rationality and motivation of the CEO, and of course, the underlying abilities and motivation (perhaps intrinsic) of the employees themselves. At any rate, individual and organizational levels remain connected. A critical matter in building bridges between levels (above discussion), is the mode of theoretical explanation utilized, which we discuss next.

Mode of Explanation

As a general matter, theory formation, and the formulation of strategies for theory formation, is strongly influenced by the mode of explanation that is dominant in a given scientific field (Elster 1983: 16-17). A classic distinction is between intentional (i.e., explaining a phenomenon solely in terms of the intentional actions of individuals, i.e., design); functional (explaining a phenomenon in terms of the benefits that the

phenomenon (e.g., a social institution) brings to the group where the phenomenon is present), and causal explanation (i.e., explaining in terms of cause and effect) (Elster 1983). Some types of explanation in social science mix these three; for example, an invisible hand explanation (Ullman-Margalitt 1978) mixes intentional and causal explanation, and an evolutionary explanation may include these two as well, in addition to elements of functional explanation.[10]

Which mode of explanation does the organizational capabilities view apply (or imply)? To the extent that explanation by means of this approach proceeds solely on the macro level (arrow 4), some kind of causal explanation would seem to be the mode that is applied (i.e., capabilities directly cause, e.g., superior, firm-level performance). However, it is possible to give a somewhat different account of explanation within the capabilities approach, one that harmonizes with the heavy sociology content in this approach. In this account, the capabilities approach is heavily functionalist. Thus, capabilities and routines exist within specific firms because of their beneficial effects for these firms; however, the specific linkages between those capabilities/routines and their effects are not understood or at least not well understood by agents. As a huge literature on scientific explanation has clarified, functional explanation is highly questionable, because the feedback links between the effects of an aggregate entity (e.g., a routine) and the entity itself are seldom if ever specified. Such links, to the extent that they can be identified, must exist on the micro-level, that is, involve arrows 1, 2 and 3 in figure 3 — which leads back to the issue of individual action and interaction. This reasoning suggests the point – inherent in our emphasis on mechanisms — that there is a strong causal dimension to the micro-foundations project: Building from individual actions to organizational outcomes involves causal links that should be specified and theorized.

> **Research Implication 2:** *Building micro-foundations for organizational capabilities must generally avoid functionalist explanation, but (in line with the emphasis on mechanisms) must make use of causal explanation.*

Fundamental Choices in Theory-Building: Making Assumptions About Human Agency

As a general matter, micro-foundations in management can take many different forms. We agree that it is possible to build a kind of micro-foundations from a sociological and/or behavioural starting point (e.g.,

[10] Taken as a whole, management studies have traditionally made use of all three modes of explanation. However, typically those parts of management studies that are heavily influenced by economics (e.g., strategic management, corporate governance, organizational design) have made heavy use of intentional explanation while those parts (e.g., work on organizational culture, population ecology, the new institutionalism in organizational analysis) that are more heavily influenced by sociology and anthropology make more use of functional explanation.

Gavetti 2005) just as a rational choice approach, more akin to economics, is also possible as micro-foundation (and we shall advocate this later). However, there are wide-ranging implications of theoretical choices made on this level (cf. Simon 1985). They influence how organization-level phenomena can be conceptualized and explained.

On a very basic level, there is a crucial choice to be made between a *homo oeconomicus* or a *homo sociologicus* model of behaviour.[11] The choice that is made at this level conditions to a large extent what is further assumed about the rationality, information and foresight of the agent or actors. Thus, if the choice is the *homo oeconomicus* model (and standard economic modelling methodology), assumptions are typically made that agents possess very considerable foresight (sometimes even perfect foresight) and can make perfectly rational decisions, no matter the informational circumstances. All versions of the paradigmatic expected utility model make such assumptions. *Homo sociologicus* is, in contrast, stuck with roles and norms that directly shape behaviour (i.e., Arrow 5 in Figure 1). As many have observed, the demands placed on the actor are much smaller than those placed on its related, though extremely distant, theoretical cousin, *homo sociologicus.*

The chosen model of behaviour is also closely connected to the applied mode of explanation. That is, if agents are equipped with a high degree of foresight and information asymmetries are insignificant, it is hard to make room for unintended consequences; this effectively eliminates functional explanation, invisible hand explanation and also evolutionary explanations. This connects to how phenomena on the organizational level are conceptualized. Strongly "rational" behavioural models (e.g., the maximization model of the economist) often suggests that organization-level phenomena are consciously and rationally designed (e.g., Milgrom and Roberts 1992). Thus, the mechanism is pure intentional design. Behavorial work, in contrast, will typically emphasize the "emergent" or partly "hidden" nature of organization-level phenomena, such as routines or capabilities (Nelson and Winter, 1982; Dosi et al., 1999). The mode of explanation employed by such work will typically be functionalist; that is, the existence of routines, capabilities, culture, etc. in an organization. is "explained" in terms of its beneficial consequences for the organization, but there is no attempt to identify the mechanisms that show how these routines, etc. are produced and reproduced by individuals.

However, it is possible to assert that individuals act in a rational manner, yet organization-level phenomena are not necessarily designed, but "spontaneously emerge" (Hayek, 1973; Schotter, 1981;

[11] Admittedly, this is a stark contrast, which neglects that there are intermediate positions (e.g., Lindenberg 1988 and Boudon 1998b). The discussion is also somewhat hampered by the fact that there is no *homo sociologicus* model on the same level of elaboration and sophistication as the *homo oeconomicus* model.

Sugden, 1986). They are "the results of human action, but not of human design" (Hayek, 1973) and their explanation takes place in terms of "invisible hand explanation" (Ullman-Margalitt, 1978; for a list of examples of invisible hand explanations, see Nozick, 1974: 20-21). Invisible hand explanations may take a number of forms, but common to them is that they belong to the category of what Hempel (1965: 447) calls "genetic explanation," which "… present[s] the phenomenon under study as a final stage of a developmental sequence, and accordingly account for the phenomenon by describing the successive stages of that sequence." More specifically, such explanation explains the *explanandum* as the unintended (and perhaps even unforeseen, cf. Ullman-Margalitt, 1978) outcome of the interaction of many intentionally acting agents. This is a mode of explanation that has seldom been explicitly applied in management. Yet, we conjecture that this mode of explanation is one that should apply fairly broadly: Complex organizations manifest both highly intentional and rational behaviour *and* unanticipated consequences thereof.

> **Research Implication 3**: *From the perspective of building micro-foundations for organizational phenomena invisible hand explanations are attractive because they combine the intentional (level of individual) with the causal (interaction among individuals) mechanisms, and seem to capture essential characteristics of complex organizations.*

However, invisible hand explanations are consistent with a fairly broad set of assumptions with respect to behaviour. The paradigmatic use of these explanations is, of course, in economics: Overall patterns of allocation and distribution in markets emerge "as if by an invisible hand." The behavioural assumption that usually drives economics is, of course, maximizing rationality, but invisible hand explanations are fully consistent with various behavioural approaches or with approaches that make only minimal assumptions on intention and rationality (e.g., Alchian 1950). In the following section, however, we argue that the most satisfactory and fruitful behavioural assumptions can be found in rational choice theory.

A Rational Choice Program for Management? Three Pillars

By way of linking our efforts (and early prescriptions for the future) to existing streams of research, there are quite promising strains of sociological (and economics) research, which, while not pervasive in management, explicitly argue for the need for micro-foundations and the need to make the micro-macro link (e.g., Boudon, 1998a; Hedstrom and Swedberg, 1998; Olson, 1971; Schelling, 1978). This rational choice program, while in part marginalized in sociology, nonetheless of late has received some significant interest among a growing group of scholars. As the very name of the "rational choice" research program

suggests, the two key pillars of this approach emphasize first, rationality on the part of individuals, and second, choice. A third fundamental pillar is that of "causal mechanisms," which we also discuss (building on earlier discussions). We highlight the implications of each of these three pillars, specifically emphasizing some very promising theoretical work which we believe can provide the foundations for further theory development by scholars in strategic management and organization theory. We explicate these three key pillars of the rational choice program as, to our knowledge, this research program has not (at least in any meaningful or direct way) entered our conversations in management, despite its promise to solve many of the problems we have highlighted in this article.

Rationality. The emphasis in extant behavioural approaches again is on the determinacy of various external factors, and the past, on learning and decision-making (or, arrow 1 and 4-type explanations - e.g., Levitt and March, 1988), while the rationality assumption rather focuses on individuals as actors capable of reason, predictions, and common sense. While there has been a remarkably programmatic effort in behavioural and sociological approaches to denigrate any forethought or reason on the part of actors (see Rosenberg, 1995 for an excellent overview), even going as far back as Comte, nonetheless more recent research suggests that individuals in fact are quite "smart" and rational in how they approach and learn in unpredictable environments (Gigerenzer et al., 1999). That is, the present theoretical emphasis on poor judgements on the part of individuals (e.g., biases), which in fact has coloured much of our research even in strategic management, has been challenged by scholars who find that individuals are rational given the information that is available in various decision-making situations. In fact, a stunning conclusion might be that biases and errors are simply made by scholars (in their theorizing), and not the subjects they study (see Stanovich and West, 2000 for an excellent discussion). This new-found rationality has important implications for organizational research, as our models still strongly emphasize "boundedness," rather than rationality. Extant organizational work emphasizes legitimacy and imitation, while more rational approaches suggest that individuals are quite deliberate and purposeful in their actions. While notions of deliberateness have recently been alluded to in the literature on organizational capabilities (Zollo and Winter, 2002), significantly more work is needed in truly anchoring these arguments into robust theoretical work in disciplines such as psychology and cognitive science, and more generally, we believe that much of the collectivist (and perhaps behavioural) baggage is best discarded as the present efforts to continuously amend the overall theoretical approaches are doomed to fail and result in an incoherent patchwork of ad-hoc explanations.

Choice. The second key pillar of a rational choice research program is choice. There is very little choosing on the part of managers in extant theories, given the programmatic and routine behaviour

emphasized presently. Choice suggests an overall logic of intentionality, which is lacking in behavioural arguments. Furthermore, choice-based models and associated invisible-hand explanations have provided quite powerful micro-macro links in some quarters of social science (e.g., Schelling, 1978). The question of choice in fact suggests that we in effect begin our analysis with the ”lone” individualand from there build a theoretical model by first specifying our assumptions about individuals by highlighting their interests, capabilities and goals, (rather than ascribing them to the organization) and then further explicate the underlying mechanisms of the organizing process (Olson, 1971). [12] In fact, the process of self-selection, rather than the presently assumed random distribution of individuals (Henderson and Cockburn, 1994), we think provides a very powerful micro-macro link or social mechanism, which deserves significantly more emphasis. Scott Stern in fact recently, while not theoretically anchoring his arguments in the language of ”micro-foundations,” nonetheless points to the powerful role of individuals deciding, choosing and creating environments (also see Zenger, 1994). By way of further examples of promising theoretical work for management scholars to build on, the work of Olson (1971) and Brennan and Buchanan (1985) begins with the very approach suggested in this chapter, though at different levels of analysis, but nonetheless providing broad guidance for the type of approach advocated in this chapter.

The choice aspect of the research program we are advocating here furthermore is also grounded in a “humanistically congenial image of man” (Coleman, 1990: 4). That is, rather than impute causation to external and collective factors such as the environment, situation, or organization; the emphasis is placed on individual-level factors and choices. This emphasis on choice comes in stark contrast to many who are calling for further institutional (e.g., Oliver, 1997) and behavioural (Bromiley, 2005) foundations for strategic management. That is, we call for a radically different rational choice approach, which emphasizes internal, individual-level factors, or, micro-foundations. This more internal approach we believe also is more congenial with the general mandate of strategic management to focus on managerial action and choices, even prescriptions, rather than highlighting the inevitable forces which may impose on a manager or firm. While various external ”inevitabilities” may, and certainly do exist, it would seem that the key *differentiating* factors lie in internal, individual-level factors. The focus from a choice-type

[12] Coleman relatedly makes the following point (noting the ‘errors’ and trade-offs that are made in theorizing): “In this paper, I will proceed in precisely the opposite fashion to that taken by the advocates of homo sociologicus. I will make an opposite error, but one which may prove more fruitful. I want to begin the development of a theory of collective decisions, and in so doing I will start with an image of man as wholly free: unsocialized, entirely self-interested, not constrained by norms of a system, but only rationally calculating to further his own interest. This is much the image of man held by economists, and with it the economists have answered one part of Hobbes’s question: how is it that although the men who make it up are wholly self-interested, the economic system can operate with one man’s actions benefiting others. It was the genius of Adam Smith to pose an answer to this part of Hobbes’s question. (Coleman, 1964: 167)

perspective then highlights rational reason, rather than, the devil made me do it"/external-type explanations.

Causal Mechanisms. Various definitions of causal or social mechanisms have been offered in the social sciences (see Hedstrom and Swedberg, 1998; Mahoney, 2003 for an overview), though the central gist of this work has been to call for explicit links between micro and macro levels. While there are some fine-grained differences between definitions, they all call for explanatory and causal understanding (rather than citing correlations) regarding how specifically individual actions, choices, and interactions aggregate to the collective level (Elster, 1989), and as a *secondary* exercise, how the macro-levels subsequently interrelate back to micro-levels (though without deteriorating into 'Giddensian' notions of mutual instantiation). While social science in general, management included, has done an admirable job with the latter, relating macro-levels to the micro, the work calling for causal mechanisms emphasizes the critical need to *first* explain the origin of macro-structures as the result of individual actions, rather than take them for granted. In short, the hard theoretical work is left undone, as management theories simply assume the existence of the very structures they seek to explain.

Overall, based on our brief outline of key three pillars of a rational choice program, we suggest the following research implication.

> **Research Implication 4:** *A rational choice research program focusing on rationality, choice, and causal mechanisms provides the foundations for superior theoretical explanation in management theory.*

Overall, a rational choice program is quite attractive as "rational action is its own explanation" (Hollis, 1977), while collective and behavioural explanations remain unsatisfactory as they point to black boxes,which themselves require immediate further explanation. That is, behavioural and collective approaches leave one quite unsatisfied as to the underlying causes of actions (Boudon, 1998a,b). The broad strokes and methodological and theoretical outlines we have highlighted above we believe will provide management scholars the early basics for building similar models for management theory.

Practical Advice for Scholars –

Four Important Questions in Linking Micro and Macro Before concluding we delineate practical advice and prescriptions for scholars by way of highlighting four important questions that we hope will help scholars think about how they link micro and macro in their own research. While the questions in part summarize some of the arguments delineated above, we hope their brief explication here

will provide a practical and succinct tool for scholars to use in their own work. These questions are meant as a practical litmus test for scholars to think about their underlying assumptions, and more generally, in hopes of helping scholars in their theory-building, and also to push scholars to build toward a rational choice program for management.

What Are Your Assumptions About Human Nature? An important question that rarely gets attention is the underlying assumptions made by scholars regarding human nature. As noted by Simon, "nothing is more fundamental in setting our research agenda and informing our research methods than our view of the nature of the human beings whose behavior we are studying" (1985: 303). Answering this question gets at the core of thinking about links between micro and macro, as theory which begins at the macro level simply assumes that individuals in effect are passive receptacles of the broader cultural environment, without underlying consideration for matters of choice and rationality on the part of individuals. Furthermore, questions of the disposition of individuals, for example, salient characteristics such as personality, also should receive consideration. For organization theorists, and strategists for that matter, this requires a familiarity (even expertise) with individual-level theories. Given the implied division of labor among management scholars, rarely are scholars proficient at both individual and collective-level theories, while the question of human nature cuts at the very relationship between micro and macro, and should therefore be carefully thought about in any research project.

How Does Something Become a Collective Property? A bulk of collective-level theorizing happens at the level of metaphor or analogy. For example, Nelson and Winter's notion of organizational routine is developed via metaphor from individual skill. However, the question of truly collective-level properties rarely (if ever) gets answered beyond discussing analogies between individual-level characteristics (e.g., identity, memory, learning) and the collective level, and over time a rather subtle process creeps in where collective constructs originally established via metaphor become taken for granted *organizational*-level *facts* (e.g., routines). While making links with metaphor, or citing emergence, undoubtedly serves a temporary purpose, we believe that truly digging into the constructs, beyond analogy, is required. This should take the form of explaining at what point, and why, we can truly talk about a *collective* capabilities *sans* individuals. The question of something becoming a collective-level property, even in the best levels-literature still remains a mystery (Dansereau et al., 1999: 349), as 'emergence' or 'synergy' are still frequently cited without more careful delineation of how and why something might emerge from lower levels. Furthermore, it is rarely recognized that it is equally likely that something *less*, rather than something *more* (the latter is generally always assumed), might emerge from individuals interacting.

What are the Origins of Collective-Level Variables? A closely, related, though still separate question is the origin of collective-level variables. To use the example of capabilities, presently there is a strong focus on collective-level origins, specifically such variables as the past, interaction, and experience serving as key independent variables (cf. Levitt and March, 1988). But, as we have argued throughout this paper, all collective level constructs must have individual-level origins. Digging into the past here may provide one way to understand origins, for example, Arrow (1974) highlights how the 'organizational code' may be a function of the founders of the organization. The matter of origins then requires more careful consideration of what individuals *a priori*, that before joining, the organization bring to the table. Matters such as individual self-selection would seem important as providing individual-level origins for (perhaps invisible hand) collective outcomes.

How Does Change Occur? The question of change in organizations provides a final question which we believe will help scholars to link micro and macro. While 'change' clearly may not be the explicit focus of a research project, nevertheless most papers implicitly weigh in on how individuals and organizations may or may not be able to change in a given environment. While there is a rather heavy emphasis on the external or the environment in inducing change (cf. Greve, 2003), it would seem that the key *differentiating* factors lie at lower levels. Put differently, while an external shock or discontinuity certainly may lead to organizations changing, how and what their responses are cannot meaningfully be ascribed to the change-inducing stimulus itself, but rather, the origins of change must lie in the choice and efforts that individuals and organizations make. Thus, asking the question of how change occurs crystallizes underlying assumptions and we believe will help scholars to more rigorously think about their research.

The purpose of the above questions is to provide broad guidelines for scholars to think about the underlying assumptions that their theories make, specifically with an eye toward making links between micro and macro levels. The above questions certainly do not exhaust the full spectrum of the types of considerations that are made in any research project, but at least begin the process of pushing scholars toward directions articulated in this paper.

Conclusion

With the broad outlines we have provided we hope to counteract what we suggest is partly a disappearing mandate for strategy and organizational analysis. What we mean by this is that the possibility of strategic action (and thus management) is either *suppressed* by a heavy emphasis on environmental determinism – in other words, that various external factors come to play the role as the key independent variables determining individual and organizational behaviour – or obscured by an emphasis on firm-level constructs, notably capabilities, that effectively obscure individual action. We argue that a rational choice program may mitigate against this trend. Specifically, it would seem critical to management scholars to understand and be able to impute actions to individuals, rather than collective variables. We have more generally outlined (using Coleman's model) the present emphasis on macro-level concepts in organizational analysis, but suggest the individual-level micro-foundations are needed in order to explain their emergence, existence, persistence, and change.

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Figure 1: Explanatory Black Boxes in the Capabilities Approach

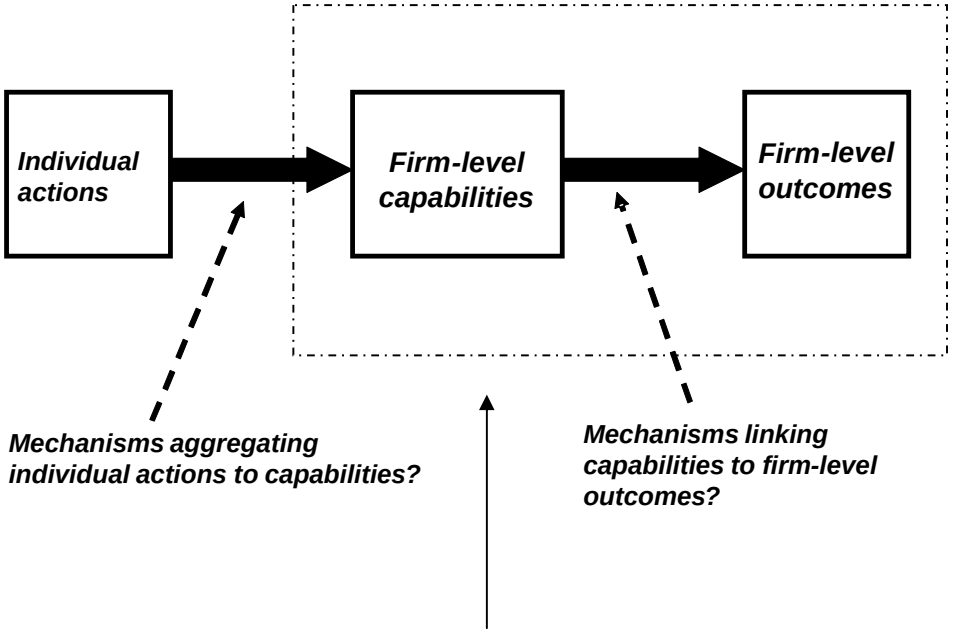

Figure 2: Coleman diagram

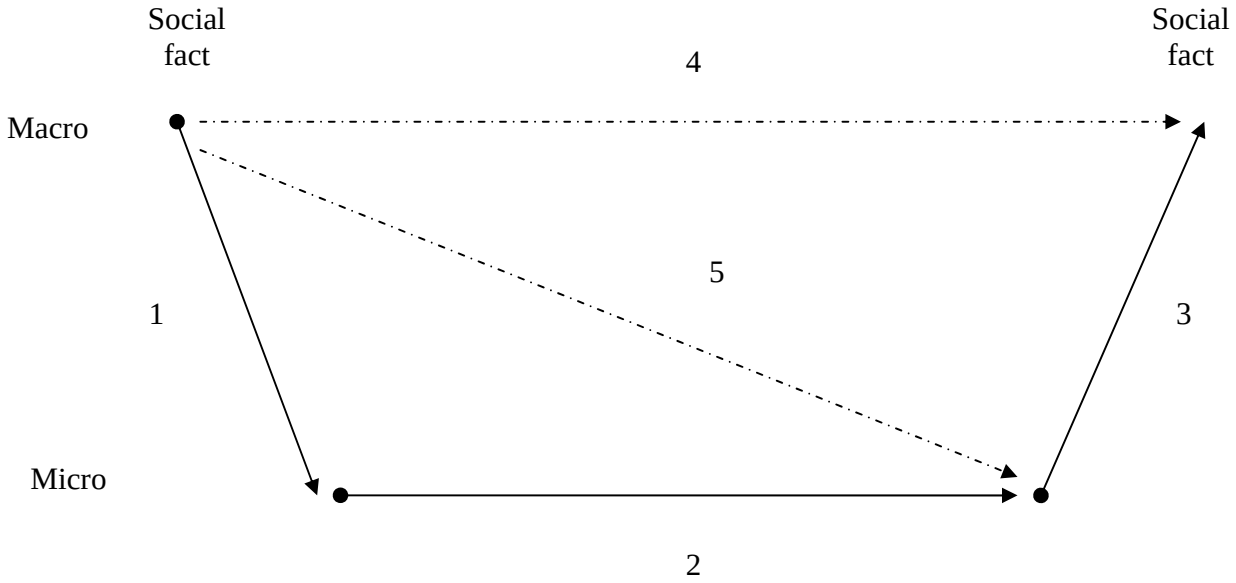

Figure 3: Extant Capabilities Work fitted into the Coleman diagram

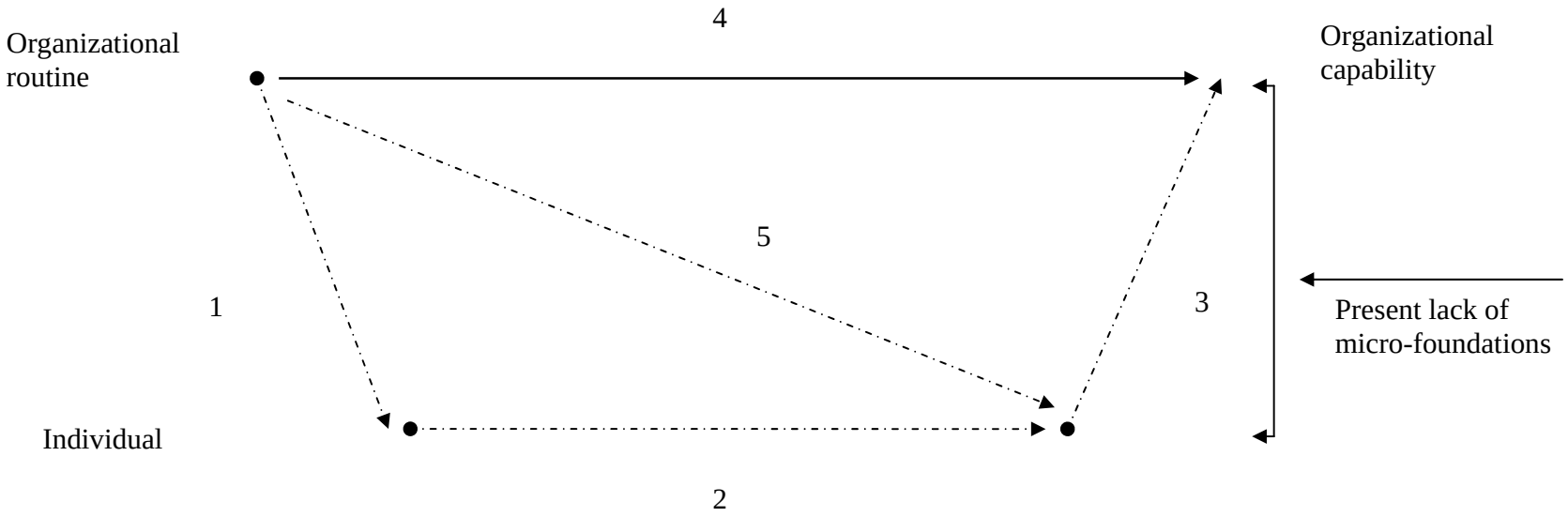

Table 1. Key Dimensions and Considerations for Individual-Organization Links

	Arrow 1	**Arrow 4**	**Arrow 2**	**Arrow 3**
Key terms	Culture, environment, organization/collective, situation, institutions	Evolution and environmental adaptation	Interaction and exchange	Choice, latent characteristics, ability/skills, self-selection
Causality	macro – micro	macro-macro	micro - micro	micro - macro
Theoretical mechanisms	Socialization	Environmental selection	Behavior	Rational design, invisible hand mechanisms, exchange
Key question(s)	What are key contextual and environmental factors determining behavior? What is the role of culture in determining outcomes?	How does the organization respond to environmental pressures? What are the routines and programs of the organization?	What are the underlying origins of interaction – why, with whom etc. is there an underlying, behavioral interaction-factor ("socialization" and resulting "emergence), or is it simply an artefact of underlying characteristics of individuals.	How do aggregate structures, institutions, etc. emerge from individual action and interaction? What is the process of sorting or self-selection into organizations?
Representative article	Henderson and Cockburn, 1994	Cyert and March, 1963	March, 1991	Future research
Behavioral vs. rational emphasis	Behavioral	Behavioral	Behavioral	Rational choice