

Optional reading in future?

Concept Fallibility in Organizational Science

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This paper extends existing social and behavioral science knowledge by placing explicit emphasis on concept-formation issues as they pertain to organizational science. Moreover, the paper (a) introduces in a detailed manner the notions of concept traveling and concept stretching, (b) provides a clear treatment of various conceptual abstraction levels, (c) articulates and offers the negation approach, and (d) shows how to attain the abstraction levels via the use of the negation approach to concept formation.

This article is concerned with the almost routine practice of creating, reconceptualizing, or defining concepts for organizational science (e.g., Rice, McFarlin, Hunt, & Near, 1985; Stevenson, Pearce, & Porter, 1985; Venkatraman & Grant, 1986; Weiss & Miller, 1987). It addresses the tendency of researchers to derive concepts loosely and fallibly, thus, muddying the understanding of them and the ability to develop and test specific hypotheses using the concepts (Campbell, Daft, & Hulin, 1982; Fry & Smith, 1987; Mitchell, 1985; Reichers, 1985; Steers, 1989). One primary source of the fallibility, addressed by this article, is concept "misformation." Here, the term concept *misformation* is used to mean the malformation of concepts and the misinformation that results.

The solution to misformation offered in this article is straightforward: Its basic logic requires specifying what concepts are not, in order to better define meaning boundaries. The solution calls for, and the article describes, an approach to forming concepts that are at once general and precise. The aim is to advance organizational science by providing a rigorous approach to the formation of concepts.

Particular attention is given to how to minimize the problem of concept stretching (broad-

ening the meaning beyond reason) while maximizing the potential for concept traveling (fitting precisely a variety of applications). A procedure is described for forming and moving concepts from low to high levels of abstraction (i.e., from situational concepts to generalizable universals) and vice versa.

After briefly addressing what value developing precise concepts has for organizational science, I (a) define and examine concepts, concept traveling, and concept stretching in organizational science; (b) distinguish between theoretical and empirical concepts; (c) describe how to climb or descend the ladder of abstraction while forming precise concepts; (d) show how to position concepts on the ladder of abstraction; (e) formalize an approach to concept formation; and (f) briefly illustrate its application.

Need for Precise Concepts in Organizational Science

The need for developing precise concepts in organizational science (Miner, 1984; Osigweh, 1989) cannot be overstated. Concepts are the building blocks of science upon which propositions are based, and scientific knowledge exists

"only when our propositions are organized in a systematic way, so that we can perceive their interrelations" (Copi, 1954, p. 167). Concepts suggest first-order questions that need to be researched and aspects of situations that need to be investigated. If any of the concepts that form a proposition are ill-defined, an ambiguous research proposition or an ill-conceived emphasis on certain aspects of an organizational phenomenon may result. Also, imprecise concepts make it difficult to produce knowledge that is cumulative (Achinstein, 1968; Bagozzi & Fornell, 1982; Schultz, 1971).

By contrast, precisely formed concepts are thoroughly discriminating and, thus, are excellent for data-gathering purposes. They do not misinform their users as to the empirical import of the theoretical propositions containing them; so, they do not misguide the efforts of researchers and practitioners using them. They assist organizational scientists in the continuing development of their discipline as a science.

It may, of course, be argued that the nature of organizational science is such that extremely few universals (those concepts that can be accurately tested in different situations) are possible (e.g., Cronbach, 1986). As some scholars attest (Kast & Rosenzweig, 1985; Lorsch, 1980; Lorsch & Morse, 1974), much of the available organizational knowledge is context-specific, and the contexts within which research findings hold are very narrow. If this is true, then searching for universals in organizational science may be an exercise in frustration, and the thought of building organizational explanations on universal concepts should be utterly rejected (Secord, 1986). Or, in a somewhat similar vein, arguing from the standpoint of the social construction of reality (e.g., Berger & Luckmann, 1967; Silverman, 1970; Weick, 1979), the important research issue may be understanding the meanings that individuals attach to actions and events in their own settings. Taken together, these views call into question the feasibility of employing concepts above a middle level of abstraction.

I take a different position, believing that orga-

nizational concepts may well identify entities that exist in nature quite apart from each individual's construing. Although effects are to some extent critically influenced by the way things are construed in particular situations, there are nonetheless "hard" phenomena or entities that have similar effects or functions across several settings. Unless research is based on such well-defined concepts, no one knows which "meanings" are valid (e.g., for each new situation) and which are not, regardless of the concept's level of abstraction. I maintain that concept misformation in general, and concept stretching in particular, is directly responsible for the lack of organizational knowledge that spans different contexts.

Perhaps a note of caution is in order. Some ambiguity in concepts may be valuable both to organizational researchers and practitioners (Cronbach, 1986; Fry & Smith, 1987; Meehl, 1986). It may allow practitioners the flexibility to adapt a concept to fit the individual's specific situation. Similarly, it may permit an individual who is studying a particular local situation the flexibility of applying the concept so that it has meaning in his or her immediate context. But ambiguity need not imply imprecision; a concept does not have to be imprecise to lend itself to versatile usage or flexible application in different, but appropriate situations. Although progress might indeed require that we respect poorly formed and even untestable ideas (Cronbach, 1986), such open-mindedness can be self-defeating, especially in the case of a fledgling science like ours. At worst, loose definitions can even obscure meaning so much that a possible truth may be interpreted as a possible falsehood.

In short, I have argued that the development of clear definitions for concepts is important to improving organizational research and theory building. This is well established in the literature. What is missing, however, is the lack of knowledge about how to form precise concepts. For example, Kaplan's (1964) work has described, in systematic detail, much of what is

current knowledge about concept formation. According to the work, it is known (thought?) that the demand for explicit specification of meaning can be met through ostension (pointing to or directly presenting the denotation) and description (Kaplan, 1964, p. 72). What is not known, however, is the exact nature of the procedure or process for rigorously defining and forming a concept's meaning. Thus, the value of this article lies in its process recommendations for forming explicit concepts.

Concepts, Concept Traveling, and Concept Stretching

As in other sciences, some of the concepts involved in organizational science propositions can be explained or defined on the basis of others. For example, motivation can be defined in management as the process that energizes, channels, and sustains behavior (Locke, Shaw, Saari, & Latham, 1981; Pinder, 1984; Steers & Porter, 1983; Wexley & Yukl, 1984), just as in physics the concept of density is defined as mass per unit volume. This definition of concepts by means of others serves to reveal interrelationships among them. It illustrates their concern with common subject matter, while allowing the concepts to be integrated with the scientific propositions containing them. It underpins the fact that concepts add to the skeletal framework of organizational science as a science. Further, it suggests that concepts are not only building blocks of science, as formerly discussed, but are also *meaning-laden* classifications that may or may not be variables. A variable is a special kind of concept. It is a classification into two or more mutually exclusive and totally inclusive categories (e.g., Hage, 1972; Smith, 1975).

The above description of concepts and some of their roles in science can help define a concept by specifying some of what it is not. A concept is not an unclassifiable mental construction; it can be decomposed taxonomically. It is not just an attribute of some phenomenon that cannot in itself be decoupled. It does not only refer to

a variable. It is not without meaning; a concept is *meaning-laden*, not meaningless.

Of course, at one extreme, meaning can focus on very delimited aspects of a specific organizational phenomenon (Bagozzi & Fornell, 1982; Lofland, 1971; Pap, 1958). Or, at the other extreme, meaning can encompass pure generalities, such as those that pervade all spectrums of organizational phenomena (Carnap, 1936; Lofland, 1971; Putnam, 1978). This suggests that not all concepts are, or can be, satisfactorily defined from a scientific standpoint. Indeed, as suggested by Copi (1954), the ideal of science is not a system in which every concept is defined, but one in which those that are defined are well conceptualized, so that their meanings add precision to the theoretical import of the other concepts and propositions with which they are interrelated.

This further suggests that, although every organizational science concept need not be defined, those defined should have definitions sufficiently precise to enable them to "travel" in the light of the numerous variables and circumstances that characterize our field. *Concept traveling*, in this sense, means that the concept is precise enough to allow researchers to define it in the same way, and so to test it in a wide range of situations—that is, that the concept is a universal. Consider the concept, puzzle. The jigsaw puzzle, crossword puzzle, or Rubik's cube come to mind. Each creates essentially the same image anywhere: (a) a maze of activities that cannot be correctly solved outside settings or mental frameworks that prescribe following certain paths or specific combination of paths; (b) an exercise of figures, numbers, or behaviors that cannot be engaged in or successfully disengaged in, except through a specific order or steps, procedures, or systems of thought processes; (c) activities that when completed cannot fail to yield exact answers, known solutions, or ultimates that could be exactly predicted beforehand. Puzzle, viewed in this way, is a traveling concept.

Few scholars would disagree that universal

categories or concepts are needed that can be understood simultaneously at any time and place and that can be validly tested in a wide range of situations. Yet, when concepts are broadened in order to extend their range of applications, they may be so broadly defined (or, stretched) that they verge on being too all-embracing to be meaningful in the realm of empirical observation and professional practice. For example, according to one definition, participation (in organizational management, or participative management) "encompasses efforts to broaden employees' involvement and control" (Stokes, 1978, p. 6). So defined, the meaning of participation can include joint consultation on productivity standards, worker ownership, union representation on corporate boards, collaboration to improve the psychological and physical work environment, handling of routine personnel problems, and anything else that evokes the idea of democracy in the workplace. (I shall return to this concept later to illustrate how else it can be defined.)

Because concept stretching in organizational science results in amorphous, unclear conceptualizations, what appears to have been a gain in extensional coverage (breadth) often has been matched and even surpassed by losses in connotative precision (depth). Thus, Reichers (1985, pp. 465, 469) concluded that current "global conceptions of organizational commitment" are deficient, creating difficulties "with the measurement and meaning of the commitment construct." Her study reveals that the Organizational Commitment Questionnaire (OCQ) developed by Porter, Steers, Mowday, and Boulian (1974), and most widely used to measure the concept, is based on a definition so broad that it nurtures redundancy, in the sense that it includes behavioral intentions that are not necessarily part of commitment but are supposed to result from the concept. The definition offered by Porter and his colleagues (1974) views organizational commitment not only in terms of acceptance of and belief in organizational values, but also in terms of willingness to pursue organiza-

tional goals (e.g., engage in committed behaviors), as well as a strong desire for organizational membership (e.g., low absence, low turnover). [The OCQ indicates that commitment occurs when individuals identify with and extend effort toward organizational values. According to Porter and his colleagues (1974), commitment consists of "(a) a belief in and acceptance of goals and values, (b) a willingness to exert considerable effort towards organizational goal accomplishment, and (c) a definite desire to maintain organizational membership" (p. 604). (See also, Reichers, 1985, p. 468)]. Thus commitment is too broadly defined as both an attitude and a behavior (Mowday, Porter, & Steers, 1982). This is concept stretching, and one resulting imprecision is the concept redundancy that is confronted while attempting to assess the worker's desire for organizational membership. Most items used to measure this aspect of commitment (e.g., in OCQ) are very close to items used to measure intention to stay or quit—a redundancy (Morrow, 1983), which partly accounts for the sometimes misleading relationship between commitment and turnover found in existing studies (e.g., Mobley, 1982; Reichers, 1985).

Elsewhere in the literature, various scholars arrive at similar conclusions while examining other concepts such as problem solving (Osigweh, 1985a), organizational work and quality of life (Rice, McFarlin, Hunt, & Near, 1985), organizational strategy (Venkatraman & Grant, 1986), coalition (Stevenson, Pearce, & Porter, 1985), and ideology (Weiss & Miller, 1987). In short, no harm is done if precise organizational science concepts are of the traveling kind, as those that are (precise) universals should be. However, a quagmire sets in when conceptual stretching leads to concepts that are not precise, thereby producing universal concepts that cannot accurately travel.

Theoretical Versus Empirical Concepts

To understand how to properly develop concepts requires researchers to make a distinction

between two types of concepts: theoretical and empirical.

Theoretical or universal concepts (Hempel, 1965; Kaplan, 1964) are defined by their systemic meaning (Kaplan, 1964), in the sense that each meaning derives from the part that the concept plays in the theory. Hempel (1965, p. 189) described them as open concepts because they reflect the availability of different operational criteria for application to different contexts. As a result, their meanings are not fully defined by reference to observable things and their characteristics. Examples are efficacy (Jones, 1986; Osigweh, 1983), entropy, synergy, feedback, adaptation (Osigweh 1985b, pp. 153-157), and homeostasis and isomorphism as well.

Consider the concept of efficacy. Whether it is used in democratic theory in political literature (e.g., Pateman, 1970), appears in a theory of citizen education in international relations (Alger, 1978, 1980), or is found in an investigation of organizational problem solving (e.g., Osigweh, 1983), the concept is nevertheless defined in terms of three distinct elements. The first element is the belief that one can do, the second is the confidence in one's ability, and the third is the sense of effectiveness in controlling one's life or environment (Alger, 1978, pp. 17-18; Osigweh, 1983, pp. 30, 41; Pateman, 1970, pp. 45-46). Now, it may well be that this concept, and each of the others mentioned, is more precisely defined in the discipline in which it originated, but each (with or without the possible exception of efficacy) has been borrowed from somewhere else because it seems to apply to some organizational phenomenon. Obviously, then, with such borrowings, care must be exercised to be sure that all meanings attached to the concept actually apply.

One illustration of the pitfalls involved in borrowing theoretical concepts is the use of decentralization. An element of this concept is the creation of an atmosphere conducive to independent action. However, the (authoritarian) dogma of centrally planned economies (CPEs) requires that the process of defining goals, strat-

egies, and other bureaucratic action should move downward from the top of the organization. Because of this, when CPEs apply the (Western) concept of decentralization, they attach to it a philosophy saying that only "responsibility without authority" is allocated to the lower levels of the bureaucracy (Askanas, 1989, p. 71). As a result, the concept creates the inverse of its meaning in, say, the United States or Canada.

In contrast to theoretical concepts, observational or empirical concepts (Baggozi, 1984; Hempel, 1965) have meanings that can be used in concrete as well as abstract contexts. They can be positioned or repositioned, upward or downward, on a ladder of abstraction. They are terms derived from inferences that are made from observables, despite their being highly abstract concepts. Their meanings can be used in relation to direct observables or to describe distant observations. Examples are communication, puzzle, group, decision, problem, conflict, and participation.

That observational concepts can be positioned or repositioned upward or downward on a ladder of abstraction is illustrated by the concept, participation. When participation is defined, as noted earlier, as embracing all efforts to broaden a worker's control and involvement in organizational affairs (Stokes, 1978, p. 6), the concept is (positioned upward and) pushed too high as a general or abstract construct. However, when participation is used to mean a subordinate's involvement in the decision-making process with guidance from superiors (Lowen, 1968), the emphasis on the specific notion of making decisions repositions the concept downward or to a less general and abstract level. Then, the concept does not include every conceivable employee-oriented program, but zeroes in on those dealing with the more specific domain of decision making. This illustration further reveals a source of difficulty. Because empirical or observational concepts can be moved up (ladder climbing) or down (ladder descending) on the ladder of abstraction, the researcher

in organizational science is confronted with the quagmire of how to retain extensional (breadth or denotation) gains by ladder climbing, while minimizing losses in connotative (intention or depth) precision. The latter objective is critical because it in turn affects both the empirical testability and practical applicability of the concept in organizational settings.

The *extension* of a concept refers to the class of things to which it applies, or the totality of objects which it identifies. The *connotation* of that same term refers to the sum total of characteristics or collection of properties that anything must possess to be denoted by that term.

Climbing and Descending a Ladder of Abstraction

How, then, can an organizational concept be formed while maintaining an appropriate level of abstraction? I propose that the ladder of abstraction may be climbed in organizational research by using one of two procedures. The first and more desirable procedure involves extending the breadth of a concept while reducing its properties or connotation (Figure 1a). A precise universal (or traveling) concept retains its precision while maintaining its universality or general character. The concept is general in the sense that it represents a large class. But it is also precise, because its differentiae are few.

As an example, consider Quick and Quick's (1984) use of the concept of organizational stress. They view organizational stress as dealing with the generalized, patterned, unconscious mobilization of the body's natural energy resources when confronted with any demand in the course of organizational life (Quick & Quick, 1984, p. 3). This description is broad and underscores the concept's extension. Then they specify the concept's connotation in terms of three sets of attributes: demands originating from inside (role demands, task demands, physical demands, interpersonal demands) and outside the organization (marriage/spousal demands, children/

parenting demands, social responsibilities, self-imposed responsibilities) and in terms of individual resources for managing these demands (knowledge, skills, and abilities; social support system; biological life history; psychological life history) (Quick & Quick, 1984, pp. 3-5). Because it points to attributes that are more specific than those provided by another definition examined later on, this description is more helpful in targeting organizational stress for research.

The second and less desirable procedure involves extending the concept's denotation, while also expanding its connotation (Figure 1b). The result is a large class or highly inclusive concept, possessing a large number of differentiae that cannot boast of being precise. Due to its all-embracing nature, the construct may be described as general, but only in the sense that it is a mere generality.

As an example, consider an unsuccessful definition of the concept organizational stress. A recent national study describes the concept's extension as one "concerned principally with the adverse health/mental health effects of the psychosocial aspects of work" (Association of Schools of Public Health, 1988, p. 96). As in the preceding example, the extension is broad, but so is the connotation. First, there are six sets of attributes, not three: the "psychosocial coverage connotes a category of problems encompassing a wide array of social, behavioral, and biological conditions with diverse and often unknown etiologies . . . sometimes connoting causal factors, sometimes outcomes, and sometimes intermediary processes" (Association of Schools of Public Health, 1988, p. 96). Second, a zealous researcher who is attempting to isolate the specific attributes constituting the six sets may find well over 150 factors to choose from, which will clearly cloud any resulting research.

Thus, following the second and undesirable ladder-climbing procedure, the obtained concept is not really a general concept, but its caricature: a pretentious, or perhaps unconscious exaggeration. Because the concept is a mere counterfeit or an illicit replica of a general con-

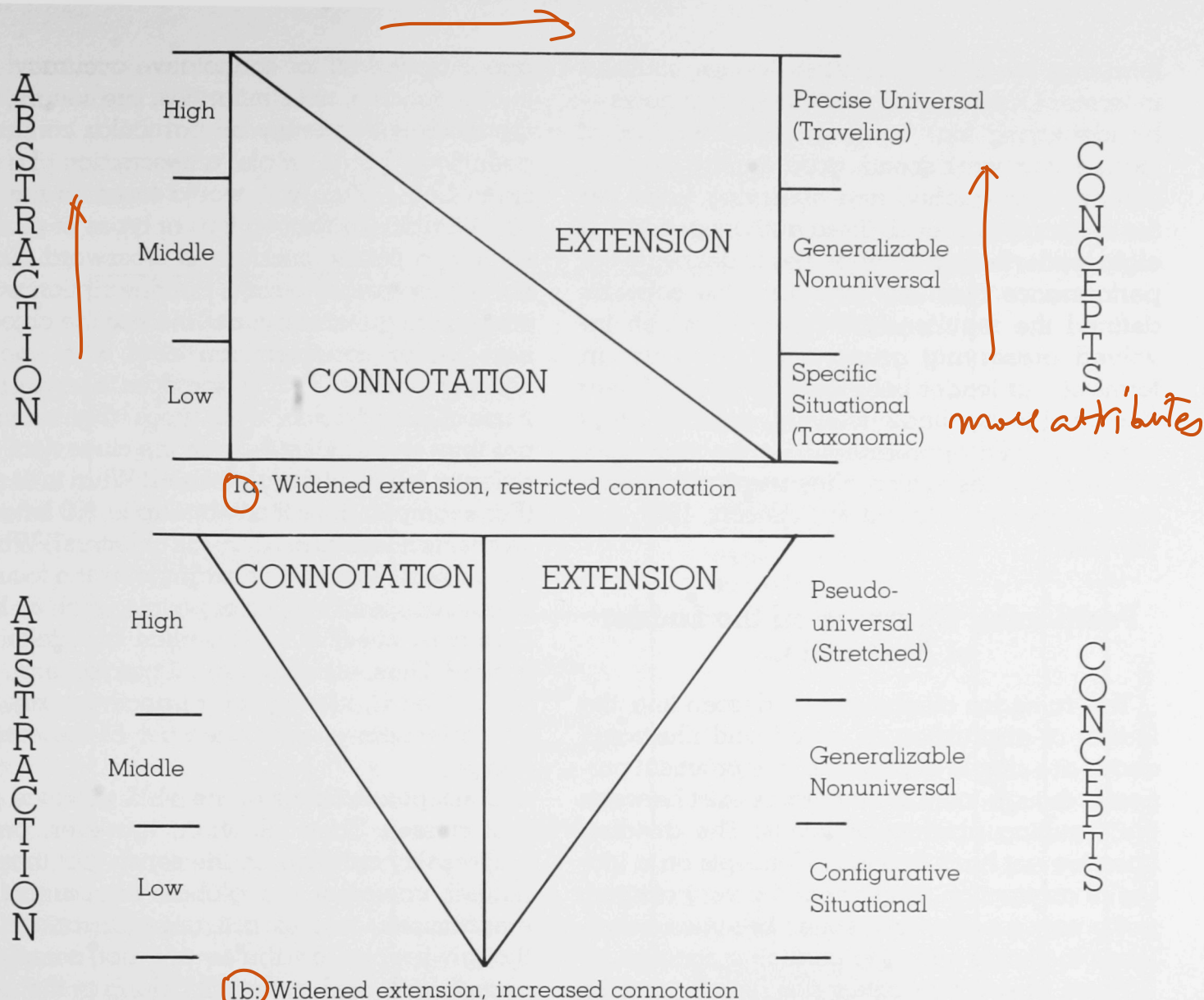


Figure 1. Climbing/descending the abstraction ladder.

ceptualization, it is likely to produce conceptual obscurity, theoretical misinformation, empirical vagueness, and practical elusiveness. It cannot be underpinned because it is indefinite and, as a result, it cannot point the way to an unquestionably specific array of concrete data. The pseudouniversal (or stretched) concepts resulting from this procedure do not foster valid scientific generalizations.

Emerging from the foregoing discussion are two maxims for climbing (and descending) a ladder of abstraction. Simply stated, the abstraction ladder should be ascended in a way

that retains precision by decreasing the number of attributes and properties of a concept. On the other hand, descending the abstraction ladder (i.e., from precise universal to specific situational constructs) requires adding to the attributes that characterize the concept.

The performance-maintenance (PM) leadership function that is conceptualized in the Misumi PM theory of leadership serves as an example of the entire procedure depicted in Figure 1a. At the more general/universal, or high abstraction level, Misumi and his colleagues (e.g., Misumi & Peterson, 1985) defined the per-

formance leadership function—conceptualized in terms of forming and reaching group goals—by identifying four behavior characteristics of leaders (fast work speed, good quality-high accuracy, high quality, and observing rules). At the more specific level, these authors generated eight leader behavior properties to delineate the performance function. Similarly, the scholars defined the maintenance function, which involved preserving group social stability, in terms of four leader behaviors at the more general level (subordinate feelings, comfort, stress reduction, and appreciation). At the more specific level of abstraction, they use eight behavioral properties (Misumi & Peterson, 1985, pp. 199–209).

Positioning Concepts on the Ladder of Abstraction

The rules for climbing and descending the ladder of abstraction as stated and illustrated above are simple in principle. For practical purposes, though, only loose borders exist between the resulting abstraction levels: The dividing lines are not hard and fast. Concepts on a ladder of abstraction range from the very abstract to the very specific, and it often becomes a challenge to decide where to position a concept.

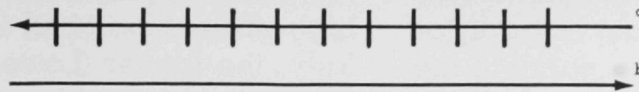
Three abstraction categories usually can be identified: ① the high abstraction level (HAL), the ② middle abstraction level (MAL), and the ③ low abstraction level (LAL). Moreover, as discussed, various magnitudes of inclusiveness are associated with the various levels of categorization. For ease of illustration, the information given in Figures 1a and 1b is combined with additional information in Figure 2. Note that Cells 1, 5, and 9 represent the recommended approach (i.e., inverse relation between extension and connotation: Procedure 1), while Cells 3 and 7 depict an unsuitable approach (i.e., direct relation between extension and connotation as in Procedure 2).

Both specific and configurative conceptualizations exist at the LAL where extensional cover-

age is traded off for connotative accuracy. Distinct properties, not similarities, are sought, and the focus is frequently on particular contextual definitions. For example, a description of a puzzle in Cell 1, Figure 2, would focus on the specific characteristics of different types of puzzles, such as a jigsaw puzzle or a crossword puzzle. For the crossword puzzle, the description would emphasize questions such as: Does the object or item under consideration deal with specific types of words? What shape does it have? Does it use clues, and if so, what types? (For example, are they cryptic clues? Or do the clues deal with different letters of the alphabet?) What is its size? (For example, does it contain up to 100 letters or words? Is it less than 20 words or letters?) What is the subject matter? (For example, is the focus on people or specific types of people, such as business celebrities? Is the attention on intellectual things?) Thus, efforts at LAL, if precise (e.g., Figure 2, Cell 1), identify the distinctive taxonomic characteristics of each member of the class of things.

Conceptualizations at the MAL produce general classes. They fall short, however, on the universality criterion, in the sense that they are neither universal nor global. Similarities are emphasized and so are generalizations, although precise attributes are not completely abandoned. MAL concepts belong to the genre described by Bendix (1963, p. 533) as "generalizations in disguise." When the *American Heritage Dictionary* (1981, p. 316) describes "a puzzle in which an arrangement of numbered squares is to be filled with words running both across and down in answer to correspondingly numbered clues," it is referring to a crossword puzzle, an MAL construct (Figure 2, Cell 5). The description does not emphasize typological differences by attempting to enumerate all distinctive taxonomic characteristics that identify various types of puzzles or crossword puzzles; that would be an LAL activity (e.g., Figure 2, Cell 1). Nonetheless, the concept's attributes are precise. The crossword puzzle deals with words, though not any specific types of words; it con-

Connotation (Depth, Intension)



Low

Middle

High

HAL
(High
Abstraction
Level)

9

- Traveling concept domain
- Broad coverage, of distinct classes of things
- Few, but determinate attributes of distinct classes
- Precise at a universal level

6

3

- Stretched concept domain
- Broad coverage
- Too many classes of things lumped together (with little attention to the precision of their many attributes)
- Packed or too all-embracing

MAL
(Middle
Abstraction
Level)

8

5

- Generalizable nonuniversal concept domain
- Breadth balanced by number of attributes
- Medium range concepts
- Similarities sought

2

procedure 1

LAL
(Low
Abstraction
Level)

7

- Configurative situational concept domain
- Narrow coverage
- Too few attributes (only as few as permitted by the narrow breadth)
- Configurative/ imprecise taxonomies
- Specific generalities

procedure 2

4

1

- Taxonomic domain
- Narrow coverage
- Many attributes for each class of things
- Distinctive typologies or precise taxonomies
- Precise at a specific level

High

Middle

Low

Extension (Breadth, Denotation)

^a Procedure 1—Widen extension, while restricting connotation.

^b Procedure 2—Widen extension, while also increasing connotation.

Figure 2. Abstraction ladder as a function of extension and connotation.

tains squares, not circles, rectangles, or triangles; the squares must not be unnumbered; the words must not run diagonally, but vertically or horizontally. It is not a crossword puzzle if the puzzle or object of description does not contain numbered clues corresponding to the squares. Also, this concept is generalizable. A crossword puzzle viewed, as described, is a crossword puzzle everywhere.

On the upper end of the ladder, HALs produce universal conceptualizations. The drawback is that precise connotation may be sacrificed for the global, extensional aspiration. The ladder has not really been climbed when this happens. Rather, the researcher has hopped, or skipped, or jumped, vertically in this case, from Cell 1 (the beginning of ladder climbing for precise universals) to Cell 3 (the domain of the stretched and undesirable universals). Needless to say, this is self-nullifying, *qua* science, when it happens. Because connotative precision is, indeed, frequently sacrificed for extensional gains in a developing field such as organizational science, HAL concepts can be visualized "as the ultimate genus which [may] cancel all its species" (Sartori, 1970, p. 1041).

The studies of participation already discussed may be taken a step further to illustrate an attempt to mitigate improper concept traveling at the HAL. The definition of participative management as a system in which "decisions as to activities are arrived at by the very persons who are to execute those decisions" (Lowen, 1968, p. 69), by its emphasis on decision making as the single concern, is clearly more specific than viewing the concept as referring to all efforts to broaden employee involvement and control (Stokes, 1978). Nevertheless, it is imprecise because its connotation emphasizes only attributes of decision making, which is a very small component of the phenomenon that participative management seeks to conceptualize. In fact, Lowen's (1968) definition is perhaps no more precise than the one offered by Stokes (1978). The latter might include all conceivable employee-oriented programs in the workplace, making it a

philosophical or pseudouniversal, in the sense that it is a stretched, untestable generality at the high abstraction level (Figure 2, Cell 3). Similarly, the former (Lowen's) definition might include all conceivable employee programs associated with decision making in the organization, without informing a probing researcher as to what participative management really is. Therefore, it is also a mere generality, but at a more specific level (Figure 2, Cell 7).

A third researcher, Sashkin (1982), moved the concept of participation to high levels of abstraction without sacrificing connotative precision. He defined the extension of the concept in broad terms: "Participative management involves workers in the planning and control of their own work activities" (1982, p. 16). He then proceeded to specify the concept's connotation in terms of four elements dealing with employee involvement as goal setting, decision making, problem solving, and developing and implementing change (Sashkin, 1982, pp. 16-17), thus making way for a totally precise definition of the concept. All that is left is to define the concept (including its elements) in terms of what it is not.

The foregoing illustrations focus the question on how to avoid pushing observational concepts so high that they result in self-defeating organizational research efforts. At the same time, attention is paid to what happens at the point in which general MAL concepts are transformed into universal HAL categories. They pose the question: How do organizational scholars determine the break-off point beyond which connotative augmentation contaminates a concept's extension and transforms it into a mere generality? In the next section, I propose that concept development should be based on the negation approach in order for the researcher to arrive at a suitable level of abstraction and, thus, to avoid connotative indefiniteness.

An Approach to Concept Formation

There may well be many theoretical approaches for extending the denotation of a concept, but, admittedly, I know of none at this time.

In light of the foregoing discussion, let me present an approach that is based on the notion of *omnis determinatio est negatio*, which for simplicity's sake shall be called the negation approach. This approach, inspired by readings of several philosophers, such as John Dewey and George Hegel, can advance concept formation in organizational science by further explaining the process and further guiding organizational researchers in its use.

As a phrase, *omnis determinatio est negatio* refers to the ability to determine things by negation. The approach itself may be understood by examining two principles of concept formation encompassed by it. First is the with-negation principle. According to this principle, concepts should be defined by specifying what they are not. Doing this delimits the concept while clearly charting its meaning boundaries, in the sense that its attributes are well defined, even if its scope is large. Thus, regardless of how broad (extension), the concept is nonetheless determinate, and empirical universals are more likely to be produced at the point where MAL categories become HAL concepts in the ladder-climbing process.

Second is the without-negation principle. According to this principle, concepts may be defined without explicitly specified boundaries or termination points. Concepts created in this way are indeterminate. They are "no-opposite" concepts, in the sense that they have no ends or delimiting points. Thus, their properties are more confusing than precise, and the class concepts derived during ladder climbing possess little empirical value. Although, at the point in which MAL concepts are transformed into HAL categories, these without-negation concepts do become universals, they can be described as philosophical or pseudouniversals, literally pointing to everything. Supraempirical, they are perfect examples of concept stretching. They persist only because they derive from following a line of least resistance. Attempting to say what something is, while not bothering to say what it is not, is a natural line of least resistance, in the

sense that it is an intuitive tendency that everyone possesses.

In short, the negation approach proceeds from an assumption similar to the Hegelian thesis-antithesis premise that every determination involves a negation. Simply stated, the approach says that the extension of a concept involves determination by negation, with concepts determined with negation being determinate, while those determined without negation are indeterminate. The principles or rules of with and without negation suggest that HAL concepts that are derived via a with-negation process during ladder climbing are turned into empirical universals, while those that are derived without negation become conceptually stretched, philosophical universals.

Since philosophical universals nurture indefiniteness and elusiveness, the search for them translates to a self-nullification of the research effort, from a theoretical and observational or empirical standpoint. Hence, I propose that the cut-off point beyond which the search for universal inclusiveness becomes theoretically self-nullifying, while the empirical or observational content of the class concept literally vaporizes, is the point at which the concept cannot be determined with negation. Indeed, the with-negation principle enables one to recognize that a concept is what it is because it is not something else. Accordingly, knowledge about any group of concepts must begin by understanding what they are not.

Illustrating the Negation Approach to Concept Formation

The extensive use of the "problem" concept by organizational science scholars of diverse disciplinary affiliations (e.g., Lang, Dittrich, & White, 1978; MacCrimmon & Taylor, 1976; Maier, 1964; Newell & Simon, 1972; Osigweh, 1983, 1985a; Pounds, 1953; Pruitt, 1965; Reitman, 1964) underscores the fact that "problem" is not only a central focus of organizational analysis, but also an all-embracing (universally inclusive) concept.

The frustration, however, is that no one seems to know what a problem is not. No harm is done when the concept is applied everywhere—in private and public organizations, in academic establishments, in small and large corporations, and so on; after all, every universal does apply extensively. What does alarm is that the concept is applied to everything as well. Because we are never told what a problem is *not*, never and nowhere shall we encounter anything that is not a problem.

Therefore, how has the concept, problem, managed to be incorporated in so many empirical research efforts (e.g., Lang et al., 1978), even though its meaning boundaries have not been distinctively delineated? One argument is that the studies have not been guided by an empirical universal, but by pockets of concrete, intuitive, ad hoc conceptualizations, mostly similar to those in Cell 7, Figure 2. As a result, studies of structured problems fall widely apart from those focusing on conflict resolution and negotiation problems, in much the same way that Newell, Shaw, and Simon's (1958) framework for addressing problems differs greatly from that offered by Osigweh (1983) or Seeger (1983).

The theory of human problem solving offered by Newell and his colleagues (1958) clearly describes its concern with: (a) only those memories and symbols it explicitly stated; (b) a perfectly definite process operation for which known physical mechanisms exist; and (c) a perfectly definite set of rules for combining the processes into whole programs of processing (p. 151). On the other hand, Seeger (1983), in addressing the same phenomenon (problem), identified its elements as fluid, continuous information-seeking; process indefinite, containing no innate phases; and dynamic sets of considerations (Seeger, 1983, pp. 684–687). These elements suggest a concern significantly different from those emphasized by Newell and his colleagues (1958), irrespective of the common "problem" emphasis.

Osigweh's (1985a) preliminary attempt to re-

conceptualize the notion of a problem may be used as an illustration of the increase in preciseness afforded with the use of negation. After examining the concept of a puzzle, he conceptualized problems in organizational science as those organizationally important concerns that are not reducible to the puzzle form without consequence, because they possess three distinctive characteristics. First, problems are not found in static or structured contexts or settings or in systems in which no reaction exists to an environment that could be dynamic. Second, they cannot be worked through (or approached effectively) by depending on, producing, or drawing from processes or frameworks that are static and, therefore, do not allow the synthesis and use of practical or conceptual novelties. The path to solving a problem is not and does not involve a static or nondynamic process. Third, problems are not expected to yield or produce a known answer or an ultimate end product, when successfully dealt with (Osigweh, 1985a, pp. 69–74). This reconceptualized problem concept points to something and not to everything. It may be founded on new conceptual frameworks, and it may, indeed, produce conceptual novelties, new relational configurations, or some other types of unexpected phenomena.

The reconceptualized problem concept does not accommodate everything traditionally described as a problem or every existing model of problem solving (e.g., the one described by Newell et al., 1958). This does not suggest that there are ordinarily multiple interpretations of what a given precise concept means. Multiple meanings exist only when the concept is not, or cannot be made, precise in the particular situation or as a universal. To an American, for instance, the concept of salary, if precise, should mean only salary and the concept of wages should mean only wages, in much the same way that an atom is an atom and a molecule is just that. The current conceptualization of the problem concept rather suggests that prevailing notions are so stretched that the concept's mean-

ing needs to be unpacked or decomposed. Perhaps there are other concepts embedded within the originally stretched one. For example, the description of a problem offered by Newell and his colleagues (1958) is static and requires the application of unchanging rules, established procedures, and thought processes. It is more consistent with the definition of (organizational) puzzles discussed earlier in this paper.

Johns and Nicholson's (1982) reconceptualization of the concept of absence serves as further illustration. Again, absence is a universal concept. It is an organizational phenomenon everywhere. It is exhibited, encountered, spoken of, or studied wherever people are employed. Yet, much of the empirical work on absence during the past 30 years can be viewed as atheoretical. Inconsistent and poorly understood relationships often are found between absence and other variables in theoretically underpinned situations (for reviews, see Muchinsky, 1977; Steers & Rhodes, 1978).

A quagmire in the body of research has been in the way in which absence has been conceptualized. Thus, Johns and Nicholson (1982) dissect the meanings of absence by identifying six propositions in use (PIUs)—i.e., prevailing conceptions of absence—and find them wanting. Then, they offer six counterpropositions (CPs) in an attempt to clarify the concept's meaning. The PIUs include assumptions of (a) similarity of meaning, (b) absence as volitional, (c) a function of individual differences, (d) a static phenomenon, (e) an organizational behavior, (f) a phenomenon occurring only among blue-collar and clerical workers (Johns & Nicholson, 1982, pp. 129–134). The scholars' attention to CPs excise some of the traditional meanings of absence. For example, in their "CP1" they describe absence as events that are phenomenologically unique, whereas the conventional view (i.e., PIU1) holds that absence events are similar, functionally and psychologically, for all workers (Johns & Nicholson, 1982, pp. 134–135, 129). This reflects our argument that multiple interpreta-

tions exist only if the concept is not or cannot be made precise in the particular situation or as a universal.

Johns and Nicholson also attempt to state some of their counterpropositions with negation. For example, "CP2" indicates that absence is nonvolitional; it "is not the result of conscious choice" (Johns & Nicholson, 1982, p. 135). This is evidence, if indirectly, that researchers sometimes recognize implicitly the merits of defining concepts in terms of what they are not, even when the scholars have not consciously set out to practice or think through the entire process.

Conclusion

Concept formation in organizational science research is important because concepts are meaning-laden classifications that serve as building blocks of science. Yet organizational science, a developing field consisting of management scholars who are interested in the study of organizations, has devoted little attention to concept formation issues. As a result, "misformed" concepts prevail. The imprecise nature of these concepts has added to our field's lag in development as a science. For example, the theories and theoretical propositions that are built upon our concepts are "not so useful" (Miner, 1984), because of their "limited applicability" (Fry & Smith, 1987) and "internal validity" problems (Greenberg, 1987; Mitchell, 1985). Besides, the search for traveling concepts inadvertently becomes a concept-stretching endeavor that produces concepts that are universals only in name, because they are supraempirical; they are too philosophical to be empirically observed or tested.

Indeed, precise organizational concepts are not only possible but also necessary if organizational science is to progress. Further, precise organizational concepts are possible not only at the low level of abstraction but also at the middle and high levels as well. Thus, this work may be viewed: first as a plea that more organiza-

tional researchers confront concept formation issues in organizational science, and second, as a proposal and point of departure for minimizing

concept misformation, particularly the concept-stretching difficulty, in organizational research.

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