

The Grounded Theory Review: An international journal

Volume 4, Issue no. 3, June 2005

Basic Social Processes

*Barney G. Glaser, Ph.D., Hon. Ph.D. with the assistance of
Judith Holton*

Adventuring: A grounded theory discovered through the analysis of science teaching and learning

Katrina M. Maloney, M.Sc., Ed.D.

Doing Best for Children: An emerging grounded theory of parents' policing strategies to regulate between meal snacking

*Ruth Freeman, Ph.D., Richard Ekins, Ph.D. & Michele
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Managing Collaborative Synergy in the Crane Industry

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The Grounded Theory Bookshelf

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The Grounded Theory Review: An international journal

Publisher's Note

Sociology Press is pleased to publish The Grounded Theory Review. Our primary goal in publishing this journal is to provide a forum for classic grounded theory scholarship. To this end, we will focus our efforts on:

- publishing good examples of the grounded theories being developed in a wide range of disciplines
- publishing papers on classic grounded theory methodology
- creating a world-wide network of grounded theory researchers and scholars
- providing a forum for sharing perspectives and enabling novice grounded theorists to publish their work
- promoting dialogue between authors and readers of the journal

- Barney G. Glaser, Ph.D., Hon. Ph.D.

Editor's Comments

One of our goals in this journal is to present the work of novice grounded theorists so it is a pleasure to feature three such papers in this issue. The fact that the three papers come from three distinct disciplines and three different continents is a testament to the broad application and interest in grounded theory. The three papers also illustrate the developmental learning curve of classic grounded theory (GT).

Katrina Maloney's paper on *Adventuring* takes us into the substantive field of science education and offers a rich conceptual description of an emergent core concept, detailing

its dimensions and sub-categories. Maloney suggests that her theory challenges current thinking and theory in science education and offers insight into changes necessary to enhance the field. She hints as well at the transcendent potential of her core category beyond science education. Her paper is an excellent start at GT that could be enhanced by further conceptual memoing, hand sorting and emergent theoretical coding to integrate her core and related concepts into a grounded theory with appropriate parsimony and scope.

In the paper on *Doing Best for Children*, we see a similar stage of conceptual development. Here authors Ruth Freeman and colleagues Richard Ekins and Michele Oliver, readily acknowledge the limitations of their study as part of a larger qualitative research project with a preconceived professional concern that limited their ability to employ the full scope of classic GT procedures and, as such, hindered the emergence of a full grounded theory. Nevertheless, Freeman and colleagues have offered us a most interesting “emerging theory” that suggests a typology of sugar snacking regulation strategies. Their paper demonstrates how the imposition of a preconceived professional concern on a research study can mask what’s really going on. However, their awareness of classic GT and their ability to utilize even selected GT procedures in coding and analyzing the study data enabled the emergence of the main concern of parents interviewed – doing best for their children – and offers several responses to doing so. Given the increasing concern with childhood obesity, their emerging theory warrants further development.

Keith Ng’s theory of *Managing Collaborative Synergy* proposes a basic social process (BSP) that explains how managers in the crane manufacturing industry develop collaborative strategies for optimizing their respective corporate interests. His theory suggests a three phase process that explains the how managers position their firms within the industry, develop confidence in potential inter-firm partnerships and consolidate their collaboration to achieve long-term mutual benefits.

Theoretical coding remains a mystery for some and a challenge for many in doing GT so we are pleased to round out this issue with two papers that explore this issue in more depth. First, to refresh our understanding of perhaps the most widely utilized theoretical code in GT; we present a classic paper by Dr. Glaser on *Basic Social Processes*. The paper is an updated version of an earlier paper that was published as Chapter 6 of **Theoretical Sensitivity** (Glaser, 1978). Lastly, in the *Grounded Theory Bookshelf*, Dr. Alvita Nathaniel offers an insightful review of Dr Glaser's new book, **The Grounded Theory Perspective III: Theoretical Coding** (Glaser, 2005).

- Judith Holton

Submissions

All papers submitted are peer reviewed and comments provided back to the authors. Papers accepted for publication will be good examples or practical applications of grounded theory and classic grounded theory methodology.

Comments on papers published are also welcomed, will be shared with the authors and may be published in subsequent issues of the Review.

See our website www.groundetheoryreview.com for full submission guidelines.

Forward submissions as Word documents to Judith Holton at Judith@groundedtheoryreview.com

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Basic Social Processes

By Barney G. Glaser, Ph.D., Hon.Ph.D.
with the assistance of Judith Holton

Abstract

The goal of grounded theory is to generate a theory that accounts for a pattern of behavior that is relevant and problematic for those involved. The goal is not voluminous description, nor clever verification. As with all grounded theory, the generation of a basic social process (BSP) theory occurs around a *core* category. While a core category is always present in a grounded research study, a BSP may not be.

BSPs are ideally suited to generation by grounded theory from qualitative research because qualitative research can pick up process through fieldwork that continues over a period of time. BSPs are a delight to discover and formulate since they give so much movement and scope to the analyst's perception of the data. BSPs such as cultivating, defaulting, centering, highlighting or becoming, give the feeling of process, change and movement over time. They also have clear, amazing general implications; so much so, that it is hard to contain them within the confines of a single substantive study. The tendency is to refer to them as a formal theory without the necessary comparative development of formal theory. They are labeled by a "gerund"("ing") which both stimulates their generation and the tendency to over-generalize them.

In this paper, we shall first discuss the search for, and criteria of, core variables (categories) and how they relate to BSPs. Then we go on to a section on several central characteristics of basic social processes. Lastly, we discuss the relative merits of unit vs. process sociology.

Core Category and Basic Social Process (BSP)

While grounded theory can use any theoretical codes, the basic social process (BSP) is a popular one. As with all grounded theory, the generation of a BSP theory occurs around a *core* category. While a core category is always present in a grounded research study, a BSP may not be. BSPs are just one type of core category—thus all BSPs are core variables (categories), but not all core variables are BSPs. The primary distinction between the two is that *BSPs are processural*

or, as we say, they “process out.” *They have two or more clear emergent stages.* Other core categories may not have stages, but can use other theoretical codes.

Without a core category, an effort at grounded theory will drift in relevancy and workability. Since a core category accounts for most of the variation in a pattern of behavior, it has several important functions for generating theory. It is relevant and works. Most other categories and their properties are related to it, rendering the core category subject to much qualification and modification because it is so dependent on what is going on in the action. In addition, through these relations between categories and their properties, the core has the prime function of *integrating* the theory and rendering the theory *dense* and *saturated* as the relationships increase.

These functions then lead to theoretical *completeness*—accounting for as much variation in a pattern of behavior with as few concepts as possible, thereby maximizing parsimony and scope. Clearly integrating a theory around a core variable *delimits* the theory and thereby the research project.

Upon choosing a core category, the first delimiting analytic rule of grounded theory comes into play. Only variables that are related to the core will be included in the theory. Another delimiting function of the core category occurs in its necessary relation to *resolving the problematic* nature of the pattern of behavior to be accounted for. Without a focus on how the core category resolves, solves or processes the problem, the analysis can drift to accounting for irrelevancies in the pattern, instead of being forced to conceptually integrate the relevant categories around the main concern.

Yet another delimiting function of a core category is its requirement that the analyst focus on one core at a time. Thus, if two core categories are discovered—or one worked on before another emerges—the analyst can choose one, being sure of its relevance. S/he then demotes the other by filtering it into the theory as a relevant “near core”—but not core—variable. Thus, in *Time for Dying* (Glaser & Strauss, 1968), we included ideas about awareness, but only *insofar* as they affected time. And in *Awareness of Dying* (Glaser & Strauss), 1967, we did the reverse. By this method, the analyst can be sure that the other core does not disappear. It can still take a central focus in another writing. Many studies yield two or (sometimes) three core variables. To try to write about them all at once with no relative emphasis is to denude

each of its powerful theoretical functions.

Discovering the core category is our grounded answer to the perennial research problem of “which focus.” This focus cannot fail, since it is systematically generated, by a sentence-by-sentence grounding in its capacity to be relevant and to work. In contrast, to core a study and its theory around a “pet” sociological interest or a logically elaborated interest from scholarly writings can easily miss on the many functions mentioned above. Since it is not grounded, there is no assurance that it will integrate any other categories or properties or account for any or sufficient variation in a behavioral pattern. Nothing—or not much—may emerge as related. Plus, it derails the analyst from discovering the true core. Thus the analyst cannot start a grounded theory study with preconceived notions, from whatever source—even grounded—about what will work in a specific project. The focus must emerge on its own to do justice to the data, while accounting for significant variation in problematic behavior.

Discovering Core Categories

Looking: First, the analyst should consciously look for a core variable when coding his data. As s/he constantly compares incidents and concepts s/he will generate many codes, while being alert to the one or two that are core. S/he is constantly looking for the “main theme,” for what—in his or her view—is the main concern or problem for the people in the setting; for that which sums up, in a pattern of behavior, the substance of what is going on in the data, for what is the essence of relevance reflected in the data, for categories (gerunds) which bring out process and change (two properties of BSPs).

As the analyst asks these questions while coding, analyzing and theoretically sampling, s/he becomes sensitized to the potential answers. Possible core categories should be given a “best fit” conceptual label as soon as possible so the analyst has a handle for thinking of them. The analyst may have a feel for what the core variable is, but be unable to formulate a concept that fits well. It is OK to use a label, which is a poor fit until a better fit eventually comes.

As the analyst develops several workable coded categories, s/he should begin early to saturate as much as possible those that seem to have explanatory power. This way s/he will see which category is related to as many other categories and their properties as possible. S/he theoretically samples to maximize differences in the data to help saturate the categories. This is relatively easy with quantitative data.

The analyst need only run possible core categories against all other variables to see how much each relates to others. With qualitative data, it is more difficult since these relations must be kept track of in memos, which get spread out until sorted. The core category must be proven over and over again by its prevalent relationship to other categories thereby integrating them into a whole.

When the analyst starts coding, categories tend to emerge quickly, giving the appearance of finding core categories. But the analyst should be suspect of these as core. It takes time and much coding and analysis to verify a core category through saturation, relevance and workability. It always happens that a category will emerge from among many and “core out”—but it happens “eventually”! And, even then the analyst may still feel s/he is taking a chance on selecting what the core variable is, until it is finally proven by sorting data into a theory that works. The more data, the more sure the analyst can become of saturation, relevance, workability and integratability of the chosen core. Time and data can be expensive; in smaller studies an analyst often has to take chances. Certainly, deciding on a core category tests the analyst’s skill and abilities. If s/he acts too quickly on a thin amount of data, the analyst risks ending up with a large array of loosely integrated categories, and a thin, undeveloped theory with little explanatory power.

Criteria: It is helpful to sum up the criteria by which an analyst can make judgments as to the core category.

1. It must be *central*; that is, related to as many other categories and their properties as possible and more than other candidates for the core category. This criterion of centrality is a necessary condition to making it core. It indicates that it accounts for a large portion of the variation in a pattern of behavior.
2. It must *reoccur frequently* in the data. By its frequent reoccurrence, it comes to be seen as a stable pattern and becomes increasingly related to other variables. If it does not reoccur a lot, it does not mean the category is uninteresting. It may be quite interesting in its own right, but it just means it is not core.
3. By being related to many other categories and reoccurring frequently, it takes more *time to saturate* the core category than other categories.
4. It relates meaningfully and easily with other categories. These *connections* need not be forced; rather, their realization

comes quickly and richly.

5. A core category in a substantive study has *clear and grabbing implication for formal theory*. The analyst can talk of hospital shifts and immediately realize the implications of shifts as a basic social condition in any twenty-four-hour-a-day work operation and start to conceive of generating a formal theory of work shifts.
6. Based on the above criteria, the core category has considerable *carry-through*. By this, we mean it does not lead to dead ends in the theory nor leave the analyst high and dry; rather, it gets him/her through the analyses of the processes s/he is working on by its relevance and explanatory power. S/he literally carries through his analysis based on the core's use.
7. It is *completely variable*. Its frequent relations to other categories make it highly dependently variable in degree, dimension and type. Conditions vary it easily. It is readily modifiable through these dependent variations.
8. While accounting for variation in the problematic behavior, a *core category is also a dimension of the problem*. Thus, in part, it explains itself and its own variation. While "becoming" a nurse explains the process that student nurses go through in relation to their training and their interaction with nursing faculty, it also in part explains why a nurse becomes a nurse. They engage in becoming to become, while becoming also explains how they handle those largely responsible for formalizing their entrance to the profession (Olesen & Whittaker, 1968).
9. The criteria above generate such a rich core category that, in turn, they tend to *prevent two other sources of establishing a core* which are not grounded but, without grounding, could easily occur: (1) sociological interest and (2) deductive, logical elaboration. These two sources can easily lead to core categories that do not fit the data and are not sufficiently relevant or workable.
10. The above criteria also generate a false criterion. Because it has so much grab and explanatory power, the analyst begins to *see the core category in all relations, whether grounded or not in the data*. While serving as a positive indicator of the core, this logical switch must be guarded against so that relationships among categories are earned through

emergence and not forced upon the data through deductive logic.

11. The core category can be *any kind of theoretical code*: a process, a condition, two dimensions, a consequence and so forth. When it is a process, additional criteria also apply.

The “Process Out” Requirement of BSPs

Once the analyst becomes theoretically sensitized to the search for core categories and those that process out, discovering core categories—and BSPs in particular—becomes natural. Indeed, we have found that analysts must be careful about tacking a gerund on to any core variable and treating it like a process when, in fact, it does not process out. For example, in one study, “shifting” was seen as a BSP. After review, we found no stages and reconceptualized it as “shifts”—a basic social structural condition confronting people and organizations that have a twenty-four-hour-a-day operation.

The “process out” requirement of—at minimum—two clear, emergent stages requires that the *stages should differentiate and account for variations in the problematic pattern of behavior. If not, the stages collapse conceptually and there is no BSP.* For example, in information-gaining processes, the stages of playing completely naive, playing mildly informed but needing correction, and finally, playing knowledgeable, each results in a different interaction pattern in bidding subcontractors. In this sense, a BSP processes a social or social psychological problem from the point of view of continuing social organization. Irrespective of whether it solves the problem, to some degree, it processes it.

A process is something that occurs over time and involves change over time. These changes over time ordinarily have discernable breaking points—discernable to the extent that stages can be perceived, so they can be treated as theoretical units in themselves, with conditions, consequences (which may be another stage), other properties, and so forth which are unique in form to each particular stage. Stages are perceivable, because they sequence with one another within certain temporal limits. Sets of codes related to these stages may “carry forward” into one or more stages further on in the process.

Stages may be in vivo (generally perceivable by those persons involved), or purely heuristic (generally not perceivable by the persons

involved, but demarcated by the sociologist for theoretical reasons), or some shade in between. If the stages are built into the social structure, they and their transition points will likely be clearly perceived by social actors (e.g. receiving a diploma, passing a course of study, getting a promotion from “worker” to “supervisor”, and so forth). Conversely, stages that are perceivable before one goes through them would likely be built into a social structure (Glaser & Strauss, 1971). However, stages not determined by social structure can also be perceived by social actors (“When they started joking with me I knew I was in”). In some instances, stages may be perceivable by social actors only after they have been through them. This would likely be the case with stages that are marked by common sense indicators and such.

Some stages may be learned as persons go through them. For example, milkmen, when learning to “cultivate,” learn from their co-workers that a particular stage in cultivating a relationship is reached when the customer routinely offers the milkman a cup of coffee (Bigus, 1972). This is, the novice learns, a “coffee stop” and is considered the last and most successful stage of a relationship, if the customer is worth it in monetary return. The novice is informed in one way or another that when this occurs, he no longer need worry about the relationship to the extent that he does others, and that “coffee stops” will perform certain functions for him—a place to go to the bathroom, a place to get a payment when one is needed, and so forth.

Stages, if perceivable by social actors, may be brought about by their conscious intentions. Again, the milkman: once he learns about the “coffee stop” stage, he consciously sets about cultivating to get particular customers (the large ones) to that stage. Other stages, particularly those demarcated by institutionalization, begin and end without conscious effort on the part of participants.

A person may perceive the events that make up stages of a process he is going through without perceiving the overall process or any particular stages. These events may be perceived as idiosyncratic—events that are unique to his own experience—rather than as stages of a social process which many persons go through. A sociologist, however, can perceive the stages because he studies large numbers of individual histories and sees as social what individuals may see as personal.

The development into stages prevents a BSP theory from being static—a condition ordinarily found in most types of theory. It allows one to follow changes over time, yet remain in grasp of a theoretically “whole” process—which has a beginning and an end. When the stages

and their properties, conditions, consequences, and so forth are integrated into the “whole” process, when each stage’s relationship to the process and to the other stages—how they affect it, shape it, and so forth—are integrated, then the process can be conceptually followed from stage to stage, the change over time being theoretically accounted for, without the imagery of the overall process being lost. This allows a reader to momentarily focus on the dense codes without losing grasp of the larger scope of the BSP theory.

Stages, then, function as an integrating scheme with which to tie together various sets of conditions, properties, etc. in a manner that allows for a high amount of densification and integration. At the same time, stages allow for conceptual grab and tractability as well as the theoretical tracing of and accounting for change over time.

Stages have a *time* dimension; that is, they have a perceivable beginning and end. The length of time between these points may or may not be fixed. In one instance, a stage may always be of fixed duration. In another, it may last several days or weeks. This will depend upon what brings about the transition from one stage to another. If the length of a stage is determined by institutional timing, for instance, it could always be of the same duration. The length of time a stage lasts could also be determined by events that do not occur according to a time schedule. A stage in a “residential career,” for instance, could be determined by the move from renting to buying a home. Thus, the renting stage (if such a stage were developed) could last several months or many years.

The transition from one stage to another is ordinarily contingent upon one or more things happening (e.g. the decision to purchase a house—as above). This contingency may be in the form of a *critical juncture* (Strauss, 1969) - a period of time between stages when the occurrence or non-occurrence of a particular critical event (or whatever) will determine whether a new stage is entered (a stage is skipped, one of several possible stages is entered, etc.) or the previous stage is maintained. For example, exploratory surgery in search of cancer could be such a critical juncture. If cancer is found, the beginning stage of a dying trajectory or a recovery trajectory (depending upon the severity of the cancer) may be entered. If cancer is not found, a diagnosing stage may be returned to.

The transition from one stage to another may not be as clear as it is when a contingency or a critical juncture marks it. It may, instead, be marked by a general set of indicators in such a way that the transition point is somewhat blurry. For example, an “acceptance” stage may

be entered around the general time that insiders begin to allow a newcomer to joke about the group, let him attend insider affairs, disclose “secrets” to him, and so forth. An exact time of transition may be impossible (or arbitrary) to pin down, but the transition may be obvious later after a short period of time, through the gradual occurrence and clarity of a set of indicators.

We now turn to a discussion of further characteristics of BSPs. Much of what we shall say in the next section applies in general to all core categories, *except* when the property specifically refers to process.

More about the Basic Social Process

Stages, as we have just seen, are the prime property of BSPs, however there are several other defining properties: pervasiveness, full variability and change over-time. BSPs are *pervasive* since they are fundamental, patterned processes in the organization of social behaviors which occur over time and go on irrespective of the conditional variation of place.

The pervasiveness of such core processes gives rise to the word basic in BSP. BSPs, then, are more than just heuristic devices that allow sociologists to conceptually order the social world. BSPs are theoretical reflections and summarizations of the patterned, systematic uniformity flows of social life that people go through, and which can be conceptually “captured” and further understood through the construction of BSP theories.

No matter what the sociologist does, s/he cannot alter the basic substantive patterns of the process. S/he can only apply whichever theoretical codes best illuminate variations in what is going on. Not all persons go through a process in the same manner; that is to say, there is much variation. But, a BSP theory can uncover what condition or variables give rise to particular variation and can therefore theoretically account for them. For example, “becoming” is basic, occurs over time, and is still becoming no matter where it occurs, and irrespective of how it is varied by current conditions. So, for instance, there’s a basic pattern or process to becoming a nurse, regardless of variation in individual experiences.

The pervasiveness of BSPs, due to their fundamentality to social organization makes them necessary, unavoidable processes, irrespective of variations. However, social organization itself being sets of infinitely variable conditions makes BSPs *fully variable*. By this, we mean that although BSPs are activated through the units of

social organization, they are abstract of any specific unit's structure and can vary sufficiently to go on in other, very different units. Thus, recruitment processes go on no matter what the social unit; people are continually brought into units or eventually the units disappear. As such, their full variability makes BSPs independent of structural units: that is, free of their time and place and the perspective of their participants and fully generalizable as abstract processes to be found anywhere they may emerge.

As an analytic unit, BSPs receive relative emphasis over the structural unit in which they are analyzed. The essential point is that, for example, we focus on becoming processes when talking of nursing education, not on the structured unit—the school—in which the study took place. The school is merely a set of varying conditions of a becoming process.

The full variability and generality of BSPs transcend the nature of any structural unit and hence, unit-focused theories. They transcend the boundaries of unit analyses as we understand the general, basic processes that shape people's lives instead of solely their particular units of participation. (We shall discuss these properties of BSPs in relation to unit analysis more fully in the next section of this paper).

BSPs are not only durable and stable over time but they can account for *change over time* with considerable ease of meaning, fit and workability. Since process connotes a temporal dimension, focus is on patterned lines of conduct as they occur over time under different conditions that generate change. Thus, change is fully as much an inherent feature of BSPs as their stability and variability. This characteristic contributes toward solving a perennial problem in sociology—accounting for change. The notion of change is not at all built into many other generic concepts in sociology such as social class, role, social structure, social system, functionalism and so forth. These categories can often be rejected when it comes to analyzing change since they become obsolete or clumsy in reflecting the realities of change.

When things change because of full variability, new conditions, stages, and transitions can be added to the BSP in order to handle the change. Take for example, locating “progress in a class” as a process. Students are able to locate themselves by comparing grades with one another. But, suppose a particular school eliminates grading. New methods of locating may be found, such as noting how often one is called upon in class, or other such subtle forms of “feedback.” At any rate, the theory of locating can be modified to handle the change.

Whatever changes and adjustments take place can simply be added as conditions or consequences of the process. The theory has not been “disproved” or made obsolete in any way. A process of locating still exists—it has merely been modified slightly in form, densified and made more general.

BSPs can also handle change over much longer spans of time by merely adjusting for the changes in conditions in the same general way that adjustments could be made for changes encountered in going from one substantive area to another. What would be accounted for theoretically would be the absence of some conditions and the presence of new or different conditions. The basic theory, however, would remain intact. The “size” of temporal scale is included.

Basic Social Psychological Process (BSPP) and Basic Social Structural Process (BSSP)

There are two types of BSPs—basic social psychological process (BSPP) and basic social structural process (BSSP). A BSPP refers to social psychological processes such as becoming, highlighting, personalizing, health optimizing, awe inspiring and so forth. A BSSP refers to social structure in process—usually growth or deterioration—such as bureaucratization or debureaucratization, routinization, centralization or decentralization, organizational growth, admitting or recruiting procedures, succession, and so forth. A *BSSP abets, facilitates or serves as the social structure within which the BSPP processes*. Thus the growth of free clinics facilitates the prescribing process of birth control and family planning (Lindemann, 1974). The growth of spiritualizing of health food stores was necessary to “hippie” health optimizing (Hanson, 1976). Consolidating a revolution is accomplished by bureaucratization of charisma (Weber, 1947).

Most sociology these days focuses on social psychological process and assumes social structural process—or simply treats it as a changing set of structural conditions—without formulating it clearly as a process. The question remains is the latter all that necessary? Perhaps the BSPP is more prevalent and relevant to understanding behavior, since one does not need the BSSP to understand it, but usually one needs a BSPP to understand the focus on a BSSP. This question is, of course, to be answered empirically for any particular study. But given this prevalence, BSP implies a BSPP and when the analyst is generating a social structural process theory, he states it clearly as such and uses BSSP.

Society swings on the relevance of its interest, sometimes focusing on social psychological problems (getting poor people to upgrade) or sometimes focusing on social structural problems (providing opportunities for work, health distribution systems, government programs). Sociologists follow both foci. The most sophisticated sociological renditions include both processes, however; perhaps most will focus on the social psychological. It takes skill and clarity of purpose to mix both with full development, as opposed to focusing on one and using variables from the other.

Two general kinds of mix occur. One is that a BSP includes both BSSP and BSPP. Examples are admitting, screening or recruitment processes to an organization. The recruitment to a fraternity in college is a clear mix of social psychological and structural in the screening and initiation ceremonies. The other type is that the BSPP and BSSP are clearly separate. For example, building housing tracts with better homes and on better terrain is a process growing builders go through. At the same time people are upgrading their housing circumstances when they choose new neighborhoods with better homes, schools, roads, parks and so forth. The new neighborhood can easily include new homes or old homes or both. As another example, developing health food stores was clearly separate from spiritualized, health optimizing.

When the BSSP follows and facilitates the BSPP, it takes on properties of the latter. Thus, the growth in health food stores occurred by taking on properties of the health optimizing process that it services; e.g. they sold natural vitamins with rhetoric. And vice versa, when the BSSP comes first, the BSPP takes on properties of it. Thus, in the beginning, birth control prescriptions took on the rules of family planning agencies. Women had to be married at one time to get a prescription for birth control. When the disjunction is great, as in this case, the social psychological may either exert a change over the social structural or may be purged. Thus, BSPPs can become structural conditions that affect the nature of BSSPs, and vice versa. In this way, a theoretical link is made between the two general levels.

The theoretical links that relate the two are many and emergent. Being analytically clear about their separateness allows for a well formulated analytic mix of the two. Otherwise, an analysis tends to become confused or unclear as to the referent process. For example, how does one analyze job transfers in an occupational career as related to time for personalizing rental housing, without a notion of how to develop both processes? Or how does one analyze upgrading life styles in

housing related to unavailability of new and better housing, without a clear picture on the disjuncture of the stages of each process?

An analysis can emphasize the BSPP or BSSP, or some mix of the two, depending on which process or which mix emerges as more *relevant* in the situation under study. In studying a process that optimizes change, fluidity, and unfreezing of behavioral patterns, it is likely that the emergent mix would emphasize the BSPP. In studying a structural phenomenon as it is growing, such as behavior in new communes or people engaging in a new health practice, one would also bring in the new BSSP that supports the BSPP. In studying a phenomenon that requires little change in existing support systems, structural process might not be as important, for instance, as a process occurring in a bureaucratic setting where the actors have little control over the structural support. Even in such a situation, however, there may be informal modifications of the formal support structure.

Beside the above defining properties, a BSP has other important characteristics. For instance, a BSP applies a theoretically useful approach to deviance. It is, as well, systematically tied to a methodology. Both characteristics are further elaborated below.

BSP and Deviance

It seems that most sociological theories are unable to explain with ease “negative or deviant cases” of whatever it is they are supposed to explain. So, they must resort to the use of additional theories—ordinarily some sort of deviance theory. Since deviant events could easily be explained as an integral part of a normal basic social process that takes place under certain conditions, there is no need to see the events as deviant or extraordinary. As the idea of basic social process becomes commonly used, the notion of “negative case” disappears. What were once considered negative cases merely highlight further conditions under which behavior varies according to the pertinent basic social process.

It is an error for sociologists to preconceive certain behaviors as fundamentally deviant, but even more an error for them to assume *from the start* that the most relevant thing about a particular behavior is its deviant dimension (regardless of how “deviant” is defined). Even if it is a behavior that is unquestionably far from general societal norms, values, etc., there is no reason, before it emerges, to take that as a starting point for analysis of the behavior. Such a consensual

label may, in reality, have little to do with the motivation, organization, etc. of the behavior. Whether or not it does is a matter for empirical inquiry. The starting point is to discover the BSP.

If the analyst were to begin with the preconception that a particular behavior, organization, or whatever, was deviant and that was the most important thing about the study, the chance is very high that s/he would miss the core and relevance of what is actually happening. To use an example: If s/he were to study brothels (which one can safely say are generally considered deviant) from the point of view that the fact of their deviance is the most important thing about them sociologically, s/he would likely miss the more general relevant fact that sociologically—in terms of structure, function, organization, and process—they are similar to barber shops, beauty salons, garages, and so forth. All are *servicing operations*.

All of these organizations service persons or their belongings. All have steady as well as casual clients. All encourage their clients to remain on the premises only while they are being serviced. After servicing, they are “spent” and are no longer useful until they require servicing again, and so forth. These seemingly different organizations have much in common sociologically, regardless of how they are seen and defined in common sense terms, and regardless of whether or not they are defined as deviant. Servicing need not be seen as deviant or non-deviant sociologically *unless* it is discovered that the deviant label has consequences for the servicing operation and those persons who are a part of it. In the case of the brothel, the deviant label would likely result in its being more isolated, less obtrusive, and so forth, than many other types of service operations.

In other words, from a BSP view, the deviant label (i.e. the fact that other persons see the activity and the organization as deviant) is merely one of many conditions that affect the servicing operations. Anyone who questioned the women would soon discover that their main concern is about servicing efficiently not about being “deviant.” In this fashion, deviance is put in integrative perspective as part of a BSP, rather than being developed as a separate body of theory. As such, its part in the development of theory would be reduced in importance in terms of the amount of time and effort spent, but increased in terms of its contribution to an integrated theory of what makes a part of society work.

If the analyst is interested in accounting for how particular persons engage in an act or series of acts which happened to get labeled deviant or have great potential for such a thing happening, a BSP

approach would look different from other approaches, primarily because the grounded explanation for the behavior would be *contextualized* and *multivariate*.

It would be contextualized in that it would not seek to explain too much (as most other theories do), but rather would seek to explain the sources (i.e. the conditions, properties, and so forth) of “deviance” within a particular context such as a servicing operation. Once enough grounded data has been gathered, presumably through several studies and through the use of theoretical sampling, it may be possible to lift the theory out of particular contexts and elevate it to a more formal level. This could be accomplished if a number of dimensions, properties, etc., were *discovered* which were cross-contextual enough to form a foundation for a formal theory. However, this would not be taken as the starting point (as it is in functionalist theory, for instance) but rather as the advancing of a substantive theory to a formal one, abstract of time and place.

A BSP view would be multivariate in that it would seek to discover all of the many relevant variables (conditions, consequences, properties, etc.) that constitute the process leading up to a particular form of “deviant” behavior as *covariant* among other behaviors. In contrast to this, the ordinary approach is to preconceive several variables and then go out and try to verify their existence (overlooking all the other possible variables which come into play). In addition, a grounded BSP would pick up and integrate structural as well as social psychological variables. The relationship between these various levels of variables could be shown; how they interact and affect one another in a systematic way. This has not been accomplished by the multivariate theories that exist presently. They have merely admitted that different levels of variables are involved in the explanation of deviant behavior.

BSP and Methodology

As BSPs are densified and integrated, they may become multivariate to the point of including variables from other disciplines, such as psychology, political science, medicine and so forth. They easily become stages in process, consequences or conditions. Thus, as an isolating BSP, mental depression can cause social isolation that can cause physical illness that results in hospitalization, with further isolating in an isolating BSP. One handles emergence with whatever categories (from whatever discipline) that fit and work and that the

analyst is trained to understand.

Since basic social processes are fundamental patterns in the organization of social behavior as it occurs over time, the BSP *conception* is a generic theoretical construct of the same genre as Max Weber's "ideal type" and Alfred Schutz's "homunculus." However, unlike these conceptions, the idea of BSP (and core variable) was developed within and is *systematically tied to a specific methodology* for generating theory. The conception is not a presupposition of the methodology, but rather is a product of its operations. The theoretical construct—BSP—was conceived as a by-product emergent in the process of doing and developing the methodology of grounded theory research. In contrast to ideal types and homunculi, BSPs are more than *post hoc* honorary labels. The BSP is fully "operational" at every step of the grounded research process. This is not the case, so far as I know, with any other type of theory construction. Weber and Schutz, for instance, leave the operationalization of their theoretical type up to one's imagination. This may allow for flexibility, but it also allows for deductive speculation and floundering before a research method and effort is applied.

Grounded theory methodology does not rely solely on "cleverness," "ingenuity," "insight," and so forth, yet it is not so rigid and specific that it can be learned and carried out by mere "technicians." It requires theoretical sensitivity as well as technical skills, and some persons will, of course, be better at it than others. It also requires a specific course of training (by teaching or reading) because it is a system that must be used in whole. If it is used in part, or if parts are used incorrectly, it will work less than properly. We have learned that analysts who use it only partially are not likely to realize this, because many of its advantages are not evident until it is used as a whole (e.g. the advantages of writing memos, coding, sorting and so forth—both individually and combined—become evident primarily through experience in doing these things). This is not to say, however, that one should use it as a whole or not at all. Every step used will improve one's ability to construct theory, regardless of what kind. The methodology provides a perpetual development of skill as one uses each part.

BSPs can be developed by this methodology at various levels of conceptual abstraction ranging from substantive theory (theory about a specific substantive area—e.g. Karate) (BEESON, 1973) through *general* substantive theory (theories about several similar substantive areas—e.g. kinds of physical self-defense) to formal theory (theory abstract of specific, substantive times and places areas—e.g. self-

defending). Thus BSPs can be conceptually ordered according to abstraction, but each level is always theoretically and methodologically linked with a less abstract level and with systematically collected data of the empirical world. They never become operationally distant or remote from reality. We might add that BSPs are not theories of the middle range.

Finding a BSP

There are two basic models for finding a BSP; by discovery and by emergent fit. By discovery, the analyst goes to a fairly contained social unit attempting by observation and interviewing to see as much as possible and find out the most salient social problem of the people there. Then s/he discovers the core variable—hopefully a BSP—that accounts for most of the variation in the behavior about the problem. S/he then switches focus from studying the unit to studying the process and proceeds to generate a substantive theory of the process by constant comparisons of incidents within different comparative groups in the same substantive class.

By emergent fit, the analyst has a BSP—discovered elsewhere—and wishes to extend it or to do a grounded formal theory of it. S/he then proceeds to find groups within which to study the BSP and, as in the first model, starts comparing incidents and groups within or between classes of units to achieve a level of generality, whether general substantive or formal.

Of course, we favor the first model, but since many BSPs are known already, some analysts may prefer the second model. It has, however, various pitfalls. In discovering the emergent fit, the analyst should be cautious about assuming that if the BSP fits, it is the core variable of that unit. *It very likely is not*; the BSP is being imposed for the purpose of generating a theory of it, *not* of explaining the variation of behavior in the unit studied. Thus one can study temporal pacing in just about any social unit, but it is seldom, if ever, the core variable of the unit. Since it is not the core variable, the BSP will usually be less than densely developed in the study unit. It will very likely become overshadowed by a more salient core variable or BSP. Thus using the second model, the analyst skips between many chosen units looking for grounded densifications of properties and does not overwork any one group and incidents in a unit for what is not their BSP as it would be for a discovered BSP.

Furthermore, the second model is somewhat contradictory to the first and to the main theme of this paper, but it has a place in grounded theory if done carefully—since there are many grounded BSPs already discovered that need further development within and between substantive areas. The second model looks a bit like deductive, logical elaboration, but it is not, providing the analyst follows the grounded approach. S/he does not start “empty” or “non-preconceived” as in the first model. S/he engages in pre-emergent analytic thinking, and sampling before approaching the field. But once in the field, s/he starts correcting early thoughts and follows the grounding in subsequent theoretical sampling. And s/he ends up as s/he would in the first model, searching for comparison groups, as it becomes clearer and clearer where to go for fit as the theory develops.

There seems to have arisen a tacit rule in naming BSPs. It is turning a substantive noun or verb into a gerund. Thus we have “friending” and “becoming” respectively. While most BSPs are labeled with a gerund, not all are; thus, career, alarm system or recruitment system. As we said above, caution should be applied in over-use of gerunds. They may mask a basic social structural condition, such as “security system” or “shift”(as in our earlier example). As in all grounded theory work, there is an area for theoretical creativity in labeling and rendering the BSP or core variable.

As the analyst becomes practiced in spotting and conceptualizing BSPs, s/he should avoid a probable occurrence. In reading others’ works, a BSP may become evident, which the author did not know s/he had in the data. The analyst should say as much in his/her own work, and not attribute the idea to the author. The analyst should distinguish his/her good idea from the author’s “good data but conceptual miss”. In fact, most BSPs are implicit and taken for granted in data, both by sociologists and participants alike. Only with training does the analyst see the strong contribution of a BSP to the on-going activity in the area under study, and only then can a theory be consciously generated for a BSP.

BSPs Compared to Units

Most sociology is focused on a rendition of a social structural unit. That is, no matter what the substantive issues or concepts, or whether the study is description, verification or theory building, *we read about properties of a unit*; persons, groups, organizations, aggregates, statuses, nations, and so forth. In contrast, in this paper

we have placed a relative emphasis on social process as the focus of analysis. *We generate properties of process.* It is important and useful to develop here the distinction between unit analysis and process analysis, so that their relative use and merits for sociology can begin to be clearly understood and used accordingly.

In itself, the focus on either unit or process sociology is not intrinsically meritorious. The test of relative worth lies in how well each may contribute to the knowledge of sociology and the purpose at hand. We, of course, are biased toward process, as we see many comparative advantages in the transcending nature of BSPs. The reader must make his/her own calculations for each project. These distinctions listed below are opening ideas, *not* final dicta. Some items do not have to occur, but empirically, they do.

UNIT	PROCESS
<p><i>1. Relative Focus</i></p> <p>Process is one property of the unit. Analysis focuses on unit itself.</p>	<p>A unit is a place where a process goes on and it provides a set of conditions for its operation. Analysis uses properties of unit, not unit itself.</p> <p>Focus is on process as it explains or processes a problem or behavior pattern.</p>
<p><i>2. Freedom From Time and Place</i></p> <p>Unit bound. Rendition of unit is always bound by its time and place during period of study.</p>	<p>Process is free of unit's time and place. These properties of unit are only varying conditions. Another unit varies process differently.</p>
<p><i>3. Generalizing</i></p> <p>Finite to unit; analyst can only generalize a study to a similar, usually larger unit. Generalizing is difficult and slow as must study large unit to analyze differences or use random sampling of smaller unit. Number of units to generalize to is limited.</p>	<p>Fully generalizable quite easily, as a BSP transcends the boundaries on any one unit by just varying it for another unit's properties. Thus, the analyst generalizes a substantive BSP to a generic BSP. BSP is more general as it may apply to all units.</p>

UNIT	PROCESS
<p><i>4. Action</i></p> <p>Provides the conditions that more or less allow the action. Units rely on BSPs to run. Units are where BSSPs and BSPPs intersect. Units themselves may be a BSSP that processes very slowly, compared to BSPP, and is actuated by BSPP. A static unit is a frozen BSPP.</p>	<p>The action of life is always in the process rather than of the unit itself. The unit is actuated <i>by</i> process as it bounds and locates it. The action process is a BSPP.</p>
<p><i>5. Freedom from Perspective</i></p> <p>Study of unit is always from perspective of analyst and/or participants. Bias is part of analysis as it is built (the establishment view of a corporation, for example).</p>	<p>BSPs are a separate perspective, irrespective of the perspective of participant or analyst. BSPs go on irrespective of bias of analyst. "Purging" is always purging, becoming is always becoming, no matter how perspectived the rendition. Bias is just one more variable in a multivariate analysis.</p>
<p><i>6. Durability</i></p> <p>Time and place change so studies of a unit becomes <i>obsolete</i>, whether unit description, unit theory, or unit formulations of change.</p>	<p>BSPs are quite durable. They transcend the fallibility of units and, while keeping up with unit changes, as units change, BSPs get modified.</p>
<p><i>7. Transferability</i></p> <p>Once out of generalizing range, it is difficult and hazardous to transfer ideas or findings of one unit to another unit. Transferring ideas about a nursing school to an Air Force academy probably does not apply.</p>	<p>Since BSPs are fully general, they transfer easily with modification. Becoming applies to both a nursing school and an air force academy.</p>

UNIT	PROCESS
<p>8. <i>Consultation Based on Transferability</i></p> <p>An expert on a unit is restricted to that type of unit, and he requires much knowledge.</p>	<p>An expert on a process can consult on any unit where process is occurring by just knowing general process and applying it to new conditions.</p>
<p>9. <i>Misattribution of Source</i></p> <p>To describe a process as a property of a unit implies that it is uniquely the result of the people in the unit. <i>This is inaccurate.</i> The unit simply uses a general process. Thus, “women in karate are trying to neutralize sex status” implies they produced this process, which is inaccurate.</p>	<p>A BSP implies that it is being used by the unit, not a source of it, and the use varies within it. For example, it is accurate to say that women in karate use one mode of neutralization of an otherwise differentiating sex status.</p>
<p>10. <i>Learning</i></p> <p>Typical unit studies can be boring unless on a deviant or other particularly interesting group. It is hard to remember the plethora of facts, and understanding the unit is often bereft of intrinsic scope of meaning, because of low generality.</p>	<p>BSPs have much “grab”(they catch interest quickly), because they have high impact in meaning, are easily understandable, and have general ideas that are easiest to remember.</p>
<p>11. <i>Research Sampling</i></p> <p>Random sampling of unit itself is used so the analyst can generalize to a large unit.</p>	<p>Theoretical sampling of properties is used to generate to the theoretical completeness of process.</p>
<p>12. <i>Research Coverage</i></p> <p>Full range of representative factual coverage needed to describe the unit accurately, whether for description or verification.</p>	<p>Theoretical coverage requires only theoretical sampling of that segment of all behavior needed to generate an explanatory theory of a process. The analyst does not need representative coverage of all behavior.</p>

UNIT	PROCESS
<p><i>13. Research Accuracy</i></p> <p>Units tend to require accuracy so the descriptions will be considered correct. Statements are facts to be believed, and subject to slight correction.</p>	<p><i>Not crucial</i> with a BSP, since successive comparisons correct categories and hypotheses. Statements are hypotheses, thus claimed as suggestions to be checked out; they are not claimed as facts.</p>
<p><i>14. Research Reading</i></p> <p>Read as accurate description.</p>	<p>Unfortunately BSP theory is still read by many as factual description, not as hypothetical generalizations.</p>
<p><i>15. Historiocity</i></p> <p>Unit studies are fixed in time. They are static. They are cross-sectional; picking up a moment in time, as if forever, but it becomes outdated, thus temporal scope is severely limited.</p>	<p>A BSP, since it deals with on-going movement, implies both a past and a future that can almost be extrapolated. A BSP has change built into it, as it is modified to incorporate new data. A BSP considers categories as part of larger ongoing process, historical scope. A BSP is in motion, not restricted to time.</p>
<p><i>16. Theoretical Impact</i></p> <p>Based on the above differences, unit analysis has limited impact and scope.</p>	<p>Based on above differences, a BSP allows for an expansive amount of grounded theorizing about every facet of social life. It has high impact.</p>
<p><i>17. New Data</i></p> <p>Typically refutes part of unit study.</p>	<p>Generates more BSP theory by comparing it and modifying theory by extension and densification.</p>

UNIT	PROCESS
<p><i>18. Relationability</i></p> <p>Units are seen as separate entities with definite boundaries. Theory related to a unit is not theoretically related significantly to other units, except perhaps to a larger similar unit to which it may be generalized. Thus unit studies are non-integrative to social organization, they make units, which are similar on underlying dimensions, seem separate, which is only arbitrarily so; e.g., normal and deviant studies appear different, not as two dimensions of the same general process. More fundamental patterns are obscured.</p>	<p>BSPs, by cutting across and transcending the boundaries of separate units, provide ways of relating units to each other through the same process; e.g., cultivating clientele, is a way of relating milkmen to lawyers. Thus BSPs tie social organization together. They are integrating. BSPs also relate to each other within units.</p>

Sociology along Process Lines

The above comparisons clearly indicate the quite different appearance and import that sociological renderings of the world will take in generating grounded BSPs. Our effort is to show that focusing on process, as well as on units, will facilitate theoretical development in sociology. Process analysis will partly alter the conceptual appearance of sociology by cutting across the transcending traditional concerns, topics and boundaries, such as check forgers, political parties, adolescents, homosexuality, prisons, patient care and so forth.

Much of unit sociology is delineated along lines that are *not* theoretically contiguous, although they are treated as such. As we indicated above, if a unit sociologist were to begin a study of brothels, s/he would probably place the study in the traditional category of “deviant behavior” or possibly “social problem.” In doing so, the presumption is that the essence or at least a primary property of the behavior to be studied is deviant or socially problematic. Concomitant results will explain the motivations, attitudes, or other social

characteristics of persons who engage in such practices as distinct from non-practitioners; i.e., “normals”. However, in categorizing brothel activities as merely another instance of deviant behavior, other—perhaps more central characteristics of the phenomenon—are denied serious consideration by the researcher.

If we hold in abeyance the deviance assumption, we note that the area to be studied is an organized activity, established for the expressed purpose of exchanging a “service” for remuneration. Viewed in terms of process, it would be found that the structural properties of the brothel are akin to servicing operations in general—a basic social process in American society. Quite simply, the brothel exists to provide a service(s), which happens to be sex. *One property* of a servicing process in this particular context is that the service being provided is generally considered deviant in the everyday world. The “fact” that it is so conceived may have some consequences for the organization of some of its publicly visible activities, such as making it necessary to maintain a low profile, putting limits on public advertising, necessitating payoffs to the police, etc.

However, the deviant conception of brothel activities is only one among many conditions and properties in this and other servicing contexts. Compared to other possible characteristics of the general process of “servicing” such as power symmetry, role of expertise, specialized knowledge, right of grievance, duration on premises, malpractice problems, waiting properties, etc., the primacy afforded the role of deviance in a unit analysis seems more reflective of common-sense considerations than theoretical fit. Conceptualized from a process orientation, the behavior of prostitutes and their customers has more in common theoretically with behavior found in garages and beauty parlors than it does with check forgery, alcoholism, and the vast array of other instances ordinarily conceptualized as deviant behavior.

One further observation seems warranted. From our example of brothel activities, it might be concluded that we have merely transposed a hypothetical social psychological study into one focusing on organization. We would answer that this is again a priority characterization that is not reflected in the empirical world. Instead, in our ongoing work with BSPs we have found one of its strengths to be an ability to *conjointly* render both structural and social psychological variables in terms of social process. It may be the case that either structural or social psychological variation has primacy in a given area, but that is a data-related question.

Regardless of the usual sociological interests, whether it be deviance, religion, collective behavior, etc.; and, regardless of the usual primary focus as either organizational or social psychological, the referent for BSP theory is always the process itself and *not* the particular substantive or conceptual unit involved. This does not mean that the analyst will be unable to explain how the particular substantive unit functions. Quite the contrary! BSP accounts of the world contribute substantial insight into the practical realities of the day-to-day world by explaining its variation (Glaser, 1969). However, as mentioned earlier, the analytic focus seeks theoretical coverage and not descriptive completeness, which is seen as impossible. As such, no claim is being made that “servicing” is the only aspect of brothels of theoretical importance. The only claim being advanced is that “servicing” explains much of the variation to be found in the actions, interactions, and perceptions found in the collected data from that research site. The process illuminates organizational features about the brothel, interactional patterns between prostitute and customer, prostitutes’ conceptions of their roles, and a wide variety of less obvious variables. As such, “servicing” is not to be taken as a “theory” about brothels (or deviance), but rather as a theoretical statement about processes that occur therein, which occurs in other areas of social life as well.

This illustrates the consequences BSP sociology would have for the manner in which sociology theoretically divides the empirical world. BSPs as basic uniformities of social life, cut across the boundaries by which sociology has traditionally been sub-divided. Thus, one of the major ways in which we render the world sociologically should reflect this basic uniformity.

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Adventuring: A grounded theory discovered through the analysis of science teaching and learning

By Katrina M. Maloney, M.Sc., Ed.D.

Abstract

The grounded theory of adventuring, derived from the substantive area of science teaching and learning, explains both why scientific thinking is an evolutionarily important trait and illustrates a common thread throughout a variety of teaching and learning behaviors. The core concept of adventuring incorporates the categories of exploring, mavericking, and acquiring and applying skills that are the hallmarks of positive science education. Learning science is difficult due to the higher order cognitive skills required. This study explains how we could be teaching and learning science in a way for which our brains are best suited, and in ways that reach all learners, and encourages the use of adventuring in all classrooms.

Introduction

The grounded theory of adventuring explains behaviors of teachers and learners. This study discusses the psychology/sociology of teachers teaching science and students learning science through a grounded theory analysis of behaviors, and elucidates the biological process of thinking by discussing changes over time to the human brain's physiology and chemistry. In connecting the behaviors of science thinkers to the biology of the brain's hardware, this work explains how we could be teaching and learning science in a way for which our brains are best suited.

Adventuring, as a core concept, contains the three categories of exploring, mavericking and acquiring and applying skills. Ten dimensions of adventuring are also discussed in this study, identifying conditions, strategies, types and consequences of adventuring. Although the theory of adventuring was discovered through an exploration of the substantive area of science teaching and learning, as soon as the theory was shared with others, it became apparent that adventuring happens in a wide variety of situations and conceptualizes latent patterns of behavior found in many learning scenarios.

Rationale: Why is Learning Science Difficult?

Studies summarized in *Benchmarks for Scientific Literacy* (American Association for the Advancement of Science, 1991) and *Shaping our Future* (National Science Foundation, 1996) state unequivocally that there is a need to teach science well to promote the type of scientific literacy necessary in a complex and increasingly global society. Science is in our everyday space. The imperative to be active decision makers in our country is a right and, as such, carries responsibility. If we forfeit that right and deny the importance of science education for all learners, we do a grave disservice to our communities, to our country, and to our planet.

The higher level cognitive demands of science courses are very difficult for a developing mind. Specifically, science courses blend math skills and linguistic skills, higher order cognition skills of hypothesis generation, analysis and modification. Science courses require rote memorization, sequential organization, and sustained attention to detail. Understanding science texts and participating in class discussion require sophisticated receptive and expressive language abilities (Levine, 1987). Troublesome issues for students identified in college science classrooms by professors include: use of scientific tools (hardware such as microscopes, centrifuges, incubators, balances, pipettes, measuring instruments); science literature (dichotomous keys, graphs/tables/charts, textbooks, journal articles, popular press items); and the cognitive skills of analytical thinking such as basic questioning, prediction, the hypothetical-deductive process itself (proceeding from general concepts to specific events, or, in other words, identifying the causes of results), organization of data and concepts, creating and/or reading graphs and charts, the recursive nature of science inquiry, and the possibility of change in facts/theories/hypotheses. Students bring various strengths to their work in the cognitive realm of science, but severe deficits in background understanding of basic scientific processes are obvious (personal communications, colleagues at a small liberal arts college, 1999).

In addition to the list above, a skills-and-inquiry-based text and study guide (Milani, 1987) identifies the following as “Science Cognition Skills”:

- observing
- describing properties and changes

- using data tables
- inferring from data
- using models to understand ideas
- identifying variables
- making predictions from hypothesis
- interpreting data to test hypothesis
- revising hypotheses
- statistics (use and understanding)
- making graphs--organizing data for
- observing to find evidence for a concept or idea
- classifying

As is apparent from the observations and teaching experiences of college professors and literature written for classroom learning, there is a complexity to the cognitive skills needed for successful scientific thinking. Other elements involved include development (physical, social, and intellectually maturity), biology (the health and “wiring” of the brain/mind itself), psychological, cultural, and emotional aspects.

How we teach science today and to how we could be teaching science if we understand how our brain/minds have evolved is a complex as well as complicated issue. This grounded theory investigation of the social activity of teaching and learning helps support the types of changes in education imperative to our success as a society of thinkers.

Method

The grounded theory (GT) method, used in this study, involves a process of discovery that begins with a broad topic. Investigations in GT start with a grand tour question, one that is deliberately open-ended so that participants reveal processes, assumptions, or behaviors that are important to them, without prejudicing influences from the researcher. Live interviews, classroom observations, published interviews and science literature were analyzed and incorporated into the final theory of adventuring. The open-ended nature of the initial data collection provided rich sources of material. The constant comparative analysis methods integral to the GT method were used to analyze all sources of data in this study.

The GT method is uniquely suited to the study of the complex social construct of science education, (and indeed, other areas of

education as well) because it is generated from data, not produced by means of hypothesis verification. Grounded theory inductively and systematically discovers theory from data. It generates rather than verifies theory. Constant comparative analysis is employed in grounded theory analysis to discover variables that might explain the widest variety of behavior (Glaser, 1992). When an answer seems imminent, the challenge is to keep asking, 'How do I know?' (Personal communication, Odis Simmons & Toni A. Gregory, June 2001). In this manner the analysis is kept honest to the data. The constant implementation of strict comparison is the prime reason GT research is rigorous, true to the data, and ultimately effective as a social research tool (Glaser & Strauss, 1967; Glaser, 1992; Simmons & Gregory, 2003).

Education is a social pursuit and is both a complicated (made up of more than two elements) and a complex (interconnected) system. Grounded theory analysis uses the cognitive skills of comparison, spiral reasoning (recursiveness) and a systematic, rigorous approach to data collection and analysis in order to approach and identify an emergent theory. Data analysis informs theory and vice versa (Glaser, 1992). To begin a GT study, questions asked include "How do the parts (data) combine into a whole (theory)?" and, "How do the everyday behaviors shown through what the interviewee chooses to talk about indicate a theory to explain why these behaviors happen?" In contrast, in scientific method research (used by the natural and physical sciences), an hypothesis is generated after observation, then tested and verified or modified according to the data (Campbell, 1996; Kent & Coker, 1992). Inductive and deductive reasoning skills are used in GT analysis, and are both useful and necessary when considering complex systems of education. The use of a conceptual theoretical model, rather than either a qualitative or quantitative tradition alone, yields a rich, relevant, workable and eventually modifiable theory.

Grounded theory, as a discovery system, is most suited to the study of the intricate and controversial system of education. Educators and learners are a widely diverse group, and there are many opinions about the problems and successes of our education system. GT methods suit this at times inextricable maze of a system by maintaining the strict adherence to description and coding of behaviors while holding at bay preconceptions, to get to the root of the matter: How can we conceptualize the wide variety of behaviors inherent in teaching and learning? The theory of adventuring is one explanation for the behaviors exhibited by science teachers and learners.

The Theory of Adventuring

The three major categories of adventuring are “exploring,” “mavericking,” and the “acquisition and application of skills.” Any person who actively seeks out physical or mental challenge in new ways, proceeds to overcome those challenges in ways that are not conventional, and then applies the new knowledge to another task is adventuring. The purpose of adventuring is not to produce an end product (although certain actions may have an endpoint such as laboratory experiments). Adventuring behaviors have a deeper objective than just to get somewhere, do something, or make a mark on an actual or metaphorical mountain-top. The point is the journey, the challenges that arise during the process, and the knowledge that, even for an expert in the field, something new is to be learned each day or from each event. Each new learning impacts others, and the results or consequences of the present may appear at a later time.

As Nobel laureate Barbara McClintock stated:

People get the idea that your ego gets in the way a lot of time--ego in the sense of wanting returns. But you don't care about those returns. You have the enormous pleasure of working on it. The returns are not what you are after.
(Bertsch McGrayne, 1998, p.168)

A professional woman interviewed said that she was not interested in research: “Something or someone always gets hurt--slugs or chimps, whatever.” She preferred to practice her science, to read about clinical trials, but to actually do her job was more rewarding than seeking answers to hypothetical questions. Her experiences in “getting my hands dirty” were more important than any lab work she could have done. Referring to academia, she said: “It is not where you life is--it's your work that's important.”

In the context of teaching and learning science, adventuring occurs in classrooms on the part of the instructor and the student, in laboratories, and in the field. Each of these environments holds the necessary atmosphere for the dimensions, categories and properties of adventuring. In a dynamic classroom, the instructor and students each need to explore, have fun, do tasks, and acquire skills to be used in the next task. Most science courses have some component

of laboratory experimentation, and this is recognized as an important hands-on teaching and learning technique (NSF, 1996). Most students like lab activities. The lab serves as an alternative to the less multimodal aspects of the classroom lecture model.

Field workers (veterinarians, foresters, biological survey workers, etc.) have the opportunity to adventure in the best setting of all. The natural world is full of opportunities for adventuring, and indeed is the original stage for such behaviors. For instance, Jane Goodall pioneered primate ethnology by conducting observations in the chimp's own wild habitat rather than in artificial environments such as zoos in the 1960s (Montgomery, 1991).

Research laboratory workers, both principal investigators and research assistants, have opportunities to adventure every day in their work. A successful research scientist working in a laboratory, who is a leading figure in her field, talked about her favorite thing about her job:

Finding out something new that nobody ever knew before. The whole process of being involved and finding out things and the excitement of discovery is absolutely tremendous.

Conditions of Adventuring

Having control over one's own schedule is important to successful adventuring. Labs, classrooms, the field, and generally nontraditional environments are conducive to adventuring. The flexible daily schedule may fit a person's own circadian rhythm, or creative cycles. Scientists might put in 14 or more hours a day in the laboratory (Sonnert & Holton, 1995), college professors may hold classes in the early morning or evenings. Legend has it that Buckminster Fuller dreamed of the structure of carbon now called a Bucky-ball, and "Eureka!" -was uttered by Archimedes in his bath. A research scientist remarked:

There are days that I get out in 8 hours and there are days that I don't. A lot of times I do more like 10 hours...but there is flex time as long as you get the work done you can be flexible about your hours. I don't have to be there at 6:30 a.m., but I'm just much more of a morning person and I live close.

Creative thinking is fostered in adventuring scenarios. Although nonlinear thinking is not traditionally considered a science cognitive

skill, it is very important that there be freedom from the institutional structure to utilize creative methods. A worker in a research lab said:

Every once in a while they [drug companies] come up with something new like now you need to have a [specific product] which is what I helped develop...They wanted to get it on the market, so they had three existing [products] that they thought would work, so they gave them to me and said, "Figure out how to make this work", so that's what I did! It was cool!

Teamwork is an available option in adventuring. Several interviewees mentioned the social aspect of doing science.

[Science is a] very social endeavor...somehow I've done fairly well with people in my lab in terms of keeping them happy...because of the fact that they feel that it's a positive environment.

Group work is often encouraged in science classrooms. Lab partners are almost always assigned, to build cooperation and teamwork skills in students, but also because some tasks need two people to accomplish. In a marine biology class visited, the students were paired up so that one could take notes while the other observed snails. Sometimes teamwork is integral to the event, such as teacher-student dynamics, team product development, physical assistance in the field, and so on. At other times the scientist is alone, experimenting with different ways to answer a question, or simply cogitating on the data. "I enjoy mostly working by myself or with a small number of scientists and students," said one participant. Jane Goodall isolated herself from other humans in order to observe the wild chimpanzees in their natural environment (Montgomery, 1991). Barbara McClintock developed the "capacity to be alone" (Fox Keller, 1983, p. 17) from an early age, and this strength supported her research endeavors throughout her life.

Part of adventuring is the *serial completion of tasks*. There are things to do, places to go, people to see, and ideas to contemplate. There are classes to teach, research to conduct, clients to meet, reports to write. Each task is time delineated with the beginning, middle, and end as discrete. The tasks may be related, and a series of tasks comprising a project is a key component of adventuring. (See below for a complete description of variable tasking.)

In adventuring, *the individual has control over Intellectual*

processes and personal motivation. In adventuring, the day-to-day accomplishment of goals is self-regulated, self-directed, and self-satisfying. For instance- laboratory protocols are designed by researchers themselves (“With this product, I made the protocol, so everyone follows the protocol I came up with”); professors design and implement their courses (“I do a lot of independent studies...I get out there with curriculum development work, bio majors who want to be bio teachers, for instance”); and field workers have only themselves to rely on when confronted with tasks to accomplish or problems to solve. In adventuring, internal motivation to succeed, grow, use new skills, and/or relate old knowledge to new challenges is strong.

Adventuring is not about being safe and comfortable, it is about actively seeking challenge: *risk is available.* Jobs that are intrinsically risky are considered fun and desirable: The challenge is the attraction that maintains high interest and engagement. Risk may be intellectual, as for this research scientist: “In choosing a subject, there has been a deliberate and very strong desire to choose something that can be completely one’s own. And this is clearly true with me, in terms of what I’ve chosen, even if it is high risk.” And risk can be physical, as in exploring a relatively inaccessible ecosystem, working in the field with large animals, or working alone in the woods.

Risk is not necessarily involved in daily survival needs--basic bodily needs such as food and housing are met, so that one can concentrate on higher order intellectual activities.

There are three types of *freedoms* associated with adventuring:

- *Mechanical freedom* comes about by gaining the knowledge of tools to DO actions/tasks. A professional scientist learned all the skills she needed to go out and do her job, and therefore could go beyond the basics in her everyday work. A college professor said, “[my graduate experience] is really driving who I’m becoming as a teacher.” The abilities gained through mastering skills allow adventuring to be realized.
- *Expressive freedom* is made available when creativity is unleashed and allowed, encouraged to flourish, and focused to use as a tool. Innovation, approaching problems from creative points of view, and being encouraged to do so is important in successful adventuring. After students are taught certain skills (i.e., observation, hypothesis development), then “let loose” on a project with support for creative approaches, adventuring

happens. Discussing the undergraduate professor for whom she became a research assistant, Barbara McClintock said, “He just left me to do anything I wanted to do, just completely free” (Fox Keller, 1983, p.39). The early trust her supervisor placed in McClintock fostered her creative abilities and encouraged her to have faith in her own intelligence.

- After mechanics are learned and creativity unleashed, *mental freedom* to use all of the exploring, mavericking, and acquisition of skills of adventuring at once is possible. After Rosalind Franklin left Kings College (where she had discovered the structure of the B form of DNA in 1951), she had a lab at Birkbeck College and a project to study viruses. At Birkbeck, she had grants, assistants, space, and the respect of her colleagues. Franklin proceeded to publish 17 papers on virus structure between 1953 and 1958, a prolific record (Sayre, 1975). The combined conditions of Franklin’s extensive background in x-ray technique, the availability of an interesting and unique problem to which she could apply her creative skills, and the conditions which allowed her to flourish and apply all of her skills exemplify the freedoms of adventuring.

Strategies of Adventuring

In order to maintain the adventuring state, scientists take on many different responsibilities (teaching load, independent student projects, writing, sitting on committees, presenting at/attending conferences, projects in a lab). Interacting with colleagues of like mind for mutual discussion and understanding also occurs. Socializing with peers is fun, interesting, and synergistic: New knowing can come from such interactions. A strategy of maintaining the adventuring state for teachers may be taking a lower paying teaching job rather than pursuing research at a university. Adventuring requires flexibility in daily schedules as well as broader considerations such as geographic location or job description. A college professor said:

This is one of the best jobs in the world as far as I’m concerned, because, if you were at a large research institute as a professor, you know, I’d have a lot less flexibility...here if I want to do my scholarship on an organism one year, I can switch to something different the next year.

Furthering one’s own professional development by attending

conferences, presenting, reading others' work, and moving to a geographic location that has the situation desired with all the proper elements are additional strategies of adventuring. Adventuring teachers or researchers learn skills from their own education, both formally in graduate school and informally as they teach in their fields. The skills thus acquired are vital to the recursive nature of adventuring. Each skill learned and applied gathers others to it and advances the spiral loop of exploration and discovery.

Types of Adventuring

In the realm of scientific teaching and learning, there are two main types of adventuring: (a) teaching, which, as an added result, prepares others to adventure into science inquiry, and (b) researching or "doing science." Both types are active, seek change, and impact others through the combined behaviors of adventuring. Adventuring through teaching incorporates action agents-- meta-catalysts seeking out events and acting upon such for change. "Teaching adventuring" acts after, beyond, behind, along with, and among other people to bring about new knowledge, and in so doing is strengthened and changed in preparation for the next event. As a meta-catalyst, teaching adventuring is not used up during a reaction but grows stronger and more expert as it travels long the loops of adventuring. A college professor said:

I'm not producing much science, but I'm helping produce scientists...so I feel like I have much more impact on my field in this position than I would if I was a practicing, doing research, although I try to do some of that, but you know when students come in and do all these independent projects, you know it takes away from my getting my research done, but... through them I get to explore about other new things...so my motivation [in taking on independent students] is to have those students go off and do such great things afterwards, that huge amount of confidence they gain from working one on one with you... so you get the direct mentoring and also this opportunity to explore something that's important to them.

Researching adventuring may or may not incorporate active teaching. Laboratory assistants, post-doctoral appointments, or student interns are sometimes present in laboratories or the field,- but for the most

part, researching adventuring is focused on solving problems. Franklin and McClintock studied DNA to answer specific questions (Fox Keller, 1983; Sayre, 1975); in commercial laboratories researching may be done to create product; in ecological or field research, observation is employed for better understanding (Montgomery, 1991). Researching behaviors relate directly to adventuring by being examples of exploration, skill application, and creative problem solving. The mechanics of adventuring include overlapping, recursive, branching, confluence, compiling, creating, and synthesizing skills, all of which are deliberately taught.

Consequences of Adventuring

The positive consequences of adventuring include a sense of fulfillment in experiencing a full life of the mind. Fun and playing are high interest motivators, and those who adventure seek out situations wherein fun is a component. When adventuring, a person achieves satisfaction of doing what s/he is good at, and has a sense of freedom and control over his or her own intellect and career trajectory. The integration of skills develops self-confidence, and when choices are available they are often self-identified: "I love my job!" was said repeatedly in interviews. The participants felt that it is rewarding to do something they love, and to do it well.

There are negative consequences of the choice to pursue adventuring. Long days in the classroom and/or lab, tiredness, burnout, or hyper-focus can produce an imbalance in the mind/body/spirit realms, stress, illness. There is a need to protect one's work from potential plagiarism, and time management is problematical, "There is never enough time to do it all", "It's hard to balance it all ". For most, there were personal choices regarding partner relationships, family, geographic locations, travel, on so on.

Yeah, I had to make choices after [grad] school and it was hard, it was hard to leave a relationship, but I hated [where she was living]. I just had to live in the country, so I could have all this and develop my practice, too.

The Categories of Adventuring

The three main categories of adventuring are exploring, mavericking, and acquiring/applying new skills and knowledge.

Exploring

In adventuring, teachers and learners of science explore their ways into mysteries, and use skills to understand how things work. Exploring involves questioning. Sir Edmund Hillary, the first European (and most public figure) to climb Mount Everest and return, was clearly questioning the formidable mountain environment for scientific and personal reasons (Morris, 2003). The botanists and anthropologists who opened the western world to Africa, the secrets of ancient Egyptians, the evolutionary origins of humans, Armstrong and his colleagues who stepped on the soil of our moon-- these men and women exemplified exploration in the name of science. Indeed, the brave, talented, knowledgeable, and well-backed Lewis and Clark expedition may be the epitome of our cultural icon, The Explorer (Duncan & Burns, 1997). Ultimately, contribution to scientific knowledge, and therefore a greater understanding of humanity's place in the global system are the goals and objectives of exploring.

A college professor interviewed said: "I still want each student to find their strengths and to have a well-rounded experience like I had during my PhD." Her students had the opportunity to explore a variety of topics before they chose their senior thesis. "You give them an opportunity to be involved in some kind of project and they find they really enjoy that. It's supposed to be a time of exploration." In two high school science classes observed, students actively explored live organisms. In a marine biology class, students were given live snails and asked to design an experiment with them; in a biology class, students were shown cryptogams and asked to observe the structure and form of the various specimens.

A Shift from Fear to Curiosity: The First Scientific Questions

The hominids *Homo habilis*, *H. erectus*, and *H. sapiens neanderthalensis* began their extraordinary evolution toward modern *Homo sapiens sapiens* in a milieu that included rapid climate change and increasing diversification of all life forms some 1.5 million years ago (Wilson, 1992). The increased use of symbolic language, communication, social order, representative art (Donald, 1991), and the beginnings of science adventuring thinking happened simultaneously during the mid to late Pleistocene epoch. Brain anatomy and function, particularly the amygdala response to stimuli¹ and the enlarging prefrontal cortex², were essential for the development of scientific cognition in

the hominid. Adventuring behaviors probably evolved as questioning, discriminating, and exploring the environment (rudimentary “scientific thinking”) became the normal behavior of the hominid. Donald (1991) described the evolution of the *Homo* brain by noting three anatomical markers in the fossil record: (a) the rise of bipedalism at approximately 4 million years ago, (b) a significant enlargement of the skull between the species *Australopithecus* and *Homo habilis* at 2 million years ago, and (c) a second increase in skull capacity (and therefore a larger brain) with the change from *Homo erectus* to archaic *Homo sapiens* at 120,000 years ago. It is probable that a shift in the hominid response to an alien object or event happened due to the animal’s interaction with an increasingly diverse environment, and resulted in exploration and the beginnings of adventuring behaviors.

From the “immediate flee” response to the unknown, *H. sapiens neanderthalensis* developed curiosity and discrimination: “What is this? Will it help or hurt me? Is it poisonous or eatable?” The animal now experimented, tested, and explained its surroundings. Ultimately this shift led to large brains, distinct culture and language, scientific thought processes based on the possibilities of the unknown rather than fear of the unknown, and the adventuring behaviors exhibited today by the large brained, sophisticated *Homo sapiens sapiens*.

Fun

The property of fun includes having interesting and new issues to work with. Through experimenting, discovering and researching a variety of issues, interest is kept high, leading to strong motivation to continue the exploration and sustaining the fun. Sometimes having fun is solitary, sometimes experienced with teamwork. The freedom to play, have fun, and the accompanying self-autonomy is an essential element in exploring.

I love teaching, it’s fun.We did some stuff on plants, and the genes, I liked the genes, it was fun. It was interesting to see the particular things, vertebrates, phylums, cool, yeah, we dissected a starfish...before that we did mealworms, but those weren’t very exciting, those were boring...Oh we did snails, too. I had a snail friend Larry; we did stuff with them, and wrote a report.

Play

Curiosity is fun. An integral aspect of the cogitative and behavioral shift from fear to curiosity was the element of fun. From the earliest mentions of games by the ancient Greek writers to the research conducted at universities on children's play development, play theory has emphasized the presence of curiosity in the playing individual (Levy, 1978). Levy established three criteria for the definition of play: intrinsic motivation, suspension of reality, and internal locus of control. Humans are stimulus seekers, and will distinguish among the intensity, meaningfulness, and variation of play activities. "Play is the behavior that maintains optimal flow of stimulation for the individual" (Levy, 1978, p.132).

Play is spontaneous, free form, can occur with others or with one's self, and is creative. Gaming is a zero-sum event (I win, therefore you lose), is organized or rule based, happens against others, and is structured. Both playing for the sake of playing, and gaming with rules occur while exploring in adventuring - playing around, playing with, messing around, having fun with. One working scientist interviewed stated that fun is a corporate fundamental value that she was rated on in her yearly evaluations for promotion. In adventuring, the element of fun is important for maintaining a high level of interest and therefore is a motivating factor. Each one of the interviews studied mentioned fun or the pleasurable nature of work.

Levy's (1978) first criterion for the definition of play is that the behavior has intrinsic motivation. Play is not forced, structured, or bounded by external forces. Play disintegrates into duty if rewarded. In adventuring behaviors, there is a strong internal drive--a passion for the work that at times exceeds common sense regarding the balance of time/effort and direct compensation, financial or otherwise. In fact, adventuring may put a person in a position of lower financial compensation, acceptable because of the wish to maintain the adventuring state. Fulfillment, happiness, the sense of well being, and tangible contributions to the greater good are attributes of adventuring that are not externally rewarded. The development of play behaviors in children is an important precursor to having fun in adventuring situations later in their academic or professional lives.

Variable Tasking

Variable tasking encompasses behavior that occurs in laboratory investigation situations. Variable tasking involves doing a number of

different tasks, sometimes simultaneously. It is fun, it has variety, it has novelty, and each step has rules. It is a game. There are parameters around each task (rules), steps that must be taken in sequence. There are time boundaries (an experiment may be timed for reaction/ etc.), or there are external time pressures (got to get it to market; beat the other scientists to publish; the class period is only a certain number of minutes long). There are protocols/processes to follow that are important for replication and for learning.

Variable tasking also has an end point: There is a result. This result informs the next task (often, if the variable tasks are a series of experiments, each builds on the previous). A product, a new hypothesis, a variation of a theory, a new something is produced. Multi-tasking is characterized by tasks that are not necessarily connected, whereas variable tasks are interrelated, sequential and/or recursive. Behaviors that illustrate variable tasking are those conducted in the laboratory, such as experimenting, where tasks are serial and orderly. Training is necessary for the use of instruments (microscopes, cameras, etc.) and cognitive skills are required, particularly the ability to follow protocols in a step-wise manner, and the ability to question the fitness of an event. A research scientist described her day:

I can come in and run a test, organize it, take a break for lunch then do the assay in the afternoon. If I can finish my assay early enough when I can get back to my desk for a couple of hours, and either read a report, write a report, do my data, go to a meeting.

The teachers observed engaged in variable tasking by having clearly defined sections during the 45-minute class periods. For instance, in a chemistry class, the teacher started with the review of a test taken the previous day, then introduced new material, then had the students talk in small groups, then reviewed what they had come up with. Each task had a defined beginning, middle, and end, which was explicitly identified by the teacher for the students. In a marine biology class, again, the teacher had clearly defined sections to the class period: preview of assignments and activities to come, preview of the day's activity and the activity itself.

In each class, the tasks had parameters of time (10- to 12-minute intervals), a clearly defined process for covering the material, and an end point defined both by the class period allocation but also by the completion of the task. Each task was related but could stand alone.

Incidentally, this process modeled scientific investigation for the students by explicitly identifying tasks to accomplish and then carrying out the tasks.

The following characteristics are found in variable tasking: organization, interest, skills, flexibility, high energy, patience, sometimes teamwork, independence, confidence in self, confidence from peers or supervisor, strong sequential thinking, and creative thinking. These are similar to the “science cognition” skills identified by Milani (1987) in a study skill workbook (see introduction). Play also relates to the exploring nature of variable tasking. The high level of interest and resulting stimulus, time parameters, and an end result are similar to the process of playing a game. Many games have strategy, a linear progression of events, and an eventual outcome that parallel the experience of a scientist adventuring in a laboratory. For instance, card games have rules and laboratory experiments follow protocol; card games can be played solo, in pairs or groups, and an individual scientist or the research teams work separately or together; card games have a winner at an end point; laboratory work has results to be analyzed and reported in a final document.

Playing around with data and ideas in the tangible world or inside one’s head is not particular to scientists. What makes these behaviors interesting and adventuring is the nature of the thought process. The questioning, observation, experimenting, and analyzing of the exploring dimension is highly creative and risky. The property of mavericking explains the type of exploring that makes adventuring applicable to science teaching and learning.

Mavericking

Scientists are curious; they seek adventure and answers to explain the natural world, the “the other”, “ the unknown”. In ancient times, this mode of thinking may have been an imperative to survival, but at a more recent point, it became a luxury. Some cultures today value this way of thinking so highly that educational institutions are required to teach children scientific thinking. For example, each public school child is exposed to a variety of natural sciences in the United States general curriculum³, and is expected to be scientifically literate by the end of the legally mandated schooling period (AAAS, 1991; NSF, 1996).

The mavericking category of adventuring includes taking a stand

that is independent from others in a group. Accepting challenge, taking risks, and solving problems creatively are important, but the distinguishing behavior in mavericking is that exciting and unusual experiences, either mental or physical, are *actively pursued*. Properties of mavericking include actively seeking hard work and advancing into unknowns (whether it be an hypothesis, a forest, or a classroom) actively, deliberately, and with preparation.

People think that it must be really horrible in science when the idea that you have turns out not to be true, but I find the opposite almost--because when what you thought was going to happen isn't true, you're surprised. And I find that really great! I love it!

Mavericking may include pursuing a different career path than expected, or being viewed by others as different.

Other members of my family think I'm sort of weird because I didn't get married ... the typical type of thing... [growing up on a farm] it wasn't the kind of 9 to 5, five days a week existence that seems to be the general norm now--certainly something I still can't do.

When I was in high school, I was not a particularly social person; I had friends, but they were all slightly odd people with unusual aspirations.

Challenge is exciting and fun. Speculation is joyous. Thinking about things from different angles, being open to new ideas, and continually moving onto the next event are important properties of mavericking.

[in] some areas [of teaching] I feel really confident, and some areas, I'm like whooooo! what have I got myself into?? So I'm pretty adventurous as far as that goes, I don't mind just trying something else, I try to be as responsible as I can, like the course [a new class] that I'm teaching right now... it's not the typical type of assessment that I'm used to doing, so that's what I mean by trying something different, all my tools of the trade don't work in a course like that. What do people do when they teach a course like this? [laughs]...so I'm willing to try certain things.

Being brave, open, and curious; having self-confidence, drive, energy

and passion for work all distinguish the category of mavericking.

My friend C and I tried to get them [snails in their experiment] to race...hers against mine, along a ruler to the other end, but it didn't work, they were climbing all over the rulers...but we tried lots of things.

Mavericking presupposes that physical and basic survival needs are fulfilled (one's salary covers the rent) and that there are more important, interesting, and fun tasks with which to fill the days. In addition, mavericking behaviors are by necessity highly creative. The type of thinking that characterizes and informs mavericking may be a byproduct of a personality style, but the behaviors that encompass mavericking in the adventuring context are supported by deliberate instruction in skills training. The acquisition and application of specific cognitive and mechanical skills that are necessary to mavericking are discussed below.

Acquiring and Applying Skills

A new scientific theory is seldom or never just an increment to what is already known. Its assimilation requires the reconstruction or prior theory and the re-evaluation of prior fact, an intrinsically revolutionary process that is seldom completed by a single man and never overnight. (Kuhn, 1970, p.7)

The category of acquiring and applying skills includes the properties of tool use (both cognitive and mechanical), absorbing lessons, and foresight. Acquiring and applying skills is fun, creative, and satisfying. As a person gets better at a skill, applies it to the task, game, or adventure, s/he becomes satisfied and challenged at the same time. S/he wants to do it again, do more, take on the next question, seek new adventures--strive, conquer, and apply to a new scenario. Each of the interviews examined for this study exemplified these behaviors through curiosity, passion, and alternative approaches to discovering and researching scientific questions.

The recursive nature of acquiring and applying skills requires behaviors that build upon one another in a constant, spiral, and integrated way. Combining previously unconnected elements to synthesize and converge theory is the basic nature of scientific inquiry.

I do think that science, science thinking requires a certain training of the mind, at least for me it did. I have my science side that thinks through logically, then I have my other side that is a release from that way of thinking, so I don't **have** to think that way...a lot of folks don't understand that it took a lot of training to do that, and that a lot of our students can't just pick up and think like that.

Tool Use

Acquiring and applying skills through tool use happens in both the cognitive and mechanical realms of behavior:

- Cognitive tool use (language; ability to synthesize, recombine, and recurse; mathematics).

In order to relate the cognitive skills of *Homo sapiens sapiens* to the behaviors of acquiring and applying skills, it is important to understand the evolutionary development of the hominid brain.

During the Pleistocene epoch, (12-1.5 million years before the present) earth's climate was highly varied. In the north, glaciers came and went; in the south, torrential rains called pluvials stopped and started, and there was great diversification among species in response to environmental change (Morgan, 1972; Wilson, 1992). The early hominid *Australopithecus* eventually became extinct as hominid radiation (diversification of the species) increased and *Homo* species became dominant.⁴ The animal evolving into *Homo sapiens neanderthalensis* had to develop a toolbox of cognitive skills to deal with the variety of climatic conditions, rivals, and food sources. Buss (1999) stated that humans evolved psychological mechanism (sets of procedures) designed to take in specific information, transform such information through decision-making rules (if...then...) into output that solved an adaptive problem faced by the animal.

For instance, the hominid had to create a question in order to make a decision about a food source: "If I eat this, will I *then* be sick?" The formulation of questions involves a more sophisticated cognitive relationship with the environment than previously needed. As problems became more specific, psychological mechanisms tailored to such events evolved, leading to behavior

which was flexible, adaptive, and extremely complex (Buss, 1999). It was during this time that scientific thinking became necessary for the long-term survival and ultimate evolution of the hominid brain into the magnificently complex mind present in *Homo sapiens sapiens*. Without the cognitive tool of questioning, adventuring is not possible, and without language, science is not comprehensible.

Donald (1991) theorized that human language developed in tandem with human culture. “[Human culture] is [an] integrated pattern of adaptation, a complete survival strategy. It forms the larger framework into which various cognitive components ...including language must be fitted” (Donald, 1991, p. 201). Language started from concrete, environment-bound, and episodic culture in the early hominid groups. As *Homo erectus* developed the larger brain, vocal apparatus, and more complex social organization (including cooperation in procuring food), a cultural shift occurred. Thus a mimetic culture utilized gesture to represent action. As time advanced, the mimetic culture began to integrate knowledge and develop mythic representations to “explain” natural events, and to record behaviors (Donald, 1991).

Archaic humans developed linguistic speech as vocal organs became more complex and skulls modified to provide space for a tongue, larynx, and pharynx. External storage for memories (pictures represented things) and theoretical construction began to emerge at this time (Donald, 1991). Symbolic language, both written and spoken, are essential cognitive tools for adventuring. Scientific language is distinct from the jargon used in other academic disciplines, and is often reported as a significant barrier to science learning for students (AAAS, 1991; Levine, 1987).

- Mechanical tool use (scientific instruments, computers)

Basic training on methods of using scientific instruments in the laboratory or field, computers, measuring devices, and so on are important aspects of acquiring and applying skills specific to the task at hand. A participant talked about the different activities she did in class to learn science: experiments with living organisms, dissections, memorization, crossword puzzles, tests, quizzes, “hands-on games,” videos, slides, writing reports. Also, students had pets for which they had the responsibility of feeding, observing, and experimenting with while keeping them alive.

Other skills taught were graphing, using mathematics, taking notes from the board, reading scientific language. One student explained what was covered the year before:

Temperature and time, graphing, seeing how the temperature rose, how long it took, here's my lab report: "prove the density of water", graphing, yeah, we do that in math, too.

Absorbing lessons

Learning from parents, mentors, teachers, or colleagues and taking advantage of opportunities and developing foresight are properties of acquiring and applying skills.

I never had the type of advice that, oh, girls don't do that sort of thing. Any kind of biased upbringing just never occurred to my parents.

My Ph.D. experience was wonderful because I had a great advisor: Dr. Y-- was great, she didn't throw me to the wolves... but my postdoc was disastrous due to a witch of an advisor...it was horrible, she had no patience, was mean.

Childhood experiences impact the development of skills. One interviewee described "playing" as picking up a volume of the encyclopedia:

I remember I would often pick up H because it had horses in it, but once I was in H, I would read about Hindus, I would read about what ever....and that somehow fed into getting interested in more advanced stuff. It's not that the actual material I was reading was significant, but it gave me a sense of connectedness later, with things that really were advanced.

Acquiring skills both cognitive and mechanical, and then applying such skills to science teaching and learning can be placed within developmental considerations, and should be carefully considered within educational contexts. Adventuring, both in and out of the classroom, may hold significant importance to advancing science education change.

Discussion

What is “scientific thinking”? What is scientific language? Why do we distinguish between the language of teaching humanities and teaching science and mathematics? Our universities are divided into schools of Humanities or Sciences, and it is rare that a person excels in both realms. But why do we make these distinctions and what ramifications does this segregation have to how we teach, and how we learn? The answer lies in the development of theoretical symbolic and highly complex language developed by archaic *Homo sapiens* and refined, expanded, and perfected by *Homo sapiens sapiens*.

In our current educational system, according to Donald (1991), the *narrative* mode of thinking is represented by the literary arts, and the *analytic* mode of thought in science, law, and government. Narrative and mythic modes of thought attribute significance to events by modeling and linking by analogy. These processes are attributed by Donald to the ancestral mimetic culture of the Upper Paleolithic and Neolithic time periods, and are encompassed by the more sophisticated analytic thought. Products of *analytic* thought are formal argument, systematic taxonomies, inductive and deductive analysis, verification, differentiation, quantification, idealization, and formal measurement. Theoretical thought is the highest level product because it is a system which predicts and explains (Donald, 1991).

Science education to date has focused on mastering content: facts and vocabulary must be memorized and spit back in laboratory reports and on examinations (Byrnes 1996; Kuhn, 1970; NSF, 1996; Polloway & Patton, 1993; Wyckoff, 2001; Shepherd, 1993). The traditional teaching of science to undergraduates, according to Wyckoff (2001), is through lecture. Wyckoff maintained that this reliance on a clearly demonstrated ineffective teaching style is the major limiting factor in the quality of science education in the United States.

Scientific thinking is characterized by certain reasoning processes: deduction, induction, inference, interpretation, systematic classification, recursiveness, receptive and expressive communication, and mathematical abilities. And science is hard. It takes practice, discipline, experience, and a level of intellectual maturity to successfully negotiate scientific thought processes. Understanding and taking advantage of the adventuring nature of teaching and learning science can strip away some of those mysterious and intimidating qualities. A participant in this study said, “You don’t have to be a particular type

of person to do science, or to enjoy science.” That statement may be true, however, science thinking and learning uses specialized cognitive processes that can be actively fostered in students by informed, creative, and adventuresome teaching. If, as Pollway and Patton (1993) stated, the three main dimensions of science learning and the associated cognitive skills are *information acquisition*: observation, listening, reading, study skills, directed experimentation; *information processing*: organization, analysis, classification; and *information integration*: synthesis, hypothesis, independent experimentation, generalization, evaluation; then the theory of adventuring is clearly relevant to the effective teaching of those skills.

Student success in science courses structured in nontraditional ways was examined (Allen, Tainter, Pires, & Hoekstra, 2001; Krupa, 2000; Reiss & Tunnicliffe, 1999; Wyckoff, 2001) and were noted in the NSF and AAAS studies mentioned above. There is consensus that a shift from lecture style dissemination to inquiry-based and experiential modalities, along with the incorporation of multi-sensory approaches may enhance scientific thinking skill development for students.

Although it is a cognitive tool of scientific discovery, linear thinking may be the hardest aspect of science literacy to teach students. Adolescent students are at the cognitive development stage where moving from concrete ideas about the way the world works and the very nature of science to the realization that science does not *create truth*. This is a stunningly difficult notion. Students must be able to hold contradictory statements of fact in their minds and, at the same time, draw on what they know to reach the logical conclusion expected by the teacher or the task. To teach the notion that science thinking tools include approaching the data from an altogether different angle—a creative, nonlinear, and perhaps a spiral approach, indeed a *mavericking* approach, would clearly benefit adolescent students.

Adventuring in the Classroom

The best science teaching methods rely on one-on-one attention. In classrooms observed for this study, laboratory periods were spent with the teacher directing each student in the way that that particular student received instruction. Teaching diagnostically was important, but the challenge to balance skill and content instruction, keeping student interest high and output rigorous, while also attending to the particular “science” cognitive tools could be overwhelming.

Teachers observed rose to this challenge in a number of highly creative and effective ways. Students were subjected to a variety of multimodal instruction. For instance, a final exam in an anatomy class included a scavenger hunt all over campus to collect bones to complete a human skeleton and answer specific concept questions. Alternative evaluation mechanisms such as multimedia presentations, posters, kinesthetic representations (via dance) as well as written papers to show mastery of the material were assigned. Chemistry laboratory experiences were inquiry based rather than “cookbook chem labs.” Students were taught to ask questions about chemical principles, then design their own activities to find the answers. Faculty also incorporated course worldwide web pages to facilitate communication; used computer-generated presentations for lectures; used computer compact disk programs, videos, and other assistive technology to enhance the multimodal presentations of material. Field trips and field research on campus were also widely used by science faculty. A variety of teaching modalities is essential when reaching adolescent students.

In addition to all the academic requirements of their time and energy, secondary and college students face the typical adolescent issues of identity, cognitive readiness for higher order thinking, parental expectations, stimulating environments away from home, availability of alcohol, drugs, and sex. Students may or may not be engaged in their own intellectual growth, no matter what they think their purpose is at school. Educators can tap into the evolutionary aspects of challenge and risk, and in so doing, provide a hook on which students may hang their learning. Adventuring is an effective model for a variety of teaching situations and is applicable to all learners.

By applying adventuring behaviors to everyday work, teachers and learners could enhance their experiences and deepen their thinking skills. It is easy to be critical of education today, but there is a world of information about how the brain works vis à vis development of reasoning and higher order cognition. Articles about creative ways to ensure engagement and inquiry about, in particular, scientific principles, are published regularly in teaching and research journals.

The National Science Foundation’s year-long review of postsecondary science, mathematics, engineering and technology (SME&T) teaching, published as *Shaping Our Future* in 1996, states that there were significant advancements in undergraduate teaching methods since the previous study (the Neal Report of 1986). However, much more

needs to be done to assure that United States students learn science and that teachers are prepared to teach SME&T. Recommendations from the 1996 NSF report include specific charges for higher education faculty, departments, administrators and accrediting agencies as well as local governments, industry, media, and nearly every echelon of our society up to the White House. The recommendations relevant to the current argument include:

SME&T faculty: Believe and affirm that every student can learn, and model good practices that increase learning; start with the student's experience, but have high expectations within a supportive climate; and build inquiry, a *sense of wonder and the excitement of discovery*, plus communication and teamwork, critical thinking, and life-long learning skills into learning experiences. (NSF, 1996, p. 3) (emphasis mine)

The NSF recommendations are all about adventuring. They are sound, sensible approaches to ensuring that pedagogy, praxis, data about how the brain works, and classroom experiences are linked for the best learning environments in science classrooms. There are ramifications to changing the way our nation educates students in science and how we train teachers to teach science. If we approach the adventure of science learning with all of our evolved cognitive tools and in a manner that honors exploration, mavericking, and skill acquisition and application, we could better serve the variety of learners in each classroom. Changing from lecture instruction to multimodal and experiential learning works. The use of a variety of instructional techniques is grounded in sound scientific research and reminds us that student success is at the heart of this debate.

Further Questions

Due to time constraints inherent in doctoral research, additional theoretical sampling is warranted. For instance, questions emergent from the study include:

- Do men and women adventure differently? Gender research clearly shows significant differences between men's and women's approaches to the world, both cognitive and behavioral (Belenky, Clinchy, Goldberger, & Tarule, 1986; Gilligan, 1982; Shepherd, 1993), and recent comments by Harvard University President Lawrence Summers (Bombardieri, 2005) questioning whether there is an "innate"

reason for the paucity of women in upper level science research begs to be completely and finally answered.

- What is the underlying neuro-chemistry that creates the behaviors of adventuring? Brain research is currently advancing rapidly and new information about how the brain works is appearing almost daily. How can these discoveries be used to understand and promote adventuring?
- What are some practical methods of encouraging adventuring in all classrooms? Curriculum design is important, but the training of teachers to be systems thinkers, gestalt oriented, and strong tool users is perhaps more vital to the long-term success of teaching and learning in our schools. Teacher education is important to encourage adventuring. What would a program for teachers include?

Conclusions

The theory of adventuring gives insights into how teachers and learners of science behave. Adventuring accounts for a variety of actions and thought processes found in the participants of this study. The next step is to answer the forgoing questions in relation to the dimensions and categories of adventuring, and create an education program that encourages adventuring in teaching and learning.

We use adventuring in our sophisticated, structured, systematic study of the unknown because we evolved from a newly bipedal, hairless, episodic-culture-based archaic *Homo* to the highly complex, sophisticated, and huge-brained *Homo sapiens sapiens* we are today. By tracing the evolution of the behavior, I offer the proposal that by understanding the origins of our brain/mind as an explanation of the adventuring behaviors we find in scientists today, we can better teach and learn scientific constructs so vital to our society, our planet, and our future. A citizen must not forfeit her right to engage in government because of ignorance. A citizen must be able to express his understanding of issues that impact his life.

Science is about questions: The natural world is mysterious. Nature is the ultimate “other”, and humans have evolved a great brain partly because of the big questions, the higher cognition required to discuss, interpret, and answer questions about the essential nature of Nature.

All the evolutionary adaptations we now enjoy were directly influenced by our environment: climate, landforms, vegetation, and fauna co-evolved. Scientists use their intellectual skills to attempt to understand and strip away mysteries, to get to the unifying principle. Long before Aristotle humans have wondered, experimented, thought deeply about results, and observed natural forces. We are a curious species.

Adventuring in science is ultimately about creating imaginary results and playing around with tests and materials until that result is realized. The classroom or lab is a playground for the creative, highly trained, passionate re-- searcher. Approaching teaching and learning from an adventuring context, as demonstrated by the scientists and learners researched for this study, would make the cognitive complexity of science accessible to all learners.

End Notes

⁵The amygdala is a small organ within the limbic system of the brain that is responsible for “fight or flight” decisions (Stefanacci, 2003).

² The area directly behind the eyes in the brain which is responsible for the processing of concepts such as time, sequencing and discrimination between two objects (Barkley, 1999).

³ In New England, school children take earth science, physics, environmental science, and biology introductory courses in middle school. Each class is revisited in high school as part of general education requirements.

⁴ At one time, two species of *Australopithecus* and two species of *Homo* existed simultaneously (Campbell, 1996).

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Doing Best for Children: An emerging grounded theory of parents' policing strategies to regulate between-meal snacking

By Ruth Freeman, Ph.D.; Richard Ekins, Ph.D. & Michele Oliver, M.Med.Sc.

Abstract

Changes in children's lifestyle from structured family meals to unstructured between meal sugar snacking has been recognised as a risk factor in childhood obesity. Parental insights into children's between meal snacking and their experiences of regulation are important if an understanding of sugar snacking is to be gained in the field of childhood obesity. The aim of this study was to use grounded theory techniques to analyze the qualitative data obtained from participants and to generate an emerging theory of snack regulation. A series of focus groups with parents and their children were conducted. Data were analysed using grounded theory techniques. The core category that emerged from the data was 'doing best'. Parents used the behavioural strategy of policing as a consequence of doing best. Parents had to balance time availability, disposable income, energy levels, parental working patterns and family life with the child's food wishes and social needs. Balancing such contextual constraints influenced the style of policing.

Introduction

The World Health Organization (WHO, 2002) has stated that added and refined sugars should contribute to no more than 10 percent of an individual's total calorific intake. Recent research has shown that the average teenager obtains 20 percent of their calories from added sugars and consumes on average 50kg of sugar/person/year (Sibbald 2003). The increased sugar consumption has been linked to the steep rise in childhood obesity and particularly in children living in deprivation and poverty (Strauss, 2002; Lobstein and Frelut, 2003; Lobstein et al., 2003).

Childhood obesity is associated with increased health risks in childhood, reduced self-esteem (Sarlio-Lahteenkorva et al., 2003, Sahota et al 2001), and quality of life (Friedlander et al., 2003). Childhood obesity acts as an independent risk factor for adult obesity (Tingay et al., 2003) and is linked with adult cardiovascular disease, adult onset diabetes, osteoarthritis and cerebral vascular accident (Parsons et al., 1999) as well as low-income work and poverty (Tingay et al., 2003). Childhood obesity, with its many health, social and life-course consequences, is perceived as a harbinger of adult illness (National Institute for Clinical Excellence [NICE], 2004).

Various suggestions have been proposed to explain the increasing prevalence of childhood obesity. These include the food industry flooding the marketplace with cheap high-sugar and high-fat foods (Sibbald, 2003), the absence of readily available low-cost healthy foods (Alderson and Ogden, 1999; Bunting and Freeman, 1999) and shifts in structured family mealtimes to childhood between meal snacking (Feunekes et al., 1999; Strauss, 2002). Reasons given by families for changing from structured to unstructured eating patterns are important in the childhood obesity story (Alderson and Ogden, 1999; Feunekes et al., 1999). Therefore, this research team embarked upon an investigation to increase understanding of this unstructured pattern of sugar intake in children.

Qualitative data was collected as part of a larger controlled trial (Oliver et al., 2002), which evaluated the role of school-based snacking policies upon the consumption of snack foods in 9 and 11-year-old children. As it was important to discover if school-based policies affected the children's out-of-school snacking, parents and children were approached to canvass their views and opinions on regulating snacking between meals. The aim of this study was to use grounded theory techniques to analyze the qualitative data obtained from participants and to generate an emerging theory on snack regulation.

The Research Context

Participants in this study came from the Southern Health and Social Services Board (SHSSB), located in Northern Ireland (NI). In this area, the majority of schools tend to be in small towns or villages. All SHSSB primary schools were classified by socio-economic status (SES) in accordance with the NI Department of Education's use of

free school meal entitlement (FSMs). This is an aggregate-level measure of poverty, low-income and social deprivation. Currently, 25 percent of all NI primary school children are entitled to FSMs (Department of Education, Northern Ireland [DENI], 2001) which reflects the proportion of children living on or below the poverty line (Northern Ireland Statistics and Research Agency [NISRA], 2003). Schools were classified as middle SES schools if up to 15% of the children were in receipt FSMs and classified as low SES schools if 40% or more children were provided with FSMs.

Participants

Sixteen primary schools were selected from 54 primary schools in the SHSSB region. Eight schools were classified as middle SES schools and 8 schools were classified as low SES schools. Three hundred and sixty-four children attended the selected schools. A twenty-five percent random sample of children (n=91) was selected by researchers using computer generated random numbers. Ninety-one invitations to participate, together with parental and child information leaflets, written consents, were distributed by Year 5 and Year 7 teachers. Ethical approval was obtained from the local ethical research committee.

Sixty-four Caucasian children (forty 9-year-old children and twenty-four 11-year-old children) and their parents agreed to take part. Fifty-one percent (n=33) of the children were girls. Twenty-eight children attended low SES schools and 36 children attended middle SES schools, which reflected the SES and ethnic profile of the SHSSB region (NISRA, 2003; DENI, 2001).

The focus group discussions

Parents and children were interviewed separately using a focus group format. Two sets of 8 focus group discussions took place with parents and children over an eight-week period. As the interviews continued, the researchers deliberately chose fathers in order to develop new concepts and ideas that emerged from the data. For instance, fathers acted more erratically than mothers, for example using the child's weight on one occasion to refuse money for sweets but on another occasion giving the same child money for snacks.

The interviews took place in a variety of agreed settings. The children

and parents were asked to focus upon their attitudes towards a range of issues associated with healthy eating. The children and parents were invited to talk about any subject they wished to, to refuse to pursue any topics they found disagreeable and to close the interview at their request. Refreshments for the participants were provided. All groups were audio-taped for transcription.

Qualitative data analysis

The qualitative data in this study were analysed using grounded theory techniques. Grounded theory is a general method of data analysis leading to conceptualization. The methodology entails (1) the generation of substantive categories, (2) creating definitions of and linkages between categories at different levels of abstraction and (3) making constant comparisons between cases, instances and categories in order to explore fully the complexities of a data corpus. While grounded theory uses a systematically applied set of methods to generate an inductive theory about a substantive or formal area, it is also useful as a set of techniques to analyze data in a qualitative study. The latter approach was applied to this study. The focus of this qualitative exploration was how parents regulated their children's between meal snacking.

In any grounded theory study, whether the aim is to generate theory or simply analyze data, the research purpose is to clarify the main concern and find out how participants resolve that concern. The resolution of the main concern forms the core category. The core category accounts for most of the variations in a pattern of behaviour (Glaser, 1992).

The procedures and techniques of grounded theory followed in this study were that of open and selective coding. As mentioned previously, the data analysis was conducted as part of a controlled trial and this constrained the researchers' ability to conduct theoretical sampling. The controlled trial allowed for a longitudinal and in-depth quantitative analysis of child reported and actual snacking behaviours in the school environment (Oliver et al., 2002). It did not provide an insight into what happened at home. It was decided to collect parents' views and opinions on the regulation of their children's between meal snacking. The rigor of the ethical committee together with the constraints of time meant that it was impossible to conduct theoretical

sampling. Nevertheless, this study describes an emerging grounded theory as a core category gradually appeared during the analysis of the data.

The Research Findings

Doing Best – The Core Category

The core category that emerged from the data was 'doing best'. The desire to do best was consistent across all parents irrespective of socio-economic status or household budget; however, for some parents doing best was hard to achieve. Constraints such as time availability, energy levels and parental working patterns all influenced the parents' resolve to enforce the family's regimes that ensured their children were getting the best.

This was apparent when mothers and fathers tried to do their best to provide a healthy diet for their children. Parents did not wish their children to snack between meals and in some families sugar snacks were only eaten at week-ends. In other families, children were allowed the snack of their choice if they 'ask permission first', 'ate good food first' and 'only if they shared [*with others*]'. Other parents provided a limited supply of snacks for all the family. The children could help themselves, however, once the snacks were eaten no more would be provided. A final group of parents provided a constant supply of sugar snacks and allowed children to snack at anytime as they believed this was 'doing the best for [*their*] child'.

The concern with doing their best for their children was also affected by parental ability to be consistent. The degree of consistency with which parents enforced their family snacking regimes varied between parents, families and households. Fears about greediness or a child's lack of food intake, for example, gave rise to compromises. Children who nagged, children who were sick or who had poor appetites were allowed to consume large amounts of snack foods. It seemed that the consistency of the enforcement of the family snacking regime was dependent upon a power tussle between the parents' resolve to do best for their children and the child's persistence to get snacks. Because variation in parental determination to enforce family snacking regimes existed, it became possible to conceptualize the strategy employed to do best as policing. Two policing styles emerged – these were hard

policing and soft policing.

Hard policing

Hard policing was a consequence of doing best. Hard policing was a dictatorial and strict mode of enforcement. Mothers spoke of being resolute and consistent in their control of the family food regimes.

The cultivation of healthy (good) eating habits was of central importance to parents. Being initiated into the compulsory elements of the families' between meal sugar snacking policies meant that young children were acquainted with the household's food directives:

If you don't eat your food, like, you just eat a little bit of your dinner and go out and then come back in looking for sweets or biscuits – you won't get any. If I don't eat all my dinner I don't get any chocolate bars. Mummy says, 'If you don't have room for good food you don't have room for rubbish'. (Child 32)

I wouldn't ask – she [*mother*] just gives me what I am allowed – just on Friday – that's **only** when I'm allowed sweets, biscuits and cola. (Child 9)

The consistency and rigor of the deployment of the household food rules suggested that doing best and providing healthy foods had acquired a moral flavor. Mothers and fathers had the conviction that it was their moral responsibility to ensure that their children developed 'correct' and 'healthy' dietary habits. Eating sugar at the permitted times was 'good', however, eating sugar snacks at any other time was 'bad'. The requirement for parents to instill 'good' dietary choices appeared to be linked to morality and to perceptions of good parenting:

Parents should know they shouldn't give children sweets – it's bad for them. Like when you go to the movies and you see them coming in with bags and bags of sweets and you know what, the parents are wrong for doing it. (Mother 3)

The power inequity, which existed between parents and children, within the hard policing style, suggested that parents held the power. Any changes or shifts in power from parent to child resulted in parental actions to readdress the power balance. In some situations, parents

were unable to hold onto their power and saw their authority slip away as children continually nagged for sweets and grandparents accused mothers of depriving their children. With ever-greater numbers of children in the family, the parents' attempts of 'keeping an eye' on the children's activities became increasingly difficult. Mothers complained of 'a lack of energy' and a 'reduced resolve' to keep their children 'on the straight and narrow'. These observations allowed two styles of hard policing to emerge – consistent hard policing and inconsistent hard policing.

Consistent hard policing

Consistent hard policing was characterised by parents who consistently and resolutely enforced the household food regimes. Parents appeared all powerful with the ability to reward for compliance and punish their children for defiance:

After tea, as long as Jane's made a good attempt at eating her food then – only then can she have a biscuit or what ever she wants. (Mother 10)

I sneaked the chocolate bars Mummy had for the visitors for me and my friends. There was none left and when Mummy found out she slapped me, so she did, she slapped me hard **and** I didn't get sweets or biscuits for ages. (Child 21)

Despite the parents' belief that they relaxed the household food rules and became more flexible as children approached adolescence, this was not supported by the data. Many older children admitted to openly flaunting their parents' wishes and to practising a deception upon their parents:

Sometimes I get carried away [laugh], like the odd time when Mum works night duties - so when I come in from school, she's in bed. I just help myself to her chocolate biscuits and she never knows. (Child 35)

On discovering their children's disobedience and deceptions, the parents' rage was palpable:

I was so cross, so ashamed not to mention embarrassed. I

took him to the doctor. He threw his blazer at me and all these chocolate and sweet papers fell out of his pockets. He knows he's not allowed to eat sweets during the week, only at weekends. Then I discover he's eating them behind my back. (Mother 2)

She's just disgusting. She knows I don't allow sweets during the week and never in their bedrooms! Then what do I find – under her bed - empty chocolate and sweet wrappers – and it gets worse – a tin of drinking chocolate – half empty - with a teaspoon in it. I could have swung for her. I was so cross what with the mess not to mention that she had lied to her father and me. (Mother 15)

The children's resolve to circumvent and to break the rules suggested that sugar had become immoral and had acquired the status of the forbidden – something pleasurable to be done behind parents' backs.

Physiological pleasures and sugar highs

Evidence from the physiological literature demonstrates that high levels of sugar-induced opioids exist after eating sugars – in other words, sugar can induce a euphoric state – a 'sugar high' (Grigson, 2002; Kelley et al., 2002). In this guise, sugar snacking could be conceptualized in terms of illicit dependency, an obsessive desire for a 'sugar high' and the children's deceptive behaviour as a means of satisfying their 'junkie-sugar' cravings.

In this climate of deception and enforcement, sugar became the first battleground from which other more serious disagreements developed:

My sister's older boy and his sister wanted to come to the garage with me and I was really pleased to have their company. They bought sweets! I knew their mother would be furious – the daughter swore me to secrecy – it was all quite unpleasant. I thought this isn't a battle worth waging and then what did I hear that the older boy – he's about 16 had been out with his mates – he'd got drunk and was too frightened to go home – the mother disapproves of alcohol too. The

children just deceive her all the time – she hasn't attempted to give them any means of managing – it's like living in a police state she dictates and the children deceive her. (Mother 4)

Inconsistent hard policing

Under a continual verbal onslaught by children, mothers and fathers often gave in and practiced an erratic or inconsistent form of hard policing. Despite parents threatening either punishment or 'never to bring those damn biscuits into the house again', when children continued to 'torture', 'moan and groan for long enough', their mothers gave in. Mothers stated that they wanted 'an easy life', 'to keep things calm', 'to keep them occupied' and 'just to pacify them' as reasons for capitulation to the children's demands:

If I want money for the shop to get sweets I just keep going on and on about getting money and my Mum gets real cross. First she says, 'No'. If I nag enough then she just grabs her purse, hands me out the money and says, 'Do what you want with it!' – that's 'cause she's in a bad mood cause I have nagged and won't leave until I get money for sweets. (Child 20)

Friends, fathers, grandparents and family visitors were lured into the children's schemes to obtain sugar snacks. All these individuals were used as conspirators in a form of blackmail to break maternal resolve:

I've bought 'Sunny Delight' so they could try it. It didn't mean to say they were going to like it - but when they nagged and said their friends all had it and they're the only ones who didn't - then I worried they felt different– I mean, like they were losing out - so I bought it. Yeah, it was – what do they call it? – Ah, yes a peer pressure thing. (Mother 22)

Similarly, parents recognised that visiting family provided children with an opportunity to extort sugar snacks and family visitors were greeted with delight. The reason being that children recognised that snacks would not only be on offer but, with visitors present, requests for snacks would not be refused:

Suppose I'd have to admit I've been guilty myself, 'cause I know my sisters don't buy sweets [*laugh*] for their children

either - so when it comes to visiting them I would usually bring something, a 'treat' [*laugh*] you know those fun packs, those bars, I mean I would treat them, I would do that but not for my own children. (Mother 42)

As soon as I hear Auntie Jane in the house – I run to the kitchen 'cause I know she'll have brought sweets for Mum and her to eat. Even if she hasn't Mum will get the biscuits out and Mum says, 'Just take one and get out' -then I take one and sneak two biscuits or even [*laugh*] more! (Child 14)

Hard policing: doing best for children?

Hard policing is a consequence of parents doing best for their children. But are hard policing strategies best for children? Hard policing styles initiate children into a family's food regimes and re-enforce the household rules regarding between meal sugar snacking. The difficulty, however, for parents relying upon hard policing styles is that, while younger children readily comply with parental rules, as they become older and enter adolescence they reject parental values. Parents are forced to adopt an inconsistent style of hard policing and because of the dictatorial nature of earlier consistent hard policing strategies children are left with no repertoire to control their sugar cravings. Recent research, by Hill (2003) provides support for this proposition. He questions the appropriateness of using restrictive dietary practices with children and is of the opinion that parents who rigidly and dictatorially control their children's food consumption bring up children who are unable to develop their own internal or 'self-regulatory dietary abilities'. Hill (2003) has called for the need to re-consider parental influences upon children's food choices, to help parents develop appropriate dietary skills and to provide children with the internal means of managing their dietary cravings.

Soft policing

Soft policing was characterised by what seems an apparent lack of parent-power as parents yielded to their children's demands and wishes. The provision of sugary snacks, demanded by children, ensured that children ate 'at least something', had the same foods as their peers and parents had a 'quiet life'. Parents, therefore, appeared subservient to their children; however, this camouflaged the parental

wish to do best for their children.

Central to soft policing and paramount in the parents' strategies, therefore, was the need to do best for their children. Balancing such contextual constraints as family life and disposable income with the child's food cravings and social needs influenced the style of policing. Consequently, lower socio-economic group families appeared less restrictive when regulating their children's between meal sugar snacking. Rarely, but on occasion, parents would be inconsistent and would not permit their children to eat snacks whenever they liked. This suggested that two styles of soft policing existed – consistent soft policing and inconsistent soft policing.

Consistent soft policing

Consistent soft policing was characterised by children snacking between meals and choosing what, when and where to eat:

Well everybody's different really; maybe other parents would say that they give them sweets to pacify them or to keep them happy. Well I'm inclined to buy her a packet of biscuits or sweets because she likes them. I try my best for her and the best thing is for her to have what she likes to eat'. (Mother 39)

If there's a packet of chocolate biscuits sitting in our house and I said, 'Don't eat them!' they would eat them anyway. I would always buy them sweets whenever I go to the shop, I don't think it does them any harm and they like them so much. (Mother 56)

This apparent abnegation of control by parents was perceived as a 'coping mechanism' to ensure that parents had a 'quiet life' and that their children ate at least something:

My Jim, just won't eat meals, full stop. I set him down to different meals and he picks at them, he won't eat them at all. He eats packets of crisps or sweets and he is skinny, he is desperate I can't get him to eat anything good. I will give him something sweet because my attitude is as long as he's getting something. I have to make sure he is getting something you know. (Mother 19)

At first sight, it seemed that the children had considerable power over their parents. This suggestion, however, ignored the fact that parents recognized the power of sugar and used it to do the best for their children. Sugary snacks were used as a protection from being bullied or ridiculed at school. The inclusion of a chocolate bar, in a lunch-box, for instance, ensured that children were the same as everyone else and included in their peer group:

I mean you're not going to send them to school with a lunch-box that's different from everybody else. (Mother 62)

I heard of a couple of cases of kids like who weren't allowed to have chocolate biscuits or anything like that well - they're sort of laughed at and teased by other children. (Mother 59)

Parents believed that their children needed calories and the source of the calories was unimportant – 'whatever foods – doesn't matter as long as its calories' and 'my attitude is it doesn't matter what the calories are as long as he's eating something'. Wasted foods not only resulted in lower calorific intakes but also money being effectively lost from the household budget – money [food] literally being 'thrown to the dogs'. In these situations, parents feared that a reduction in disposable income would result in their children having less than the best. Therefore, when children demanded particular foods these were provided irrespective of their costs or nutritional value. In the following examples, mothers consistently provided foods that they knew their children would eat and are illustrative of consistent soft policing:

My daughter will say, 'Oh I would love Chinese [food]', so then they all want a Chinese [meal] and I say, 'That's a good idea', you know, maybe not thinking. Yes, its expensive but it'll be eaten when it's bought – not be wasted like all the other food that's thrown out and that's money down the drain. (Mother 19)

When I get home from my shift say at half five or six o'clock I'm exhausted. I get out the chip pan and put on the chips and I think that'll do them – it's gets the children filled. (Mother 28)

Inconsistent soft policing

Inconsistent soft policing was a rare occurrence. It was most notable in fathers' interactions with their children and was observed when fathers feared their children were becoming obese. Fathers often gave their children money for sweets:

My Daddy gives money to me - my Daddy's awful soft - the shops only across the road for sweets. (Child 55)

Daddy would give me money, so he would, to go up to the shop to get sweets and then when I come back down Daddy says, 'Where's my share?'. (Child 57)

The behaviour of fathers changed when they noticed their children had gained weight. Fathers refused to provide money for sweets and discouraged their children to eat biscuits:

My Daddy just says I'm not allowed them. He says, 'You're getting too much weight on and you have to lose some of it'. (Child 61)

Children complained of their fathers' inconsistencies – sometimes they were told they were 'too fat and given sweets' and at other times they were 'too fat for sweets':

Last week my daddy called me fat, like I know I am and that's annoying but what I find really annoying is when I ask him for money for something to eat he calls me fat. (Child 59)

Mothers also acted inconsistently when they noted their children were heavier. The inconsistent nature of their dietary interventions was such that it often resulted in the children eating more of everything:

My wee fellow would be a bit overweight. I have stopped buying all that sweet stuff. It's a banana – he gets it if he's hungry. I say, 'Have your banana' but then he eats crisps, then he has a drink, then a wheaten bread sandwich, then he has to have something on top of them and he'll still eat a big dinner. (Mother 60)

Soft policing: balancing constraints to do best

Soft policing was a balancing act that parents performed to do best for their children. Parents juggled such contextual constraints as family life, disposable income, children's social needs and food wishes to do best for them. Parents, nevertheless, recognised the power of sugar and, within the guise of soft policing, used it to do the best for family life. The need for a 'quiet life' was essential when mothers worked night shifts. In other family situations, 'sugar as pacifier', was used when parents wanted their children to be quiet:

Say with wee ones - now you know what if you were taking them somewhere - now say if I was bringing my wee one here today – well I'd have been inclined to buy her a packet of biscuits or sweets to keep her occupied, to keep her quiet. So you'd like mm you try your best to buy the best thing for the children – sure the best thing – to keep them quiet. (Mother 19)

For the most part, but not entirely, parents who practiced soft policing were living near or on the poverty line. For families balancing doing best within the constraint of low-income there was an increased tendency for lower quality diets (Blackburn, 1999). As the cheapest source of calories came from foods with high fat and high sugar content (Casey et al., 2001), children whose parents worried about their children's food intake or who had financial concerns, were more likely to provide meals that were inadequate in fruit and vegetables (Chinn et al., 2001) or to be characterised as 'unhealthy' (Sweeting and West, 2005):

Mary will not eat so I say she might as well have sweets or chips instead of a dinner with vegetables that will be thrown out. (Mother 20)

The association between maternal employment, socio-economic status and diet has been highlighted as central in children's 'unhealthy snacking' and 'less health eating' (Sweeting and West, 2005). Despite the strength of evidence supporting Sweeting and West's (2005) conclusions, their analysis excludes the difficulties encountered by low socio-economic group parents when they attempt to find solutions to their families' problems. The findings presented here, buttress and extend the work of Sweeting and West (2005). By conceptualizing

soft policing as a consequence of doing best, this work provides the means to understand parental behaviours. Even in the face of potential adversity, parents strive to provide the best lives for their children, not only with regard to diet but also with respect to their children's quality of school and family life.

Discussion

The background to this study was a controlled trial to evaluate the effectiveness of a school-based policy to regulate children's between meal snacking. Because of the nature of the experimental design, it proved difficult to assess the effect of the policy on outside school snacking. Consequently, a series of interviews was arranged and conducted with participants to discover their views and opinions on regulating their children's sugar snacking. The aim of this study was to use grounded theory techniques to analyze the qualitative data and to generate an emerging theory on snack regulation.

An emerging grounded theory of snack regulation

The core category of 'doing best' was central to all parental activities surrounding their children's sugar snacking. Hence, a consequence of parents 'doing best' was the policing of their children's snacking between meals. Two policing styles emerged – these were hard and soft policing. In the home environment, parents had to balance time availability, their energy levels, parental shift work, and family life with the child's food cravings and social needs. Balancing such contextual constraints influenced the style of policing and, therefore, some parents consistently or inconsistently practiced hard and/or soft policing. Central to all policing was the parental wish to do best for their children.

To generate a complete grounded theory, it would be necessary to conduct theoretical sampling; however, due to time limitations and ethical approval constraints, it was impossible to do this in the present programme of research. To create a substantive theory, it would be necessary to theoretically sample parents of children and adolescents in different situations where parents are doing best. Some parents in the current study provided glimpses and hints of how adolescence restricted and shifted their policing styles when doing the best for their adolescent sons and daughters. As children entered adolescence,

parental policing styles gradually acquired a softer dimension with shifts from consistently harder to inconsistently softer policing styles. It may be postulated that parents with adolescent children would increase their dragnet. Parents would not only police snacking but also their children's home-work, out of school activities, friends and peers, sexual encounters as well as their consumption of alcohol, tobacco and drugs. In an atmosphere of the adolescent revolt, parents would be unable to maintain consistent hard policing styles and parents, in an attempt to do best, would shift from hard to soft policing with the tendency to adopt inconsistent policing styles.

Limitations

Difficulties abound in health promotion research and evaluation (Watt et al 2001). The first difficulty is that the health promoter perceives a health problem and imposes their solution upon a target population. The second difficulty is that the health problem belongs to the health promoter and not to the individuals. It is this mismatch in perception of health need, which, we suggest is at the centre of difficulties in health promotion. In contrast grounded theory supports the emergence of problems that are identified by people (Glaser 1998). As individuals start to interact they make sense of their own environment, their specific difficulties and concerns. Doing so allows them to identify what is going on in their lives and the social processes they use to solve their concerns, difficulties and/or problems.

Therefore, at the outset of this programme of research there were limitations. The researchers had not allowed the problem to emerge - the health problem of childhood obesity and its solution (the regulation of between meal snacking) had been imposed upon the parents by the researchers. When the parents' concern emerged as doing best for their children, it allowed the researchers to understand the place of between meal snacking in the family lives of the participants. What was primary for parents was to do their best for their children and the need to regulate (police) was secondary. Another limitation of the study was the lack of theoretical sampling which restricted the aims of the study with regard to theory generation. It would not be true to state, however, that this study represents a qualitative exploration of parental views rather it represents an emerging theory since the core category 'doing best' emerged from the data.

Conclusions: grounded theory in health promotion

Since the Ottawa Charter (WHO, 1986), health promotion has become conscious of the need to work in partnership with communities to strengthen community actions for health. Partnerships to strengthen community action have been defined within the construct of community capacity, being defined by Labonte and Laverack (2001) as the “increase in community groups’ abilities to define, assess, analyze and act on health (or any other) concerns of importance to its members” (p.114). Community capacity is, therefore, not an inherent property of a locality nor of the groups of individuals within it. Community capacity is about the social interacting that binds people together (Laverack, 2004). With greater social interacting and increasing capacity, the community becomes empowered to identify its own health problems and solutions to them (Laverack 2004). To have effective partnership working the health promoter must ‘tune in’ (Freire, 1970) and gain an insight into the community’s concerns and worries. The importance of grounded theory techniques for partnership working, community capacity and health promotion, therefore, cannot be overstated.

Despite the limitations of this present study, the use of grounded theory techniques to analyze the qualitative data provided the researchers with an insight into the family lives of parents and children. The awareness that parents wanted to do their best for their children allowed the researchers to re-assess their current methods of health promotion with children and parents and to adopt partnership working with children and parents. The health promoter who uses grounded theory techniques will gain an insight into people’s concerns and the behaviours they use to solve those concerns. The adoption of a grounded theory approach is essential if health promotion is to be informed, assisted and empowered to strengthen community actions for health.

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Managing Collaborative Synergy in the Crane Industry

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Abstract

This study explores the key factors vital to Principal-Distributor Collaboration (PDC) in the context of the crane industry in Singapore, Malaysia and Indonesia. It explains the social processes that Principals use to address differing interests throughout the course of the PDC.

Applying Glaser's (1978, 1992, 1998, 2001) emergent approach to grounded theory, 150 interviews were conducted with 50 participants from these countries. The main professional concern of participants throughout the course of the PDC was the need to achieve corporate objectives, within a certain time frame, whilst also having to rely on the cooperation of key managers from the partnering firm. Key decision makers continuously resolve their professional concern through the basic social process of Managing Collaborative Synergy (MCS). The theory of MCS suggests that the way in which Principal firms manage the PDC is by giving attention to the three interdependent dimensions of Competitiveness Initiating, Confidence Building and Conformance Setting.

Background and Motivation to the Research

This study took place during the Asian Financial crisis at a time when the crane industry was undergoing change. Principal firms are manufacturers of cranes or crane components. Distributors are those who resell, construct and service cranes or crane components of those principals that they represent. At the time when this study was conducted, Principals were gaining in their appreciation of the rewards associated with successful collaboration with Distributor firms in the pursuit of their corporate objectives. Similarly, Distributors were more alert to the benefits, in a limited market, of working in conjunction with their foreign counterparts to share risks and meet increasing customer demands. This environment of increasing cooperation between Principal and Distributor firms provided the overall context for this research study.

It is a well-recognised fact that effective collaboration with Distributors plays a prominent role in the business-to-business arena (McQuiston, 2001; Mudambi & Aggarwal, 2003), and so collaborating with Distributors has been gaining popularity with Principal firms for two main reasons. First, it allows the Principal firms to focus on larger accounts (Ernst & Young, 1990; Emsweiler, 1991). Second, Distributors with a home territorial advantage often have a better knowledge of their local markets and are able to penetrate these markets with ease and greater success than can Principal firms (Douglas & Craig, 1989; Cavusgil & Zou, 1994). Given the prospects of mutual benefits, working with Distributors provides the possibility of reaching every segment of the business field. Therefore, an astute Principal firm will choose to work closely with their Distributors in order to stay competitive and ensure long-term corporate success (Noordewier, John & Nevin, 1990).

Although there are no definitive data to account for the business volume that Distributors are directly responsible for, industry estimates in the United States indicate that there are 400,000 Distributors who make up as much as 50% of the upper-channel sales in business-to-business markets (Dishman, 1996). In the crane industry, 80% of crane firms in Singapore, Malaysia and Indonesia are Distributors who represent Principal firms that manufacture hoisting equipment. Given the large number of firms using Distributors, successfully managing and improving working relationship with Distributors is of paramount significance to any Principal firm (Merkel, 2001; Ng, 2002).

However, despite the large numbers of Principal firms employing Distributors, little appears to be understood about how the Principals have gone about developing and maintaining Principal-Distributor relationships. While there are a number of models of building relationships in the business-to-business arena (such as Anderson & Narus, 1999, Zineldin, 2002), none are specifically designed and directly focused on managing the collaboration between a Principal and a Distributor. This lack of research into Principal-Distributor relationships is also reflected in the crane industry, the specific focus of this study. This study attempts to fill this gap in understanding Principal-Distributor relationships by using the crane industry as a case study. In addition, this study also seeks to explain how Principals draw out the synergistic nature of the relationship by resolving the issues arising in the relationship. The relationships between Principals and Distributors that form the focus of this research are labelled Principal-Distributor Collaborations (PDCs).

Batt and Purchase (2004) contend that a firm's ability to develop and successfully manage its relationship with other firms is a key competence and source of sustainable competitive advantage. Managing relationship with Distributors has long been recognized as a critical component in channel marketing (Ross, 1985; Weber, 2000). However, there is recognition that making collaboration work is a significant challenge (Boddy, Macbeth & Wagner, 2000; Cropper, 1996; Spekman, Forbes, Isabella & Macavoy, 1998). This leads Weber (2001, p. 95) to suggest that both Principals and Distributors may benefit from a closer study of how collaboration between them "are developed, managed and maintained over time."

Because of its potential to impact on the long term profitability and survivability of both Principals and Distributors, the management of PDCs should be a major concern to both parties. In an increasingly competitive environment, unsatisfactory progress rates for a PDC will put considerable resources at risk especially in the form of financial resources. Conversely, firms that collaborate successfully realise corporate objectives by improving both top line revenues and bottom line profits (Weber, 2001). Thus increasing the efficiency and effectiveness of the management of PDCs has the potential to expand and maintain significant competitive advantage for both parties.

At a professional level, my interest in the management of PDCs resulted from my work as the managing director of KI, a manufacturer of electrification systems for the crane industry. I was involved in the training of Distributors in the areas of sales and marketing, product knowledge, installation techniques and after sales maintenance programs as a part of the induction of new Distributors. In the course of working for sixteen years in this particular field, it became obvious to me that the management of PDCs was underdeveloped and under researched. Collaboration between Principals and Distributors was not symmetrical, particularly in relation to the role of initiating and driving the relationship. It was in the perspective of the Principal that this research was undertaken.

Purpose of the Study

The purpose of this study was to develop a substantive theory of how key decision makers of Principal firms in the crane industry address

the managerial concerns they were challenged with throughout the course of the PDC. The following questions guided this study:

1. What are the main concerns that confront key decision makers contributing to the satisfactory outcome of a PDC?
2. What can these key decision makers do in order to resolve these concerns to ensure that long-term mutual benefits can be achieved throughout the course of a PDC?

In this study, key decision makers were individuals who shoulder the responsibility and were directly involved with the developing and maintaining of the PDCs. These included business owners and employees that have the most constant contact with Distributors and have the greatest influence on the ongoing management of the Principal-Distributor relationships.

The Method

Given the lack of research in the area of PDCs and the exploratory nature of the research questions, it was decided to use a qualitative approach in the present study. More specifically, grounded theory (Dick, 2002; Glaser, 1978, 1992, 1998, 2001; Glaser & Strauss, 1967) was chosen as the main research methodology. Grounded theory is a systematic, inductive approach to developing theory to help understand complex social processes. The main motivation that encouraged this choice is the ability of grounded theory to handle the emergence of problems identified by participants in a study (Glaser, 1998).

Another factor that motivated the selection of grounded theory as the research methodology was that the theory discovered would be representative of the substantive area of inquiry of this study. A fundamental strength of grounded theory is letting the data determine who next to talk to or where to go for further information. This process is referred to as “theoretical sampling” (Glaser & Strauss, 1967, p.45). Theoretical sampling in a grounded theory study is determined by the need to collect as much data as necessary in order to investigate categories and theoretical connections. Participants were added to the study as guided by data analysis until the point of saturation was reached (Glaser, 1978). In this study, 150 interviews were conducted

involving 50 business owners and senior managers of Principal and Distributor firms in the crane industry across Singapore, Malaysia and Indonesia. Data were collected over several phases from major stakeholders of PDCs that had at least 10 years of working experience in the crane industry. Confidentiality for each participant was ensured and written consents obtained. The data were coded as an ongoing process and subsequently written up.

Throughout this study, the constant comparative method was used for data analysis. The basic intent is the identification of a core category as a key part of the process. Glaser (1978, p. 93) asserts that “the generation of theory occurs around a core category” and represents the main theme of the substantive area of inquiry. So the core category captures the main concern of participants in a study and accounts for most variation in a pattern of behaviour. It explains, “what is going on in the data” (Glaser, 1978, p. 94) and becomes the basis for the emerging substantive theory. In this study, the core category was identified through an iterative process of coding, memoing, theoretical sampling and theoretical sorting. Towards the completion of data analysis, a comprehensive review of the literature on PDC was undertaken in order to place the developed substantive theory within the context of what was already known in existing collaborative theories on the topic.

The Main Professional Concern

Analysis of the data revealed the following factors formed the main professional concern of Principals in the crane industry; i.e., how to collaborate with Distributor firms to achieve corporate objectives within a specific time frame. These factors emerged after an in-depth examination of the data collected in the study, as described by the grounded theory method.

The first factor was the environment within which the key decision makers try to achieve corporate objectives. For the PDC to work, the collaborators had to pursue common interests such as increasing market share, achieving customer satisfaction, filling competency gaps and reducing overall costs. The reason firms entered into collaboration was to enable them to leverage each other’s strengths. Key decision makers were unable to make independent decisions or work in isolation from each other in a PDC, as they might within

their own firms. Decision-making in a PDC would inevitably involve both parties acting together. Not only did key decision makers need to collaborate with each other, they had to do so in the best interests of all parties. A PDC working environment is collaborative, a 'it takes two hands to clap' scenario. In other words, achieving corporate objectives in a PDC environment requires collaboration with other partners through social processes that exclude conventional forms of managerial power or control.

The second factor that influenced key decision makers was the pressure of meeting corporate deadlines. The success rate of achieving set objectives within the specified time would give rise to better financial gains, an enhancement of corporate reputation and an overall improvement in business performance. Failure to achieve set time lines would incur the use of additional resources and an unnecessary extension of working hours. Therefore a 'time is of the essence' mindset is vital for key decision makers. It allows managers to recognize and seize opportunities and to recognize when things are getting off the rails and to take the initiative to fix them. Working effectively in today's competitive environment requires managers to keep pace with the ever-changing market.

Another factor that must not be overlooked was the key decision makers' own career prospects. This third factor focused on the key decision makers' personal interests. For key decision makers who were employees, their success in making a PDC work could result in career benefits ranging from higher bonuses and promotions, to securing their position within the organisation. For business owners, the successful management of a PDC would provide the benefits of long-term corporate success and inherent financial rewards. Failure to meet set objectives would have adverse implications such as termination in the case of employees and the possibility of bankruptcy for business owners.

Therefore, the need to fulfil corporate objectives was a strong motivating factor in framing the main concern for key decision makers in a PDC and is often used as a signpost when appraising managerial competence. Decisions made in the best interest of the PDC itself rather than just in the interest of the partnering firms or the key decision makers. This approach led to 'win-win' solutions for long-term market gains. How to maximize the synergistic nature of the collaboration, through the processes of cooperation, became the

factor that motivated and explained the behaviours of key decision makers in Principal and Distributor firms.

In this study, synergy is a term that is commonly used and understood in the Singapore organizational context. Synergy means the ability of both the Principal and Distributor to create greater competitive advantage by working together than they could by working apart. This includes the ability to generate value for each other greater than that which is generated by each of its rivals.

Managing Collaborative Synergy: A Way of Resolving the Main Professional Concern

Managing Collaborative Synergy (MCS) was the label selected to describe the process whereby the Principal constantly addressed their main concern in the Principal-Distributor relationship. It was a process in which the Principal firm employed and adapted a range of collaborative management strategies capable of initiating and maintaining the synergistic benefits of a PDC in the crane industry.

During the MCS process, constant interactions between key decision makers from Principal and Distributor firms allowed the establishment of criteria on which the PDC could be based. These criteria enabled both firms to achieve a greater understanding of each other's needs and expectations. Thus, once these criteria were established, more cooperation and less opportunistic behaviours could be expected from key decision makers. In an environment of cooperation, key decision makers often acted together in an effort to improve the synergistic nature of a PDC and so achieve satisfactory outcomes for all in the relationship. Issues that might cause disputes with each other were often resolved by informal means rather than by one side exploiting the situation. That was a major feature of MCS.

MCS is a form of management that fits the contextual needs of a PDC in the crane industry. The theory of MCS enables the Principal firm to facilitate translation of PDC goals into reality. In addition, MCS possesses the necessary conceptual power to provide an explanation of the managerial practices and processes adopted by the Principal firms in this study.

In the process of MCS, three conceptual phases emerged as the

main professional concerns of study participants and accounted for the variations in patterns of behaviour of these individuals in the PDC. In grounded theory parlance, these three phases were sub-core categories of the process:

1. Competitiveness Initiating
2. Confidence Building
3. Conformance Setting

Competitiveness Initiating

Competitiveness Initiating refers to a sequence of two linked stages – *grappling with the market* and *positioning within the market* – as the Principal firm assesses and explores the environment within which their potential Distributors operate. This helps the Principal to position its internal capabilities to deliver products and services that fulfil these requirements. In addition, the Principal firms actively identify suitable potential Distributors to work with. Often Principals identify Distributors based on what the Distributors can potentially achieve, given the availability of essential resources supplied by the Principal. Conceptually, this is the phase whereby the Principal identifies gaps in market and capitalises on its ability to deliver goods and services. Deliver them at the time at prices as good as, or better than other suppliers and in the form sought by buyers. All of this while earning at least opportunity cost on the resources employed. This phase provides the Principal with an understanding of the commitment of resources required to obtain a competitive edge over rival firms.

Grappling with the Market

This encompasses the Principal's exploration of market needs of potential Distributors. The Principal searched for marketing information pertaining to the environment, specific product requirements and potential Distributors for collaboration. A category of grappling with the market is the need of *achieving competitive edge*. This varies according to the needs of Distributors and may include the need to have access to expertise and compatibility. Another category is that of *third party influencing*. In addition to exploring ways to achieve a competitive edge, Principals must also understand the existing relationships in which their potential Distributors were engaged in.

These third parties influencing could influence positively or negatively, the decision to search for a partner and hence the formation of a PDC relationship.

Positioning within the Market

This is the process of converting a Distributor's need to achieve competitive edge, into an opportunity that was attractive to the potential Distributor. In other words, positioning within the market is the consequence of the Principal's grappling efforts to fulfil market needs. Activities during this stage are directed towards positioning the Principal firm so that it is in a favourable stance in later phases. When effective, this process is likely to result in heightened interest of potential Distributors towards the Principal firm.

A category of positioning within the market is *complying essentials*. In the search to fulfil market requirements, the Principal may take initiatives to offer goods and services to match market needs. Most often the missing resources required by the potential Distributor, determined the area in which the Principal must deliver. This may take the form of meeting recognised standards, matching quality expectations and improving designs. The process of identifying a complying essential in the positioning stage might sometimes lead a Principal to appreciate a PDC from the perspective of the potential Distributor.

Another category of positioning within the market is the process of *tolling*. This serves as incentives for a potential Distributor in offering Principal's products and services in the marketplace. The level of competition within the market often influences key decision makers to adopt proactive pricing to maintain competitiveness. Financial gains in working with the Principal are the implicit condition that justified the relationship. Therefore, the Principal is required to implement pricing based on current market trends and needs. It would be unusual not to express how much value the collaboration could offer each partnering firm in due course.

Support is the last category of positioning within the market. This is the label applied to the process that the Principal adopts to assist Distributors in meeting the objectives of collaboration. In other words, what other things could the Principal do to enable Distributors to

achieve the desired results from the relationship. Distributor firms are mainly interested with the type of Principal's support that they receive ranging from simple responses on enquiries, availabilities of stocks, completeness of product range, available marketing budget to demands for higher discount structures.

Confidence Building

Confidence Building refers to a sequence of two linked stages – *addressing differences* and *ensuring deliverables*. Often the main challenge for Principals in this phase of a PDC is to increase the pursuit of mutually compatible interests in the collaboration while decreasing opportunistic behaviours. Social processes associated with Confidence Building are employed to attract potential Distributors so that Principals may access the cooperative nature of the partner firm for mutual benefits. In addition, this phase is also characterised by social processes directed at appraising the latent cooperation within a potential Distributor and between individual key decision makers. Formal and informal appraisals conducted during this phase often suggest the rate at which a PDC might progress in the later phases of the collaboration.

Addressing Differences

Addressing Differences is often a stage marked by intense negotiation, which leads to the recognition and establishment of common grounds in the PDC. Activities are directed at increasing the interest of potential Distributors in forming a PDC. The Principal, having in the first phase understood and positioned itself in meeting market requirements, often attracts interest by first converting their need for a partner into some form of opportunity that is attractive in the market to the potential Distributor. In a way this is putting the 'carrot' before a potential Distributor in an effort to increase their level of interest in forming a PDC.

A category of Addressing Differences is that of *appraising capability*. Managerial interests at this point are aimed at assessing the levels of value that the potential partnering firm possesses. Formal and informal appraisals of capabilities might be undertaken to establish the level of benefits associated with collaborating with a specific

firm in comparison with the potential risks. Formal appraisals are referred to as activities that occur at firm-specific level in evaluating the benefits of working together with a potential partnering firm. This is characterised by factual, rational and objective requirements of the firm. Informal appraisals are usually more prominent at the level of key decision makers. These are substantially less structured and involve the subjective interpretation of those aspects of risk and benefits that are believed to be vital to the individual. Intuition rather than fact often dictates the basis of informal appraisals.

Another category of addressing differences is that of *engaging exclusivity*. This is the process where the Principal assigns the right of marketing its products and services in specific territories to a potential Distributor. The term 'exclusivity' means the rights are given by the Principal solely to the one Distributor. As exclusivity could be viewed as the highest selling right awarded to a Distributor, the negotiation of this factor is often a crucial period for the success or failure of the PDC. It might be the first catalyst in the PDC to a discussion about a firm's willingness to commit to a long-term relationship with the other potential party. While not working on exclusive terms might be perceived as non-committal from the Principal, the wrong selection would impede the main objectives of the collaboration. The Principal might lose opportunities if the Distributor did not give its exclusive commitment in its marketing efforts. Conversely, Distributor firms look for assurances in the relationship with the Principal firm. In marketing the Principal's products, Distributors want to be assured that it is worth their effort to incur marketing expenses and even be able to reap the benefits of their labour for long-term survivability.

Following the processes of both *appraising capability* and *engaging exclusivity* that of *reducing risk* follows. *Reducing risk* is the category used to describe a time where firms tread carefully prior to the commitment of significant resources to the PDC. Not all issues can be fully addressed at this point of time, so both Principal and Distributor adopt a reducing risk attitude toward the relationship. In other words, there seems to be general agreement to work with each other in a PDC given the likelihood that benefits exceed risks and so, to increase that likelihood, they focus their attention on the reduction of risk. The process of reducing risk is often characterised by getting a market response. For example, a Distributor might request a product trial and obtain customer feedback prior to the commitment of stock orders or entering any collaborative arrangements. In addition, there is often an increase in discussions between the potential partner about ways

of improving the level of collaboration. During this stage, the focus of discussion shifts from internal to external factors impinging on the potential viability of the PDC. This is often marked with discussions on commercial terms of sale such as payment terms and flexibility of payment.

The stage of addressing differences is a transitional period whereby Distributors' interests are addressed by the Principal firm. Activities are usually directed to addressing these issues and success acts as a catalyst in the formation and formalization of a PDC. This might take the form of legally binding contracts or a 'handshake' agreement based on the promises given by both parties, as discussed earlier. The satisfactory completion of this stage leads to one whereby the Principal firm is in a position to ensure it can deliver on its promises.

Ensuring Deliverables

During the first stage of *addressing differences*, managerial attention is centred on addressing the question of 'how can we work together'. This stage in PDC usually concludes with a general agreement by key decision makers within each firm that both partners gain from the synergies of working together. This becomes the impetus to move both partners to increase their level of commitment in the PDC. It is frequently a period in which partnering firms agree that they must deliver on the promises made in earlier stages of the PDC. The process of passing these resources to the partnering firm indicates the point when the commitment to delivering its promises are consummated.

The commitment of real and tangible resources into the PDC often provides the context of managerial action in this stage. As such, the Principal may attempt to ensure, often simultaneously, delivery on a combination of issues common to many PDCs.

Increasing confirmation was the category applied to the process that involves the Principal firm keeping the promises given as part of its commitment during the earlier stage of *addressing differences*. It is often a crucial period for the success or failure of the PDC. It might be the first point in the PDC when the reliability of the Principal firm to deliver on its promises is tested. Often, it is a point whereby the Distributor has already made commitments to go ahead with stocking the Principal's products for re-distribution in the agreed territories.

Failure to deliver on its promises might either dissolve permanently, or stall, the PDC while the other firm re-examines their alternatives in view of the actions of the defaulting partner.

Improving status is a category used to describe the consequences of a firm's increasing confirmation efforts. Once key managers have progressed through the *increasing confirmation* process and trust and mutual respect are built up, the relationship will move towards a synergistic position that captures the strength of the two firms working together. An important property in the process of *improving status* is the continued growth in personal relationships between key managers of the organisations represented. This is characterised by a sense of familiarity developing through working with recognisable counterparts in the PDC. Managers experienced in PDCs often appreciate the essential need to gain the involvement of their counterpart as early as possible in order to ensure the success of the PDC. Usually, by this time, experienced managers have established some form of direct contact with key decision makers of the Distributor firm.

Often, in working with Distributors, it is common for Principals to find that not all of the agreed points of collaboration are fully covered in the earlier stages of the relationship. Nor does the Principal anticipate all of the approaches that might be needed in resolving every managerial issue. In addition, PDCs in the crane industry often involve many stakeholders within each partnering firm and the initial agreement made might not fully address all issues. Some managers prefer to label the unmet issues as 'gaps' and the processes used to resolve these issues as 'approaches'.

Closing the gaps often means key managers will constantly look for alternative means to resolving issues arising between the parties. Knowing that not all points were covered in the earlier stages of the discussion, key managers are prepared to make alternative decisions for the resolution of issues arising. Conversely, inexperienced managers in PDCs are often astonished to find these gaps were not addressed earlier and might go through a phase of dissatisfaction and even anger at what they perceive as failures in the earlier discussions. This phase of dissatisfaction might jeopardise relationships with key managers of the partnering firm and even with other managers in their own firm. As a result, firms experienced in the process of PDC often strive to limit any form of interruption in the relationship by having the same key managers participate in all phases of the development of the PDC.

Another property of *improvising status* is that of *filling in*. Although key decision makers could adopt formal or informal approaches to the resolution of managerial issues in this stage of a PDC, they are likely to employ one or the other extreme in *filling in* the 'gaps'. This reflects the level of personal relationships, mutual trust and confidence that these partnering firm have in each other. When relationships are characterised by suspicion, key decision makers prefer to manage issues arising by using formal approaches such as 'going by the book'. However, the relationship between Principal and Distributor is often characterised by increasing levels of trust and mutual respect and key decision makers will accordingly adopt a 'logical approach' to 'fill in' the gaps.

Informal means of resolving issues often involves key decision makers searching for 'win-win' solutions. This choice is dependent on the time required for the issue to be resolved. Taking a 'logical' approach to the resolution of issues prevents the process from stalling to an extent that jeopardizes the viability of the PDC. In short, what drives key managers to adopt informal processes to fill in 'gaps' is the intention to avoid impeding the advancement of the PDC at all costs.

Conformance Setting

Conformance Setting is the last phase of the basic social process of MCS. It can be conceptualised as the extent to which the Principal devises and implements strategies and actions that guide the PDC to follow the rules of the collaboration. In attempting to ensure that the PDC continues to progress at a satisfactory rate, the Principal adopts a range of strategies to guide decision-making with the objective of improving the overall synergistic nature of the collaboration. This is seen as the phase whereby the Principal has delivered on its earlier promises, and where it expects the Distributor firm to fulfil its part of the bargain. These strategies provide and act as a guide for the Principal firm in resolving a variety of managerial issues so that the objectives of the collaboration can be met. Three broad types of strategies for *Conformance Setting* emerged from the study: Distributor-based, Operational-based and Principal-based strategies.

Distributor-based Strategies

Distributor-based strategies focus directly on the Distributor by constantly monitoring the status of the Distributor. This involves continuous interactions between collaborating firms to make sure that the Distributor is competent in its role. These strategies attempt to enhance the Distributor's knowledge by improving its abilities, skills and attitudes in relation to the Principal's products and services. These include training, acquisition and participation. Developing the capability of Distributors, and helping them to grow, is an effective strategy that the Principals adopt to achieve high performance by Distributor firms.

Operational-based Strategies

Operational-based strategies are Principal strategies that focus on aspects that strive to improve the performance PDC. The overall category of operational-based strategies consists of two separate sub-strategies – *communicating* and *preparedness*. *Communicating* are Principal strategies intended to increase the effectiveness of the communication occurring between Principal and Distributor firms. *Preparedness* are Principal strategies directed at planning for issues that might arise or actions that might be required as a result of working with the Distributors. They determine how the desired outcomes could be efficiently and effectively achieved.

In the crane industry, Principals monitor the operational issues that might arise as a result of working with Distributors. This would enable the Principal to determine if there are issues that contribute to Distributor's behaviour, positively or negatively. These influences on Distributors, if deemed to be conducive, will prompt a Principal to preserve these characteristics. Conversely, when influences effecting Distributors are perceived as being detrimental, the Principal might attempt to cease or minimize such effects. Both these outcomes are likely to affect the Distributor's behaviour positively. Failing to do so would frustrate Distributors leading to disillusionment in the relationship.

Principal-based Strategies

Principal-based strategies were those that are aimed at optimising the PDC by improving those Principal's behaviours that affect or influence the behaviours of their Distributors. In the crane industry, the Principal's ability to improve their behaviour depends on two major factors. The first is their understanding of the level of influence that their behaviours had on their Distributors. The second is their receptiveness to make changes in their own behaviours. When their influence has positive or negative outcomes in Distributor's behaviours, attempts must be made to either strengthen or modify their own behaviour accordingly. This results in both outcomes positively reinforcing the Distributor's role in the PDC.

The overall category of Principal-based strategies consists of two separate sub-strategies – *comprehending* and *self-improvement* strategies. *Comprehending* is the label given to those strategies focused at increasing the Principal's understanding of how their own behaviours influence Distributor's behaviour. *Self-improvement* is the label given to those strategies aimed at the Principal's self-improvement in order to be attractive to their Distributors and thus in turn influence their behaviours.

Discussion

In Glaser's grounded theory method, the emergent theory leads itself to the extant literature that should be examined in the final stage of the research process (Guthie, 2000). According to Glaser (1998, 2001), this approach enables a more appropriate and relevant comparison of the emergent theory with the literature. The benchmark for inclusion in the comparison with the extant literature is perceived relevance.

The theory of MCS explains how the Principal firm manages the Principal-Distributor relationship to achieve corporate objectives within a specific time frame. The literature search revealed that there was no theory totally similar to the theory of MCS. However, several theories that reflect the theoretical focus of PDC can be found in the Inter-Firm Relationship (IFR) literature with what Peng and Kellogg (2003) describe as "voluntary cooperative agreements between at least two organisations which involve exchange and sharing." (pp. 292-293).

I will present the model proposed by Zineldin (2002) for “managing one-on-one relationships” (p. 549). No particular reason led to the choice of this model apart from its relevance to this study. This model is based on the analogy of a romantic relationship; Zineldin (2002) proposes business relationships as commencing from a period of “discovery”, followed by “development” and moving towards “commitment” and “loyalty” (p. 552). Change is imminent as the IFR ‘evolves’ through a generic sequence of life-cycle phases. Each phase logically implies a high level of cooperative effort as well as differences in information, expectations, experiences, needs, wishes, values, strategy requirements and consequences. As such, each phase has the potential to create or impede the growth of the relationship.

A closer examination of the theory of MCS and Zineldin’s relationship life-cycle model reveals several striking similarities. The first of these is that firms move closer over time as the relationship evolves thus depicting increasing levels of mutual commitment. This is evident in the *confidence building* phase where the Principal firm ensures *deliverables* on promises made in earlier stages of the relationship. Another similarity is the recognition of the inherent problems of working together in a relationship and as such the possibility of failure in each phase of the IFR development. Aspects of the theory of MCS provide some conceptual support for this. To achieve the purpose of PDC means that Principals and Distributors have to perform their roles in the relationship effectively, failure to do so would possibility impede and even terminate the relationship. The third similarity is the acknowledgement of the need to use strategies in the relationship to acquire or retain partners. This is supported in the *conformance setting* phase whereby strategies such as *Distributor-based*, *Operational-based* and *Principal-based* are used by the Principal firm to guide decision making to ensure the PDC continues to progress at an acceptable rate. However, while there is congruency and conceptual support to the Zineldin (2002) model, a major point of significance of the theory of MCS is the contribution it makes by providing insights into the social processes of deploying strategies that may encourage greater commitment and trust. In the theory of MCS, strategies were used to guide the Principal firm in resolving a variety of managerial issues so that the objectives of working together can be achieved.

Achievements of the Study

The first question early in the study was to examine key factors that confront key decision makers in order to obtain satisfactory outcome of a PDC. The findings of this study provide an insight into our understanding of the major concerns that key decision makers face when managing PDCs. These results indicate that Principal firms are expected to give due attention to three main categories of *Competitiveness Initiating*, *Confidence Building* and *Conformance Setting* to obtain a favourable result in their endeavours with their potential Distributors. From the academic perspective, given the limited studies in identifying managerial concerns and how these key decision makers went about addressing their concerns, such a study benefits by filling the gap in the extant literature (Nevin, 1995; Weitz & Jap, 1995).

The second question was what key decision makers can do to resolve various concerns that arise throughout the course of the PDC to achieve long-term mutual benefits. Often in addressing differing interests in the course of the PDCs, key decision makers not only pursue their own corporate objectives, they draw out the synergistic nature to sustain long-term mutual benefits. The crux of the theory of MCS is the way in which the Principal firms manage the PDC by employing and adapting a range of managerial strategies capable of initiating and maintaining the synergistic nature of the relationship. Key decision makers working at the interface between Principal and Distributor firms often establish criteria on which the PDC could be based. How these individuals approach and manage these criteria is the key to achieving satisfactory outcomes in the relationship. Managers experienced with PDCs often resolve confronting issues by considering the interest of both parties rather than by exploiting the situation. This approach enables the Principal firm to facilitate the translation of PDC goals into reality, providing consistency in managing the Principal-Distributor relationship and fulfilling expectations of both parties to the relationship. The theory of MCS provides details about the social dynamics between key decision makers in the resolution of each of the managerial issues identified above.

From the perspective of practitioners, it is expected that the study will contribute to their understanding of Principal-Distributor relationships. In addition, it will provide conceptual explanations for the patterns of behaviour of key decision makers in the crane industry. Understanding

these patterns of behaviour will allow practitioners to be suitably prepared when collaborating with potential partners. This study will enable practitioners to recognise the limitations in the roles that both partners play. Relevant actions could then be taken to address these shortcomings early on in the relationship, as this study will provide a platform to evaluate the overall health and status of the collaboration. An exploratory study like this will begin to provide practitioners with the means to improve the overall quality, effectiveness and efficiency of their management of PDCs in general. These improvements will lead to PDCs contributing to increased corporate performance and adding to shareholders' value.

Conclusion

Faced with the ever-increasing number of Principal firms using Distributors as their sales arm, developing viable working relationships with Distributors is of considerable importance and is now viewed as a high profile area in the crane and other related industries. The results of this grounded theory study indicate that the way in which the Principal manages this relationship is by giving attention to three sub-core categories of *competitiveness initiating*, *confidence building* and *conformance setting*. These findings serve as a foundation for developing and understanding all the different facets on which the relationship is based. By collating the data of this study, Principal firms can build more effective and enduring relationships with those that resell their products.

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The Grounded Theory Bookshelf

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The Bookshelf provides critical reviews and perspectives on books on theory and methodology of interest to grounded theory. In this issue, Dr. Alvita Nathaniel offers a review of Barney Glaser's new book.

The Grounded Theory Perspective III: Theoretical Coding, Barney G. Glaser (Sociology Press, 2005). Soft Cover, 160 pages. \$ 32.00.

Not intended for a beginner, this book further defines, describes, and explicates the classic grounded theory (GT) method. *Perspective III* lays out various facets of theoretical coding as Glaser meticulously distinguishes classic GT from other subsequent methods. Developed many years after Glaser's classic GT, these methods, particularly as described by Strauss and Corbin, adopt the grounded theory name and engender ongoing confusion about the very premises of grounded theory. Glaser distinguishes between classic GT and the adscititious methods in his writings, referring to remodeled grounded theory and its offshoots as Qualitative Data Analysis (QDA) models.

The GT/QDA debate is reminiscent of the schism that developed between the philosopher Charles Sanders Peirce and his benefactor, William James at the beginning of the last century. Peirce was a brilliant philosopher and scientist. America's most prolific philosopher, Peirce originated the doctrine of pragmatism. Because Peirce's writings were a very high level of abstraction and difficult to understand, James attempted to make them accessible to the popular academic community through his own, more concrete writings. However, James never got it quite right. Unhappy with James, failing to clarify his ideas about pragmatism, and desiring to distinguish his original ideas from those proffered by the more popular James, Peirce eventually changed the name of his own theory to *pragmaticism*. Unfortunately, the new name never caught on and the theory of pragmatism continues to be popularly attributed to William James.

Like Peirce and his theory of pragmatism, Glaser remains faithful to the original premises of classic GT. He continues the battle to distinguish classic GT from QDA, viewing QDA as a rigid method with a low level of abstraction and tendency toward preconception. He outlines in *Perspective III* many ways that QDA violates the foundational ideas

of GT.

In particular, Glaser emphasizes that an understanding of “what is going on” in an area of concern requires openness on the part of the analyst/researcher to the natural emergence of the theoretical code. The theoretical code emerges late in the GT process as the analyst painstakingly hand sorts conceptual memos. This process requires several elements such as the analyst’s proper use of conceptual memos, openness to emergence, perspicacity, and patience. The process is hindered or derailed entirely if the theoretical code is forced through the use of a preconceived theoretical framework, a conditional matrix, discipline specific codes, or “pet” codes.

Glaser effectively clarifies his points through critique of various writers and grounded theorists. He sorts through point by point the writings of grounded theory “experts” from a number of disciplines and comments on their level of understanding of the classic GT method. This discussion will be particularly helpful to Ph.D. students who are trying to learn both the fundamentals and the finer points of the classic grounded theory method. It will also be helpful as background for the Ph.D. student to use in discussions with dissertation/thesis examiners.

Many quotes from what Glaser deems to be good examples of GT are also helpful for clarification purposes. Glaser comments on elements of theories developed within a number of disciplines around the world. The words of the original writers offers helpful examples to illustrate the complex concepts underlying good classic grounded theory. In addition, Glaser offers a few new theoretical codes, which have emerged in grounded theory studies in the last few years.

Perspective III ends with a chapter on the impact of symbolic interaction on grounded theory. This chapter will be welcomed by grounded theory scholars. As anyone who reads grounded theory studies knows, most grounded theory papers include a reference to symbolic interactionism in the discussion of method. In most cases, the analyst never again mentions symbolic interactionism. Glaser views the symbolic interactionism claim to grounded theory as a quest for an ontology and epistemology to justify GT—a quest that is unnecessary. Classic grounded theory, is a “general inductive method, possessed by no discipline, or theoretical perspective, or data type” (p. 145). Glaser voices regret that grounded theory has been taken over by symbolic interactionism, which serves to further remodel

the method. He welcomes symbolic interactionism as one data type among many—all of which are suitable for GT analysis.

In conclusion, *The Grounded Theory Perspective III: Theoretical Coding* is a welcome addition to Barney Glaser's collection of writings about classic grounded theory. As an adjunct to his previous books, especially *Theoretical Sensitivity* and *Doing Grounded Theory*, this book will help both novice and experienced grounded theorists. It serves to clarify areas of confusion about theoretical coding, distinguish classic GT from remodeled GT methods, and answer the symbolic interactionist question. It is a must-have addition to the classic grounded theorist's library.

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