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14 Understanding Matrix Organization: Keeping the Dialectic Alive and Well

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ABSTRACT

Implementing a matrix structure is seen as a revolutionary rather than an evolutionary undertaking, requiring a rapidly different culture and reward system than exists in most organizations. Unless all those involved in the matrix understand the concept of the Hegelian dialectic and implement the type of culture and behavior supportive of the dialectic, the organization will experience the costs of matrix without the benefits. This paper suggests some of the concepts from the philosophy of science and the behavioral sciences that will help provide the understanding for making a matrix organization effective.

AUTHOR BACKGROUND

Ralph H. Kilmann is a professor of business administration and the coordinator of the Organizational Studies Group at the Graduate School of Business, University of Pittsburgh. He received his B.S. and M.S. degrees in industrial administration from Carnegie-Mellon University in 1970 and a Ph.D. in Management from the University of California at Los Angeles in 1972. He is president of Organizational Design Consultants, Inc., a Pittsburgh-based firm specializing in structural and cultural changes.

Several articles and books have appeared in the past two decades that examine the rather new type of organizational form generally referred to as *matrix* (see Knight 1976 for a review of the literature). Most of these discussions treat matrix as an evolutionary progression for organizations facing more com-

plex and dynamic environments (Kingdom 1973; Kolodny 1979). Matrix is seen at the high end of a continuous scale of coordination devices for managing increased complexity (Galbraith 1977). Organizations are supposed to opt for matrix as the last alternative way of managing after all other methods have been tried, but no longer are effective (Davis & Lawrence 1977). To illustrate the relation of matrix to traditional organization designs, Galbraith (1971) positions matrix at the midpoint on a continuum between pure functional and pure project organization; matrix representing the in-between case where functional and project authority are shared on an equal basis.

My own experience in working with organizations adopting a matrix structure suggests that the change is more revolutionary than evolutionary, requiring a radically different way of managing resources and not just a next step in coordinating complexity. Matrix can be viewed more appropriately as being on a totally different scale or continuum than other traditional structures. It is, I think, a lack of awareness of what a change to matrix really entails that often leads organizations to a major confrontation of management style and culture. Only by understanding what the *essence* of matrix organization requires of the organization will organizations make well-informed choices of this form of structure, recognizing the additional changes in culture and management systems that need to take place in order for matrix to prosper.

This paper presents matrix as an example of the Hegelian Inquiring System (HIS)—a way of approaching information, decisions, and problems very different than the Lockean Inquiring System (LIS), which seems to be emersed in most of our contemporary organizations. These inquiring systems require a completely different kind of logic, frame of reference, and social system in order to approach different types of problems (Churchman 1971). The main argument is that if matrix is approached as simply another type of Lockean Inquiring System (on a continuum of management choices) then the benefits of matrix will not be realized. It is moving from the Lockean to the Hegelian system that brings out the need for the qualitatively different type of organization needed to address a qualitatively different type of problem (Mitroff & Kilmann, 1978).

SIMPLE VS. COMPLEX ORGANIZATIONAL PROBLEMS

A simple problem (decision or task) can be defined as being solvable by the expertise and information of one person. That is, one person can possess all the information and wisdom to address the problem. In contrast, a complex problem, by definition, cannot be addressed or solved effectively by one person, since one person cannot possibly have all the information, expertise, and knowledge to manage the problem. This follows from the limited cognitive capabilities of individuals referred to as "bounded rationality" (Simon 1957). Only for simple problems involving a few variables within a well-defined and narrow area of expertise can one individual be capable of developing the right answer or a best answer (which cannot be improved upon by utilizing additional individuals, the latter become redundant).

Organizations are divided into subunits also because of the cognitive as well as physical and social limitations of individuals (Barnard 1938). Each subunit is responsible for a small part of the whole as a way of decomposing a complex problem into a simple problem. When traditional organization design is done well, each subunit contains the necessary information, skills, and knowledge to address its responsibilities (its part of the whole) efficiently and effectively. In this sense, a single subunit (analogous to one individual) is addressing a simple organizational problem (analogous to a simple problem for one individual).

Functional organization breaks down the complex problem the organization is addressing into such functional subunits as marketing, finance, manufacturing, engineering, and so on. Project organization breaks down the whole problem into specific product or project groups. The latter may seem more complex within each group since all the functional areas are represented. However, since each individual is oriented to one objective—the product—each project group as a whole still has the requisite information and expertise to solve the “problem.” Besides, product divisions are often subdivided further into functional areas even if each of these is contributing to one product only.

Matrix organization violates the concept of a single subunit containing all the relevant inputs to solve its assigned problem. Matrix purposely places individuals in one business team containing different areas of expertise and information, but the business team does not have all the necessary inputs. Some of the inputs to solve any particular problem have to come from the overlapping functional organization, via the members of the business team interacting and receiving guidelines and information, and so on, from their respective functional managers. Thus, one member on a matrix team will go back to his or her marketing manager (his or her functional boss) to discuss an issue and take a position, while another member on the matrix team will go back to his or her finance manager (his or her functional boss) to develop a different perspective on the problem in question, and so on. Thus, during the matrix team meetings managed by a matrix manager (or business-team manager), the information and expertise is not complete, but is necessarily and purposely incomplete.

Furthermore, because of the dual reporting relationship of the matrix-team members, there is a perpetual state of conflict in the system (Butler 1973). Team members must comply with their business-team manager and, at the same time, are expected to follow the guidelines and objectives of their functional-area manager. Since these two types of bosses reflect different objectives, members often feel “pulled apart” and unable to attain each set of objectives simultaneously. As will be seen shortly, the actual reward system is a key factor in determining whether the allegiance of the team members is toward either boss or if it supports the two bosses equally. Only the latter would bring about the benefits of the matrix organization.

Defining Matrix Organization

Matrix has been defined numerous ways in the literature, and many other terms have been used to describe overlapping responsibilities and dual membership in two or more organizational subunits. Gibson et al. (1973) report that

terms such as grid structure, multidimensional structure, global matrix, program management, and project management have been used interchangeably with matrix organization. Davis and Lawrence (1977), providing the most comprehensive discussion on matrix to date, define the term by the existence of the two-boss model—where some people are simultaneously reporting to two superiors, one in the functional organization and one in the matrix (business) team.

It seems that the prime characteristic of the matrix is to maintain a constant *dialectic* (a particular form of conflict, to be defined shortly) between two or more competing objectives in the organization (as represented by two or more formally structured subunits). Further, the dialectic is managed *within* an additional designed team or subunit with representatives from the relevant subunits in the organization. Thus, a matrix can be said to exist if there is a strong difference in goal orientation between say marketing and operations, and in order to manage this conflict, a third unit is established as a "business team." The latter's objective is to keep the tension between marketing and operations alive and well so that the conflict can be managed constructively for the benefit of the organization. In this case, the members in the business team would be representatives from the marketing and operations departments in the organization and would be reporting not only to their functional-area managers, but to a formally designated business-team manager as well.

Defining the matrix in this way excludes a number of organizational forms that have been used interchangeably with matrix, as mentioned above. For example, if the purpose of project management is to assemble a team of representatives from different subunits, but the effort is to develop a new product without an ongoing mix of competing objectives and orientations, then I would not view this as matrix. Besides, while the project is in operation, members would be reporting to one boss entirely (their project manager) and would not be subject to the authority of their functional-area managers until the team is disbanded upon completion of the project. Similarly, if any "two-boss" arrangement resulted in a team that had a goal orientation in one direction (rather than in two or more competing, *equal* directions), I would not refer to the system as matrix.

In essence, this definition involving two bosses *and* an ongoing dialectic helps distinguish organizational forms that previously have been lumped together. I also believe that this distinction will help get at the essential character of matrix organization that is the most difficult to manage precisely because its character is opposed in a fundamental way to the typical style and culture of most contemporary organizations.

INQUIRING SYSTEMS FOR PROBLEM SOLVING

Churchman (1971) presents a variety of approaches and methods for "knowing" derived from the philosophy of science. Each approach assumes certain things about the nature of problems as well as the mechanism (guarantor) to assure that the correct solution to the problem has been achieved. For current

purposes it is sufficient to distinguish two such "knowing" systems or inquiring systems: the Lockean IS and the Hegelian IS.

The Lockean Inquiring System

The Lockean IS generally assumes the existence of *simple* problems where a group of experts can uncover the true solution via agreement and consensus. For example, if a group of experts were given some problem to solve or asked to state some opinion or prediction, the one that they could agree upon would represent the best position. In other words, if a group were asked to state why they believe in the worth of a particular solution, the approach would be considered Lockean if the members responded, "because we *agree* that this is the best solution."

The Lockean IS can be shown as a normal distribution where the ends or extreme positions are eliminated simply because agreement and consensus cannot be reached on these "minority" views. However, support for the middle of the distribution can be achieved since the majority of experts holds that view. Thus the Lockean IS tends to gravitate toward the mean (average) and stay away from the end-points of any distribution. An example of the Lockean IS is the Delphi approach to planning where the deviants on any opinion or prediction are asked to revise their judgments when these differ from the majority views. Another example is the method of scoring a diving competition in the Olympics where the high and low judgments by experts are thrown out and the remainder are averaged to derive the "true" performance of a person on a particular dive.

The Hegelian Inquiring System

The Hegelian IS, also known as the Hegelian Dialectic, portrays a very different approach to knowing truth and "the best solution" to any problem. First, the Hegelian system assumes that problems are *complex* and therefore any one person is not likely to have all the information and expertise to solve it. Rather, each person with a different area of expertise might be able to address, at best, only a piece of the whole problem. By this approach, truth is not in the majority but more likely resides in minority viewpoints as appropriately combined or synthesized. The synthesis of expert views is developed by debating the extreme, opposite opinions instead of eliminating these "end-point" positions as in the case of the Lockean IS. Therefore, the Hegelian IS can be represented as a normal distribution that de-emphasizes or even rejects the middle of the distribution and concentrates on the tails (end-points) of the distribution.

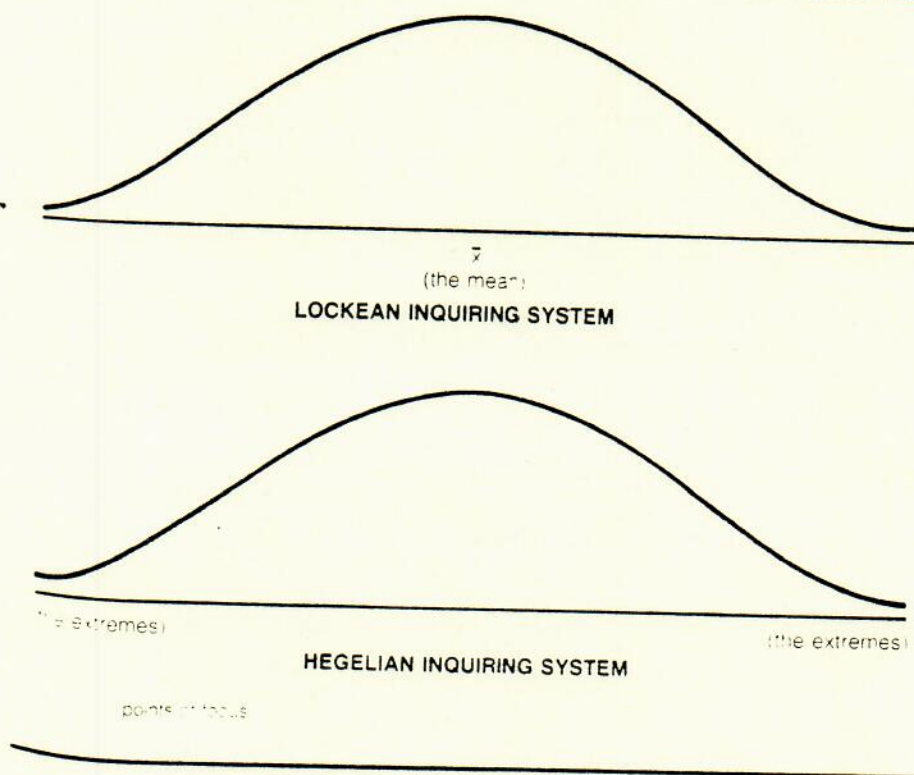
Truth for the Hegelian IS is through the dialectic debate. Experts representing the extreme opposite positions are expected to debate their viewpoints. During these debates, underlying assumptions are exposed and challenged, and thereby each extreme position is scrutinized and dissected. It is through these debates that the "truth" is expected to emerge for any complex problem. If a

group of experts were asked why the proposed solution was the best, their approach would be considered Hegelian if their response were, "Because we debated the extreme viewpoints to understand their underlying assumptions." But the final position need not be any of the positions that were debated. It is the debate that enhances understanding so that the best solution among all alternatives can be made or some synthesis derived. Furthermore, the dialectic is not the same as the straw-man approach where one alternative is set up as the devil's advocate only to be disarmed so that the original position is chosen. In the Hegelian IS, each extreme position is for real and equal; the debate, therefore, is intense and balanced, not one-sided.

The Lockean IS vs. The Hegelian IS

It should be apparent that these two inquiring systems are quite different, almost opposite to one another as diagrammed in Figure 14.1. Here the relevant portion of each system is portrayed on a normal distribution of opinions or proposed solutions, as discussed above. This diagram also suggests how both

FIGURE 14.1 Two Inquiring Systems: Lockean and Hegelian



inquiring systems together present the full picture. In essence, each one presupposes the other and has to deal with the other in some form. For example, before the Lockean IS suppresses disagreement and extreme positions, it has to recognize them. Consensus and agreement may be the final outcome, but surely some debate would have taken place along the way. The Lockean system does not like to acknowledge this and tends to minimize conflict as such. On the other hand, the Hegelian IS has to achieve some agreement or consensus regarding which extreme opinions to debate, for how long, and which synthesis will represent the choice of the experts. The Hegelian approach, in its emphasis of differences, tends to suppress or make light of the role that consensus plays in its process.

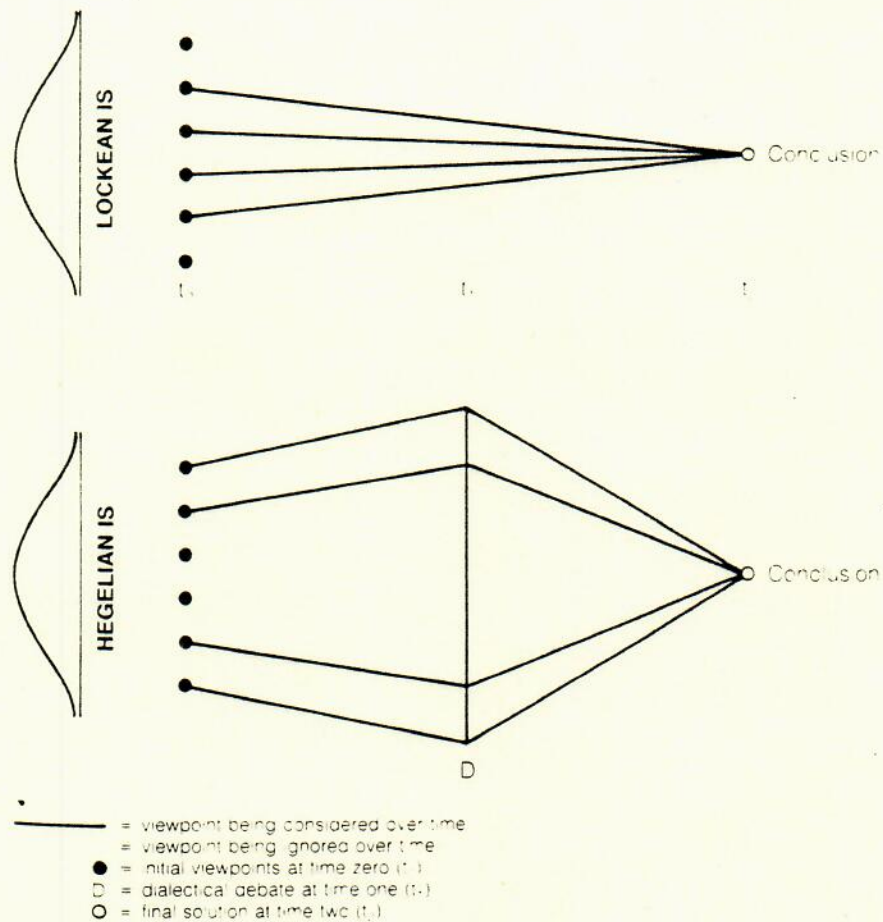
The difference between the two, therefore, is a critical matter of emphasis. They both come to agreement on a final solution, but the Hegelian IS first explicitly creates debates, conflict, and divergence before it moves toward an agreed synthesis (emphasizing the former over the latter). The Lockean IS tries to converge directly to the final choice by ignoring and downplaying the differences along the way. Figure 14.2 diagrams these two inquiring systems as each initiates, processes, and then resolves some problem situation.

As mentioned early, the Lockean IS is expected to be suited better for simple problems—where *one* area of expertise can be applied to solve the problem. If several experts agree, then the chosen solution must be correct. The majority is expected to hold the modal wisdom and the minority is assumed to be off-base. The Hegelian IS is most appropriate for complex problems, where different areas of expertise can all contribute to developing a synthesized solution. Different positions thus represent different areas of expertise and world views that must be debated and then combined. The majority in a group of varying expertise is not expected to hold common wisdom in solving the problem because they all have different backgrounds and perspectives. In fact, any majority view would be suspect and would be regarded as common *ignorance* on the problem. The Hegelian IS gives special attention to the minority areas of expertise before any sort of agreement is reached.

THE ESSENCE OF MATRIX

To understand the differences between the Lockean and Hegelian IS is to understand the essential differences between a functional or product organization and a matrix organization. A single-boss arrangement that is built around a well-defined, single objective is best suited to the Lockean IS. Not surprisingly, most organizations would be viewed as Lockean in that methods of gaining agreement and reaching consensus are paramount priorities. Similarity of values, goals, and motives in selecting and training individuals for organizational responsibilities are widespread. Further, tales abound of how deviates are treated in organizations where there is tremendous pressure toward uniformity of opinion. "Don't rock the boat" and "Getting everyone on board" are just some examples of the efforts at guaranteeing agreement and consensus. Conflict is viewed as painful.

FIGURE 14.2 Diverging and Converging Aspects of Lockean and Hegelian Inquiring Systems



unnecessary, and blocking goal achievement. If the problem is rather simple and straightforward (because the organization has been designed into a structure that has taken a complex problem and subdivided into simple parts via departmentalization), then the Lockean IS is appropriate. Perhaps not much is lost by suppressing conflict since the majority view within any department or functional area probably is correct most of the time (especially among experts in the same field).

The matrix organization, however, is meant to address a very complex problem. At a minimum, it attempts to manage conflicting goals, keeping a variety of technical concerns as an explicit part in all decision making along with a product orientation. That several representatives from different functional areas are all on the same team and are expected to contribute different areas of

expertise highlights the complex problem that matrix seeks to manage. It would be a waste of time, energy, and resources for the organization to design a complex team (different areas of expertise and functional divisions) to solve a simple problem (requiring a narrow or single range of expertise). The very point of the matrix is to approach a complex problem in a way that cannot be accomplished within the typical organization structure designed for simple problems (Argyris 1967).

This perspective suggests why going from a functional or product organization to a matrix organization is so difficult. It is moving from a Lockean to a Hegelian IS—a revolutionary change, not just a change along a continuum of complexity as other authors have suggested. And while the two inquiring systems presuppose one another, there are some fundamental differences with regard to the value of conflict and how to assure that conflicts will be brought out in the open, debated, and resolved. This is the major challenge to designing a matrix organization. Specifically, what does it take to create a Hegelian IS in an organizational culture that historically is based on the Lockean IS?

Culture and Systems to Support Matrix

Perhaps one of the most difficult “variables” to manage in an organization is its culture. By culture is meant the collection of norms, values, beliefs and attitudes concerning what behavior is appropriate and acceptable in the organization. Culture develops over time as members learn what behavior and views are really rewarded regardless of what the formal statements of purpose and reward systems may indicate. This culture is passed on from generation to generation as new employees are socialized and learn the unwritten rules. Even if all the members who created the “initial” culture have left the organization, the culture survives and often becomes an untested assumption that is considered a given (Baker 1980).

The Lockean IS that seems to be engraved in most of our contemporary organizations is very much supported by a particular organizational culture, one that encourages the suppression of conflict and disagreement, among other things. People learn that to confront their superiors and to confront the customary ways of reaching decisions, is simply inappropriate. Further, the reward system, as utilized by those persons in positions of formal authority, tends to support the culture if it is used to reward those who help generate consensus and agreement, and to punish those who foster conflict and disagreement. Generally, given human nature, once a person has been “burned” many times for taking independent stands on central issues to the organization, he or she will either leave the organization, be treated as a deviant and trouble maker, or be co-opted as a like-minded member of the organization. Rarely, in a Lockean organizational culture, would a person of views that conflict with key organizational issues be rewarded and encouraged to continue his or her confrontation of established practices and viewpoints.

But this is exactly what the Hegelian IS and an effective matrix organization requires. In order to bring conflict out into the open so that real, intense debate can take place over key organizational issues, the culture and reward system

must support such behavior and attitudes. Superiors have to feel suspicious if too much agreement is reached too early in any important decision process. Certainly, at the early stages of debate, conflict and extreme positions of "minority" members (those having unique and highly specialized knowledge) must be signaled out and must be allowed to be expressed. Here people would be rewarded for differences and not coming to agreements at the outset. In fact, in the extreme case, a member would lose rewards (or be punished) if he or she continually sought agreement and consensus and did not engage in conflicts and debates when complex issues were being explored.

MAKING MATRIX WORK

Four major steps can be proposed for helping an organization move from a Lockean to a Hegelian IS. It should be emphasized that such a move is appropriate only in these cases where a matrix arrangement is considered essential in order to manage some complex-problem situation. There is little gained by taking a simple problem and managing it as if it were complex. Consequently, only when the organization has found that various Lockean approaches are no longer adequate would a matrix organization be chosen. This is consistent with the findings of Davis and Lawrence (1977) that matrix should be used only if all other methods have failed.

The first step is to *educate* all members who would be involved in a matrix (business) team including their functional managers and the business-team manager. In most cases it would be necessary to include the next higher level of management in the educational program: the president or vice-presidents of the whole division, for example. The latter may be critical to include since these persons have to understand *why* the culture and other supporting management systems must be altered.

Briefly, the educational input would entail a two- or three-day workshop where the basic concepts of matrix are introduced and the differences between the Lockean and Hegelian IS are explored in depth. Various case analyses of successful and unsuccessful attempts at introducing matrix would be examined to derive the principles and guidelines for *successful* matrix management. Material on conflict management, leadership styles, personal vs. positional power, personality types, organization culture, reward systems, and so on, would be presented and discussed also. As suggested above, it is not enough for the business-team members themselves to receive this education; the next higher levels of managers who have some control over the culture and management systems must take part (in either the same or a separate workshop). Ironically, in order for matrix to work, an educational input *and* a Lockean agreement on the need and character of the Hegelian IS is essential for the latter to be applied successfully. The relevant organizational members have to agree to disagree when the various dialectics are put in motion at the workshop.

The second step in moving to matrix is to outline the current culture of the organization and contrast it to the type of culture necessary to support the matrix organization. In a second workshop setting (time away from day-to-day

pressures so that longer-term issues can be reflected upon and explored), those to be involved in the matrix are asked to generate individually a list of current *norms* of behavior in the organization. By norms is meant the written or especially the unwritten expectations of what makes a good, solid organizational citizen. What behaviors and expressed attitudes are rewarded and encouraged, and which are punished or frowned upon? (See Silverzweig and Allen 1976 for a similar approach.)

It does take a little time to get members thinking about norms (because these are usually covert and taken for granted), but with a little encouragement and several illustrations, most people recognize what is being asked. Sometimes it is best to do this sort of "exercise" among peers rather than including both superiors and subordinates in the same room. The latter might stifle the listing of the true norms if the culture in the organization does not encourage making norms explicit in front of one's superiors. Thus, this step in the process assumes that with the proper guidance (generally by an outside, organizational development consultant), the present culture of the organization will not prevent an investigation and explication of the culture. If this turns out to be a false assumption, then it is unlikely that the present culture can be changed to one supportive of a matrix. Under these circumstances, the process should be terminated and other efforts at "culture management" might be considered.

Once each individual has listed the present norms of behavior, he or she is asked to generate a second listing, this time expressing the necessary norms for a matrix culture. When each individual has completed this task, all the lists are displayed and an effort is made to summarize and synthesize the various norms into a more parsimonious list of current vs. matrix culture. A skilled consultant would illustrate and guide the members to debate some of their differences (as in a Hegelian dialectic) before consensus is reached on the two sets of norms. Such a consultant also would suggest in what manner the two sets of norms represent the type of dialectic that will be experienced continually by the matrix team members as they cross the boundaries of their business team and interact with the functional organization.

The third step requires that a plan be developed to create the matrix culture (norms for behaviors and attitudes) for that part of the organization that will be designed as a matrix. It is recognized that most of the organization (for better or worse) will retain the current culture. However, can the relevant persons and parties: (1) appreciate the need for a separate matrix culture where necessary, (2) allow it to develop, and (3) actively encourage and support its development? Too often an organization's members assume that one culture is for all and do not allow for differences. Here it must be argued that, analogous to the concept of differentiation and integration advanced by Lawrence and Lorsch (1967), if two "parts" of the organization address different types of problems requiring different types of organizational behavior, then each part should have a different culture supportive of the desired behavior patterns. It then takes skilled managers to "integrate" or even work across these different cultures.

Developing a plan to create the appropriate matrix culture entails examining the current reward systems. First, what changes can be made for the business-

team members so that they would be rewarded for promoting and managing conflict effectively? Perhaps as part of a regular review and performance appraisal (every few weeks or months) assessments would be made regarding each member's contribution to airing differences, challenging underlying assumptions, debating positions and perspectives, and so on, in order to foster a better understanding of a complex situation. This type of assessment might be easier said than done, but the intention has to start with the formal, explicit acknowledgment of the need and value for these behaviors (and attitudes). Naturally, one has to distinguish constructive conflict and dialectics from destructive, blocking, and spiteful behavior. Further, a member's contribution to the Hegelian IS can be assessed via the member's attitude toward furthering a productive climate (vs. a defensive climate) for other team members. Thus, specific behaviors and general attitudes toward a matrix mission should be articulated and codified in a formal statement of policy and assessment method.

Another possibility, one that I have found to be very successful, is for the members themselves to outline the necessary behaviors and attitudes for their matrix culture and for them to define specifically, in their own words, what the new set of norms will be. Then the members of the matrix team, with the support of the business-team manager, share responsibility for monitoring and enforcing the stated norms. In this way, the members themselves determine when a norm is being violated and they then institute a procedure to correct the violation. Since these norms are theirs (as in participative management), one can expect more ownership and commitment to follow and enforce the new norms. In essence, the power of the group is utilized to design and implement the new culture of the matrix, rather than trying to rely on a one-by-one individual understanding of the new culture and reward system.

It is imperative, however, that the new system is understood and accepted by the functional-area managers and by the next highest level of managers (for example, the vice-presidents and president of the division). Otherwise, these individuals might inadvertently undermine the matrix culture by applying the old culture during performance reviews, during informal assessments, and as guides to all types of decision making and action taking.

This brings us to the fourth and last step in switching from a Lockean to a Hegelian Inquiring System. It is essential that the balance of power between the business-team manager and the functional-area managers be *equal* (Davis & Lawrence 1977). Typically, as a functional organization takes on a matrix concept, the vested authority remains with the former even if team members are "told" to give equal weight to their new team managers. In addition, if performance reviews are done primarily by the functional-area managers with little input from the business-team manager, then members clearly can see where their rewards come from. Even separate performance reviews by each member's two bosses is not enough when the functional organization has the historical advantage, culture, and the clout behind it.

The only viable solution is to have performance reviews conducted by both bosses *simultaneously*—each member meets with his functional-area manager and the business-team manager in one meeting. But for this method to work,

the two bosses must be sure to communicate their *joint* assessments and must support one another's perspective and appraisal, equally. In one sense, the functional manager might emphasize the Lockean aspects of the member's performance while the team manager would evaluate the member's Hegelian contributions. At the end of the formal review, the member should feel that each perspective is equally important and that he or she will strive to develop the appropriate balance in subsequent behaviors and attitudes. Such a dual-performance evaluation, if conducted properly, would help assure that the matrix concept will work.

CONCLUSIONS

My experience in working with matrix organizations is what highlighted this distinction of a Lockean vs. a Hegelian IS applied to alternative structural forms. At the same time, it became apparent to me that the culture of the organization represents a special variable to manage in any major change effort. It seems appropriate to expand briefly on these themes in the conclusion of this paper.

Perhaps one might consider why the Hegelian IS is likely to be more and more relevant to our contemporary organizations and the organizations in the future. If, as a society, we are facing more complex problems that cannot be decomposed easily into simple, well-structured problems, then it seems reasonable to conclude that more of our organization structures need to shift from a Lockean to a Hegelian IS. Matrix represents one way in which the latter can be operationalized, but there may be a number of other Hegelian forms as well. The use of a dual hierarchy in a hospital organization, one hierarchy of doctors and the other one of administrators, would be one example. Having the CEO role assigned to a *team* of managers rather than to one person as is the tradition, would be another example. The ability of these various forms to foster a Hegelian IS needs further theoretical attention and empirical research.

"Culture management" is another by-product of the current paper's focus on understanding the essence of matrix organization. Taking the organization's culture as a given or only concentrating on describing and measuring it, is quite different than purposely trying to change it. In any OD program where a major shift in organizational behavior is desired (through process and structural change), it is virtually impossible not to run up against the history, tradition, and power of the organization's culture. You can't see it or touch it, but it is there nevertheless, and since you can't go through it or around it, the culture will often prevail. I am suggesting that *altering* the culture is another option and that intervention methods be devised to do just that. Certainly this is a main part of the four steps to a Hegelian IS, as discussed in this paper.

In sum, if social scientists, including organizational development practitioners, could develop technologies to (1) move organizations from Lockean to Hegelian IS where appropriate, and (2) alter the organization's culture to support such a movement, I predict that the success rate of major organizational

changes will increase dramatically. Thus, managing complex problems with the right inquiring system and culture can be viewed as a hallmark of applied social sciences. It may well be our bottom-line of what *can* be changed and what *should* be changed.

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