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James Courtney
Texas A&M University, j-courtney@tamu.edu

David Croasdell
Texas A&M University, dcroasdell@tamu.edu

David Paradice
Texas A&M University, d-paradice@tamu.edu

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Guiding Principles and Design Guidelines for Learning Organizations

James Courtney, David Croasdell & David Paradice
Business Analysis and Research Department
Texas A&M University
College Station, Texas 77845
409-845-9541
j-courtney@tamu.edu dcroasdell@tamu.edu d-paradice@tamu.edu

Introduction

The growing literature on the "learning organization," suggests that for organizations to be successful, they must be capable of continuously acquiring, assimilating, disseminating, sharing and using knowledge (e.g. Senge, 1990, DiBella, 1995, Nevis et al. 1995, Olsen, 1995; Slater and Narver, 1995; Huber, 1991). It has been suggested (Courtney, et al., 1996) that Churchman's (1971) models of inquiring systems might form the basis for the design of effective learning organizations or organizational subunits. The purpose of this paper is to use Churchman's model of a Lockean inquirer to propose guiding principles and design guidelines for learning organizations, and to suggest how information technology may be deployed to support those principles and guidelines.

Lockean Organizations

Lockean organizations are based on the principle of induction. The Lockean inquirer begins with a blank slate, or no built-in preconception of the world, but is able to: 1) receive information in the form of simple observations about objects in the world, 2) build a list of basic properties exhibited by objects in the world, 3) use the operators "and," "or," and "not" to form lists of compound properties, 4) given an observation about an object, say X, sort through its list of properties to classify X, and 5) output a sentence of the form "X is P" to a community of Lockean inquirers. The degree of agreement about the observation among the community of inquirers becomes the guarantor of the validity of each inquirer's knowledge..

This form of organization would seem suitable for enterprises that need to stay in close contact with elements of the environment, such as retailers and service firms. Defining market niches and consumer segments are classification problems that require observation of the environment. Assignment problems, such as assigning employees to tasks, or suggesting specialties for trainees, are others. A close examination of Churchman's work provides clues as to how Lockean inquirers, and hence, Lockean organizations might be designed.

"*Build a community of minds*."

Clearly, one of the most basic elements of a Lockean organization is the need to communicate. Thus, for example, the infrastructure provided by a telecommunications network is essential for a modern Lockean organization. Information technology, in the form of electronic and voice mail, groupware, integrated databases, multimedia presentations, graphical user interfaces, and client-server architectures can greatly enhance the ease with which observations can be acquired, shared, compared and used. The rapid deployment of such technologies attests to this assertion.

Note, however, that in order to compare the inferences drawn from observations, it is necessary for the observers not only to have the proper media with which to communicate, but also to have a common language and psychological attitude. Also required is knowledge about others in the organization with whom to communicate to share observations and inferences. That is, the Lockean organization requires not only a telecommunications network, but also a social network or "community of minds" whose members know one another, and speak the same language. The scientific community has designed itself to foster such communication on a global basis. Business organizations should do so as well.

Thus the Lockean organization should ensure that it's members assimilate its cultural attitudes, and that they are trained in the language the organization uses. Moreover, employees should be encouraged to "network" with others and share relevant knowledge and observations. Clearly, these should be among the principal objectives of organizational training programs.

"*Seek observations that are the purest and simplest.*"

Observations, made via the five senses, are the source of input to the Lockean inquirer. But our senses are notoriously fallible, and are often confused by the external environment or our own imagination. Thus, Churchman, following Locke, argues that the best way to assure that an observation is simple is the extent to which a community of observers strongly agree about what is observed. To assure that an observation is simple, is to lend credence to the belief that it is valid. Of course, all the observers could be wrong about the validity of the observation, but by relying on agreement of the community, the likelihood of error is greatly reduced. Or as Churchman (1971, p. 101) puts it, "The community becomes the basis for judging whether a specific inquiring system is responding correctly."

Yet, what if disagreement persists. The system should rely on the same basis as in the case with courts of law, the eye-witness. That is, the final authority is the person who made the direct observation. Thus the Lockean organization should be able to trace an observation back to the member of the community which first observed it. Observations need unique identifiers and associations with their observers.

The implication for Lockean organizational design is that observations should be simple, and compared among several observers in the organization. But the world is complex. Observations about it are most likely complex, as well. Thus, complex observations should be broken down into elementary components, and comparisons made on the basis of the simpler components. It is easier to reach agreement about elementary components. If the community agrees on the components, then perhaps it can also agree on the whole formed by those components.

Well-designed object-oriented database systems would seem to do a good job of this. Objects, such as customers or products, are partitioned into classes, and examined carefully in the context in which they exist to determine relevant properties to be stored (observed). Relationships among objects are also represented, especially in the visual models, such as entity-relationship diagrams or semantic object models.

"*Pay attention to what's relevant.*"

There are literally an unlimited number of "things" that members of the community can choose to observe. The trick, of course, is to observe the right things. Bankruptcy courts are full of firms that concentrated on the unimportant, or failed to observe the salient.

Omitting the unimportant may be as important as concentrating on the important. The mere availability of "information" may have a distracting effect, seducing the community into sense of complacency, or concentrating on the visible, or what is seeable through the prevailing Weltanschauung. As Hegel so vividly points out, the community may need its devil's advocate to unsettle it occasionally and keep it honest.

Members of the Lockean community will make observations, and individual decisions as to whether those observations should become inputs to the system. This is a crucial part of the filtering process. Is an observation just random, or the beginning of a trend? Yet if every observation is recorded and broadcast, the system will likely become overloaded with "information" that just can't be processed. While there seems to be no totally satisfactory solution to this conundrum, it seems that the best thing to do is to train the observers as well as possible, and let them decide when an observation is unusual enough to be accorded some special status. Then the community can decide if special attention should be directed to that phenomenon.

"*Build a storehouse of knowledge*."

The observations accumulated and verified by the community of Lockean inquirers begin to form an ever-expanding warehouse of data. But the true Lockean organization goes well beyond the construction of a data warehouse. The organization should seek to create inferences about the world that are justified by its observations of specific events. Inferences or generalizations must be supported by numerous observations. No observation alone is compelling. A generalization becomes realistic by being linked to, and consistent with, several agreed-upon observations. Thus the inference that "Customers prefer bell-bottom jeans." gains credibility when linked to the simple observations that customers A, B, and C are members of the class (consumer segment) that prefers bell-bottom jeans.

The cautious organization, however, will note that even simple, agreed upon observations may not be made with 100% accuracy. Suppose that customer A buys bell-bottom, boot-cut and straight-legged jeans. There is an element of doubt about the observation that "Customer A prefers bell-bottoms." A more accurate observation may be that "Customer A prefers bell-bottoms 1/3rd of the time." Thus our storehouse must maintain information on the confidence that it places in its assertions. An intelligent Lockean system can even direct attention to areas where confidence is lacking. Modern expert systems provide just that capability.

"*Learn from experience*."

Unlike scientists, organizations don't just observe. Organizations must act. A knowledge storehouse provides the basis for rational action. That is, action based on simple facts, and inferences based on those facts. But organizations should observe (objectively) the results of their own actions. Observing the results of actions provides the basis for real learning. Observing results completes the learning cycle. Observations are accumulated about the world. Inferences are drawn from those observations. Actions are taken on the basis of inferences. Results are obtained from those actions.

The Lockean organization must not only record observations of the world, and inferences drawn on those observations, but must also record the actions it takes based on those inferences, and the results of its actions. By examining results and actions, the Lockean community can learn. Not only can it learn, but it can agree (or disagree) on what has been learned, thereby providing the foundation for a continual learning process. Observations, inferences, actions, and results provide the basis for learning in a Lockean organization.

Summary

Lockean organizations are built on the principle of induction. Simple, believable observations about the world support the induction process. To be assured that observations are simple and believable, a community of minds is required. Lockean organizations should ensure that such a community is developed and nurtured. Effective communication is imperative in the Lockean community. Moreover, the Lockean organization must direct its attention to what is important. This is an obvious, but critical task, and perhaps a topic worthy of further study. The Lockean organization should build a storehouse of knowledge, consisting not only of observations, but also of inferences drawn on the basis of those observations. These inferences then become the basis for action. Actions taken, and observed results therefrom, provide the basis for learning, and also become part of the Lockean storehouse. The storehouse is a legacy for those who must guide the organization in the future.

References are available on request.