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FEATURE

**The Impact of Epistemology on Approaches
to the Study of Organizational Culture:
Some Examples from Information Systems**

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Abstract: *Organizational culture has been increasingly studied as a tool for management and business. Because of its complexity, however, results have not been easily quantified or compared. This paper suggests that the design of the research may very much affect the result of the study, and that different designs may be more appropriate for specific situations, based on the research question under study. A targeted approach, so to speak, may yield better results than a “shotgun” approach of trying to study all aspects of culture at once.*

Over the past 15-20 years many researchers have focused on "culture" as a construct to enable managers to better control and manage their organizations. As society faced a technology explosion in the 1990s and on into the 21st century, understanding how culture and technology relate has become important. Every culture, organizational or national, is different, and not all technologies are equally acceptable in all cultures, nor are all technologies used in the same way across varying cultures. The better we understand culture, the better we can maximize the usefulness of new information technology in the workplace.

The focus of this paper will be on organizational cultures and their impact on the adoption, diffusion, and usage of information technologies (IT). Attention will not be focused on national and/or regional cultures, but on organizational culture. While understanding national cultures may be important, managers today must understand their own organizations in order to better manage them, all the time facing specific constraints and needs. Because demographics such as education, age, and prior exposure to computers have been shown (see Schmidt, 2008) to significantly affect the response of individuals to technology, the focus

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will be on the organizational culture, which in many cases poorly reflects the national culture due to very different demographics.

This paper has three major sections. The first describes what culture is (or is perceived to be). The second delineates the different epistemological bases on which culture is analyzed. The third outlines research that has been done on the relationship of culture to IT implementation. Finally, in the conclusion it will be shown where the research on the relationship of culture to IT is lacking, and what methodology can be used to address this problem.

Culture

The term "culture" has become a buzzword in the business community in the last few years. Different writers have defined culture in varying ways. In order to apply the concept of culture to any research, it is important that the idea be well understood.

Culture is not easily defined. Kluckhohn, one of the fathers of cultural studies, has defined culture as "the set of habitual and traditional ways of thinking, feeling, and reacting that are characteristic of the ways a particular society meets its problems at a particular point in time" (as cited in Schwartz & Davis, 1981, p. 32). Edward Hall, who equates culture to a silent language, defines it as "that part of man's behavior which he takes for granted--the part he doesn't think about, since he assumes it is universal or regards it as idiosyncratic" (1959, p. 30). Geert Hofstede (1993), who was one of the first to attempt to quantify organizational culture, defined it as "the collective programming of the mind which distinguishes one group or category of people from another" (p. 89). These definitions reveal that culture is manifested universally and is present everywhere. It is not something normally thought about, yet it affects decision-making and information processing. It colors everything in our lives.

Studies of cultures and their different characteristics are innumerable. Most of the research on cultures has been done from an anthropological perspective, which focuses on a description of the studied culture, attempting to eliminate any preference or bias introduced by the researcher. This leads to the "elimination" of all references or comparisons to "foreign" cultures. The studied culture is described in anthropological terms, but is rarely quantified. The results of anthropological studies of cultures are rarely comparable across cultures, since they are descriptive and are dependent on the individual anthropologist's methodology and perspective.

Research on culture sometimes focuses on large groups of people such as entire countries or regions (Hofstede, 1980; Trompenaars, 1993), while other research looks at smaller units such as organizations (Cooke, 1988; Hofstede,

1990). This difference is a question of "granularity:" how small an entity is considered as one indivisible unit. Even without considering the difference in granularity, it becomes apparent that the author's perspective on what culture is impacts the methodology and the results of the study.

Perspectives on Culture

The study of culture can be approached from at least five different perspectives. Each of these is epistemologically different from the others—each perspective represents a different way of perceiving truth. Each perspective is also independent of the others. The following section synthesizes these five perspectives from a survey of the literature on culture, and shows how they are truly distinct.

The Cognitive-Variable-Holistic Perspective

Sonja Sackmann has identified three approaches to the study of culture in "Cultural Knowledge in Organizations" (1991). These are the *cognitive*, *variable* and *holistic* approaches.

The *cognitive* perspective defines culture as "ideas, concepts, blueprints, beliefs, values, or norms" (Sackmann, 1991, p. 21), or "the invisible culture core" (p. 19). This approach states that while culture certainly exists, it is something which exists truly in individual minds and not in people's behavior. It cannot be seen directly, but only indirectly, through the prism of individuals' words and actions. One can try to comprehend culture by trying to understand people's thought processes and the underlying beliefs and values. This is usually done through observation, but may also be done through questionnaires or surveys. Hofstede, in his landmark 1980 study, and Trompenaars (1993) have researched culture from the cognitive perspective.

It is nice to be able to say that we understand how people think, and therefore why they behave in certain ways. Given the results of current research, however, it is presumptuous to state that we understand all, or even most, of what goes on in an individual's mind, which we can see in that none of the research we have found to date (and what is presented in this paper) can explain even half the observed behavior.

The *variable* perspective defines culture as verbal and physical behaviors or practices, artifacts, and their underlying meanings (Sackmann, 1991, p. 19). Culture does not run deep, but rather on the surface. It is thus "variable." This approach posits that culture can be comprehended through an understanding of visible elements: artifacts, behaviors, rites, rituals, and ceremonies. Trying to understand the cognitive aspects and the thought processes is not necessary. Knowing all the details about the actions will suffice. Researchers who take this

perspective include Cooke (1988, 1993), Hofstede (1991), and Trompenaars (1993). As opposed to the cognitive perspective, this approach focuses on what is evident to the researcher. However, because it only taps the cultural "surface," researchers risk seeing only the proverbial "trees" while missing the real "forest."

According to the *holistic* approach, neither the variable nor cognitive approaches to studying culture are sufficient in and of themselves. In order to understand culture, the researcher must focus on the cognitive as well as the behavioral aspects. Because the study of culture from this perspective is so all-encompassing, few researchers have performed integrative research, using the multiple methods which would be necessary and taking the necessary time to understand the "whole" of culture.

Using the holistic approach, it becomes possible to see both the "forest" and the "trees." The main problem is that it generally takes too much time and effort to study both. At the same time, however, there may be a synergistic effect in that observations may be used to perform both cognitive and variable analyses. Whether synergism exists or not, the holistic approach demands a much larger volume of data, and therefore organizing the data becomes more complex and more time consuming, such that it may well become highly impractical.

The Quantitative-Qualitative Perspective

In this perspective, two fundamentally different approaches to the study of culture exist: quantitative and qualitative. The quantitative approach to studying culture attempts to measure culture or cultural attributes. This is generally done through some survey instrument (Cooke, 1988, 1993; Hofstede, 1980, 1990; Trompenaars, 1993). Some instruments focus on the behaviors or "variable" aspects of culture (Cooke, 1988; Hofstede, 1990), while others focus on the cognitive aspects of culture (Hofstede, 1980; Trompenaars, 1993). The main goal of this approach is to create instruments which can be used in different times and places to understand, to compare, and to contrast different cultures.

While we appreciate having portable research tools, which can be used in multiple settings, this approach risks overlooking the small differences and making the whole explicitly the sum of the parts (using aggregate scores to understand an organization). In the analysis of quantitative data from an organization, one should look for the existence of subcultures, which may make the quantitative analysis even more meaningful and richer.

The qualitative approach sees culture as something which cannot be measured accurately or which measurement cannot completely describe. In many ways this approach is perceived to be the "better" approach to studying an

individual organization, since it is usually done using ethnographic techniques and observations over time. This approach generally takes significantly more time, however, and the results are not easily replicated. Several researchers have used this approach (Hofstede, 1991; Denison, 1990), while both Hofstede and Denison have utilized both quantitative and qualitative assessments on the same organizations.

Qualitative research is generally richer in metaphors, since the attempt is to put everything into "perspective," and to "tell stories." The black and white, right and wrong, are not emphasized, while the details of communication and the environment are captured. While this emphasis might enable a researcher to give a fuller understanding of an organization's culture, it is also deeply reliant on the individual conducting the research, and on what that individual may perceive or fail to perceive. Whatever perspective the researcher has will impact the phenomena observed as well as the results of the study.

The Positivist Versus the Interpretivist Perspective

The positivist perspective is taken by those who feel that culture can be understood, and once understood, it can be controlled and/or managed, at least to a certain extent (Deal & Kennedy, 1982; Kilmann et al., 1985; Schein, 1986). The positivists do research with the belief that objectivity can be achieved by using the scientific method. They can do quantitative or qualitative research (although by nature they may be predisposed to quantitative), but they simply believe that questions have right answers, and that through research an eventual understanding of the relationships can be found. (See Hunt, 1994 for a complete discussion of the development of positivism and its tenets). The extreme positivist position is well described by Joanne Martin:

[Positivists] generally see culture as a key to commitment, productivity, and profitability. They argue that culture can be--indeed, should be and has been--managed, and they often offer guidance as to how to do this. Their prescriptions for this admittedly difficult task range from the active (seven steps to managing cultural change) to the relatively passive (culture as relatively unmalleable, a potential obstacle to desired strategic change that must be anticipated and "worked around"). From this perspective it is arrogant or ignorant to question whether culture can be managed. (1995, p. 95)

This approach to studying organizational culture has been used extensively in business as well as social psychology. It is the natural evolution of the desire to predict and control surroundings.

The interpretive understanding of culture holds that culture is something which can be merely understood through in-depth research. In this way the

approach is similar to that of the positivists. However, interpretivists do not feel they can change (or therefore manage) culture by intentional activities, so nothing can be done other than to understand it.

In the business and computing literature, no examples of research have been found from this perspective, but there are occasional descriptions of it. Taken to the extreme,

[interpretivists] find it ridiculous to talk of managing culture. Culture cannot be managed: it emerges. Leaders don't create cultures; members of the culture do. Culture is an expression of people's deepest needs; a means of endowing their experiences with meaning. Even if culture in this sense could be managed, it shouldn't be, particularly if it were being managed in the name of increased productivity or the almighty dollar. From this perspective, it is naive and perhaps unethical to speak of managing culture. (Martin, 1985, p. 95)

The objective always seems to be to understand culture better, without a desire to manage or change it. For example, Linda Smircich (1985) suggests looking at culture to "seek to offer ways to diagnose organizational culture, either to help an individual manager negotiate his or her way through an organizational maze or to provide assistance in the accomplishment of organizational change" (p. 61). As aptly pointed out by Kunda (1992), there seems to be a cultural bias toward controlling everything. Because of this bias, only describing a phenomenon such as culture seems to be insufficient, and we must attempt to manage it and control it. By so doing, we become positivists.

Integration, Differentiation, and Fragmentation

From this perspective, the approach taken will depend on what the researcher is looking to accomplish. A researcher may be looking for commonalities, differences, or conflict and dissensus:

The integration perspective holds that all cultural manifestations mentioned are interpreted as consistently reinforcing the same themes, all members of the organization are said to share in an organization-wide consensus, and the culture is described as a realm where all is clear. Ambiguity is excluded. (Martin, 1992, p. 12)

This focus on commonalities tries to find the similarities across cultures, and tries to see what patterns, if any, can be determined. The idea is to try to build a knowledge base that can help use the lessons learned in one setting in a different place.

The differentiation perspective focuses on conflict and dissensus within an organization or population, and looks for the differences within a group or

between groups. It describes cultural manifestations as sometimes inconsistent (for example, when managers say one thing and do another). Consensus occurs only within the boundaries of subcultures, which often conflict with each other. Ambiguity is channeled, so that it does not intrude on the clarity that exists within these subcultural boundaries (Martin, 1992, p. 12).

Differences in culture are part of the reality of the existence of subcultures in moderately large organizations. Further, each of these subcultures has a great interest in its own survival (as pointed out by Martin & Siehl, 1983).

The "fragmentation approach" focuses on the fact that reality is constantly being constructed and reconstructed. Consensus and dissensus are recognized to be issue-specific and in a constant state of flux. No stable organizational or even sub-cultural consensus is found. Clear consistencies or inconsistencies are rarely, if ever, found. Under this approach, culture is looked at not as a static entity, but rather as a dynamic construct, which is constantly changing. The focus of the research is on understanding how and why culture changes.

Since it is well known that researchers tend to find what they are looking for, the possibilities of skewed results using one of these three approaches are somewhat disturbing. A researcher who wishes to find similarities can do so, while a researcher looking for differences may find them also. Each may report only the outcome that was being sought. This has been demonstrated by Martin (1992), who gives results of the research done on one organization, with a section dedicated to each perspective. The results are so different that the reader might well question whether she studied only one organization.

Individual, Relationship, and Task Orientation

Denise Rousseau (1990) divided cultural attributes into three categories: individual, relationship-oriented, and task-related. Research may focus on one or more of these areas, depending on the objective.

From the "individual" perspective, certain cultural attributes, including freedom, self-expression, and flexibility belong to each individual. The attributes studied do not directly impact the ability of the individual to perform a task, or relate to others.

Relationship attributes are those that focus on communication, fairness, and teamwork. These may be reflected in honesty, approval seeking, and communication style. These attributes enable groups to get along and live in harmony.

Task oriented attributes such as innovation, analysis, and risk-taking influence the decision-making of the individual, as well as the ability to

accomplish a task. An individual who fears failure or is perfectionistic will approach life very differently from someone who does not feel that failure is a problem or that everything must be perfect.

A study of the available descriptions of culture will show that this three-part categorization of cultural attributes can be used to group the different attributes used. We should note, however, that researchers who explicitly name cultural attributes use attributes that fall into all three, or at the very least two, of these categories. This division of attributes is most useful when approaching a specific problem. It allows one to focus on the attributes most relevant to the research.

Discussion

Five epistemological perspectives from which culture can be viewed have been identified and discussed. These perspectives and their authors are summarized in Table 1. Two of these perspectives have three alternative approaches, while two others have two approaches each. Additionally, one perspective ("cognitive-variable-holistic") is really two approaches, with the third as a combination. Each of the other perspectives can be combined with one of the approaches of the "cognitive-variable-holistic" approach to produce a full view of the approach to studying culture. Thus, any combination of approaches is possible.

Table 1
Approaches to the Study of Organizational Culture

Author	Approaches
Sackman	Cognitive Variable Holistic Quantitative Qualitative Positivist Interpretivist
Martin	Integration Differentiation Fragmentation
Rousseau	Individual Relationship Task

A researcher may use both quantitative and qualitative approaches when looking at culture from a cognitive or a variable perspective. Even an interpretivist may use quantitative tools in order to better understand certain phenomena, such as demographics. Positivists may use qualitative research to try to more fully understand the culture they want to change. Regardless of the research being done, there is always one or more cultural attributes involved. This may well include attributes from all three approaches identified by Rousseau.

It is important to note that while not one of the alternative approaches is inherently impossible, some may be more useful than others. Quantitative researchers tend to be positivists; cognitive researchers will be more likely to try to use qualitative research, since they are researching thought processes and understandings that are not easily quantified. In addition, there is nothing to stop an individual researcher from using several different perspectives simultaneously. Regardless of the approach taken, research tends to focus on individuals, their actions or their thought processes. The organizational culture (or subculture) is described as the aggregate of the individual cultures.

Research on Culture and Information Technology

From the late 1980s until the early 1990s many researchers studied the relationship between culture and information technology (IT), focusing on IT diffusion, adoption, and usage, as well as the potential impact of IT on culture. These studies are divided into two main groups: (a) the effect of national culture on IT (Eindor, Segev, & Orvad, 1993; Neko, 1990; Straub, 1994) and (b) the effect of organizational culture on IT (Burkhardt, 1994; Burkhardt & Grass, 1990; Cooper, 1994; Grote & Baitsch, 1991; Pliskin et al. 1993; Robey, Gupta, & Rodriguez-Diaz, 1992; Romm et al., 1991). In addition, other research looks at organizational culture in relationship to IT and other technology at the same time (Barley, 1986, 1990).

Because the focus of this paper is on organizational culture, national culture research will not be discussed, other than to say that differences in culture across national boundaries have been shown to cause significant differences in IT implementation (Eindor, 1993; Straub, 1994).

Romm et al. (1991) focus on when it is valuable to identify potential culture clashes. Using a series of mini-cases, the authors argue that organizational culture can be defined as having a "high content" or "low content." *Content* is defined as the "degree of cultural relevance and its visibility in terms of familiar artifacts" (p. 103). This means that a management information system (MIS) that will affect few people, or affect few cultural

attributes is "low content," with the opposite being "high content." Romm, et al. also state that the "predictability of outcome" of the proposed MIS is important, and can be classified as "low" or "high." Predictability is defined as "the extent to which the outputs of the MIS are predetermined" (p. 103). This gives a two by two matrix, with four possible cells where an MIS may be located (see Table 2). The authors argue that when a culture has high content and there is little predictability of the outcome of the MIS, evaluating the organizational culture is important, since the system is deemed to be "high-risk." The opposing cell in the matrix, where the culture has "low" content, and there is a "high" predictability of outcomes, leaves little need to evaluate the culture, since there cannot be much conflict.

Table 2
Risk as a Result of Culture Content and Information Systems Predictability

	Low Culture Content	High Culture Content
High Predictability	Low Risk	Medium Risk
Low Predictability	Medium Risk	High Risk

Pliskin et al. (1993) focus on the implications of not understanding organizational culture correctly and the resistance that this can bring to IT implementation efforts. Their research follows up the earlier work by Romm et al. (1991). The authors argue that organizational culture should be added to Markus and Robey's (1983) framework for determining whether an MIS fits the organization, which included the user, the structure, the power politics, and the environment. This addition of organizational culture to their four factors would create five levels of analysis of resistance to the implementation of information systems. Pliskin et al. argue that if culture is ignored, the rest of the analysis may well be for naught.

Organizational culture is seen by Cooper (1994) as a source of inertia in IT implementation. He argues that organizations have two main competing dimensions: order versus flexibility, and the demands of the internal systems versus the demands of the external environment. This creates organizations that have one of four basic organizational cultures: human relations, survival, stability, and productivity. In order for an implementation of a new MIS to be effective, it should be supportive of the current culture. If the current culture is not supported, then there will be inertial resistance to its adoption.

One report that deals with organizational cultures in an international perspective is by Robey, Gupta and Rodriguez-Diaz (1992). These authors relate the experiences of an airline company in implementing a new accounting system in two foreign offices. Using the case method, they describe what happened and show that while the culture and the organization in the two countries were similar, the results of the implementation were dramatically different. They attribute this difference to having learned about the organizational culture during the first implementation, and applying those lessons at the second site.

Another study focuses on the impact of organizational culture on office communication systems. Grote and Baitsch (1991) report that "technology did not effect a change [in culture], rather it was integrated into pre-existing cultural patterns" (p 207). This research was done in a large transportation company. The company had two major divisions, each with a distinct organizational culture. The same office communication system was implemented company-wide, yet the behaviors as measured by the researchers, did not significantly vary over time. Employees adopted only the features that were supportive of the subculture, while other features went unused. Technology was made to adapt to culture, rather than vice versa.

Two studies (Barley, 1986, 1990; Burkhardt & Grass, 1990; Burkhardt, 1994) focus on communication patterns within an organization. Barley's study (1986, 1990) did not target IT specifically, but rather an application that used IT as a part of the system. He used the case of hospitals introducing new CT scanning equipment, in which computers play a major role. Using a mix of quantitative and qualitative research over time, he found that the introduction of the new technology shifted the communication patterns substantially, but not uniformly. The way technology is introduced plays a role in how communications change. The structure of relationships shifts, with power shifting to those who have knowledge of the system.

Marlene Burkhardt's (1990, 1994) studies specifically evaluate the impact of IT over time. She focuses on the network of relationships within the organization, not on culture in general. While she does not state that she is studying the culture, the study of behavioral patterns of interpersonal relationships fits in with the variable approach to the interpersonal cultural attributes. Burkhardt studied how individual interaction patterns and relationships shifted over time. These three time points spanned 15 months, beginning before the new system was implemented, and ending a year after it was in place. She found that the networking within the organization shifted substantially. Her research is based on the concept of networking, where each individual is connected directly or indirectly to everybody else in the organization. Each individual filled out a form indicating whom they related to

regularly, and who they felt was important to the organization (this latter measure was used to evaluate "power"). By analyzing the results of these questionnaires, determining network centrality (the degree to which an individual is in the middle of things) was possible, and also the perceived power of individuals. Early adopters of the system gained both in perceived importance to the organization and network centrality. After everybody received training, the shift essentially stopped, but was not reversed. It appears that those individuals who gained power and centrality retained it, at least over the period of this study. Burkhardt hypothesizes that this may be because they gained new credibility, which was transferred to areas other than the new computer system.

Burkhardt's study only addresses the actual communication network and communications structure; it ignores the formal structure. It also does not address the question of whether part of the shift in communication patterns was due to the fact that under the new computer system some responsibilities and attributions would have shifted anyway. The research demonstrates a methodology for evaluating network relationships within an organization.

Romm et al. (1991) and Pliskin et al. (1993) use the qualitative approach, with an emphasis on the cognitive aspects of culture. They explicitly state that they are desirous of controlling the results of culture. Culture is broadly defined to include attributes relating to the individual, relationships and tasks. Cooper (1994) does not use any quantitative analysis and also focuses on the cognitive aspects of culture. The objective is clearly a management (positivist) objective. Robey et al. (1992) did not explicitly make the statement that culture should be managed or that it should not. They provide only anecdotal evidence to support their assertions. They are not really specific about cultural elements, but certainly focus on the behavioral aspects of culture.

Grote and Baitsch (1991) used both quantitative and qualitative techniques. They determined what the culture was from documents and from observations. The analysis of communication patterns was made based on interviews and quantitative data. They did want to be able to better manage culture, but found that maybe in their case it was unclear whether culture managed the process more than the process managed the culture.

The only research included in this survey which is done purely from a quantitative approach was by Burkhardt (1994). She did not attempt to study from the cognitive perspective. Her concern was obviously the behavior of the individuals in the organization. She was only concerned with one small portion of the behavior, as opposed to a larger view.

In the last decade, much of the research has not been on whether there is a relationship between organizational culture and IT adoption and diffusion, but

rather on what other factors influence it, in addition to organizational culture. As just one example, Jones et al. (2005) focus on the impact of readiness for change in the organization, as a moderating influence on the impact of organizational culture. Also, disciplines other than business have looked at the impact of organizational culture on the adoption in IT (van der Meijden et al., 2003). As researchers have realized the complexity of the problem, some (Straub et al., 2002) have even gone so far as to revisit the concept of culture, through the "Social Identity Theory" (SIT) where there is a view of the whole identity of each individual. While this concept may have face validity, it is, however, difficult to operationalize and measure.

Conclusions

Research on the impact of culture on IT implementation is quite limited. It is apparent that there are many research avenues not yet explored. Most research relating to IT and culture appears to be done on the conceptual level (Cooper, 1994) or using case studies (Barley, 1986; Robey, Gupta & Rodriguez-Diaz, 1992). While the research is interesting, it really only demonstrates that which common sense already indicates: that understanding what the objectives are and managing the process differently will impact the successful adoption of the new information technology.

It is interesting, although not surprising, that the research which has focused more narrowly on some aspect of culture appears to have had the more easily interpretable results. While the research and postulations of Romm et al. (1991), Pliskin et al. (1993), and Cooper (1994) are interesting, they just give a "fuzzy" outcome, which does not yield easily measurable results. On the other extreme, Burkhardt (1994) and Barley (1986, 1990) focus narrowly on one aspect of culture, discuss it in detail, and get results which can be interpreted with reasonable clarity.

The research by Grote and Burkhardt (1991) on communication patterns and the impact of IT on them gives us tools which need to be expanded. Organizational communication is truly a network, where individuals normally communicate both within and outside the formal structure. The informal structure should not be studied to the exclusion of the formal structure. Both of these parallel communication networks need to be investigated. Research should focus on the communication networks (formal and informal) before and after the introduction of IT. Studying the existing formal and informal networks is possible. In addition, the formal network that will exist after the introduction of IT can be identified. The only question remaining before implementation is what the informal network will be after the introduction of IT, and if the organization has a desired network, how managers will go about attempting to achieve it.

It appears that culture is so multifaceted that it is impossible to study all its facets at once and have easily interpretable results. In addition, researchers recognize that changing the fundamental values of individuals is possible only in the long term. Only outward behavior, and at best, norms, can be changed in the short term.

In order for the study of culture and its relationship to the implementation of IT to be constructive, it is important for the researcher to (a) understand the impact of their own perspective and presuppositions, (b) understand the impact of the choice of breadth of the study, and (c) understand the impact of their choices of epistemology and research design on their results. What we wish were possible is a study which encompasses all views of organizational culture, from all perspectives, with full details on each characteristic of culture. Since this is practically impossible, what we need is a methodology that will assist us in studying culture in such a way that the results can be meaningful to the problems in IT implementation.

Identifying "fit" between the organization and the technology needs to be the primary goal of research on cultures and IT. In order to do this, research needs to be able to evaluate both culture and technology in ways that they can be readily compared. This means that research on culture for this purpose should be from a quantitative-variable perspective. While some information on the cognitive aspects would be useful, short-term plans cannot include changing values or fundamental thinking patterns. Qualitative results may be nice, but when assessing "fit," developing a methodology is difficult based on qualitative results. Taking advantage of the quantitative results, subcultures and conflict should be identified, not just the composite view of the organization's culture.

Whether the researcher is a positivist or interpretivist will make no difference to the assessment of fit. For both positivists and interpretivists, the question is whether the existing culture and the desired culture are similar. The perspective will impact the recommendations to be made whenever a lack of fit is found since the positivist may try to change the culture while the interpretivist will attempt to work around it. The cultural attributes analyzed (individual, relationship, or task-oriented) will depend on the technology that will be implemented. Information technology may affect all three groups of attributes, or possibly none.

In order to study culture completely, all five perspectives are necessary. Researchers should first identify the cultural attributes being studied before the research begins, identifying them both from the cognitive-variable perspective as well as the individual-relationship-task perspective. Research then could be done using quantitative and/or qualitative techniques. The results could then be analyzed to check for differentiation and/or integration, and if done over time

even fragmentation. With complete analysis in hand, decisions can be made about how to proceed (or whether to proceed). These implementation decisions will then be made either from the positivist or the interpretivist position.

Using this sequence in research on organizational cultures allows for the inclusion of all five different perspectives on culture, each at the appropriate moment. It may well be that this sort of a serial approach to varying perspectives could be more practicable than Social Identity Theory, which attempts to study everything at once.

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