

**The Role of the CEO
in the Management of Change:
*The Case of Information
Technology***

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Few people would question the assumption that CEO's have a major impact on the changes that occur in their organizations. Yet there is surprisingly little analysis of just what the nature of this impact is likely to be, whether it will vary by industry, company, or CEO attitude and style, and what empirical data can be gathered to begin to shed some light on these issues.

We decided in 1987 to interview CEO's in a variety of companies, and, with the assistance of a number of our Sloan Fellows and other graduate students, were able to interview 94 executives all of whom were current or past CEO's, and, in a few cases, COO's or presidents of divisions in conglomerates or multi-divisional companies. But what is particularly distinctive about this research is that it draws exclusively on the responses of the chief executives, a point of some importance inasmuch as most of them felt that becoming a CEO changed their role and attitudes in important ways.

The interviews focused on the personal attitudes and use of information technology (IT) on the part of the CEO, and tried to elicit some of the underlying assumptions behind the behavior and attitudes. Common dimensions and variables were chosen for the interview protocol and subsequent analysis but, because we felt it essential to get the CEO's spontaneous views, we asked our interviewers to allow each CEO to tell his story in his own way. We then combined the protocols in terms of common themes and found that coding reliability was sufficient to pursue our analysis and to develop constructs, but not high enough to allow us to generalize from this sample to the population of CEO's.

This report attempts to fit the CEO responses into a framework that allows us to analyze how CEO's impact organizational change. The results will be presented in three parts:

- 1) A taxonomy of generic CEO behavior in terms of a model of the change process, with examples from the cases;
- 2) An analysis of some of the factors that influence how a CEO will actually structure his own role in a change process;
- 3) A set of change scenarios derived from an analysis of the interviews that reflect the factors identified above. We were able to classify 84 of the CEO's into these scenarios.

I. GENERIC CEO ROLES IN THE CHANGE PROCESS

Table 1 shows a model of the change process that was originally proposed by Kurt Lewin and elaborated by me to explain changes that had planned, non-voluntary, sometimes coercive elements to them (Lewin, 1952, Schein, 1961, 1972, 1987). Lewin correctly foresaw that in living systems any given stable state was a "quasi-stationary" equilibrium that could be unfrozen, moved, and refrozen, but he did not elaborate in detail how one actually unfreezes a system, moves it, and then refreezes it. Since organizations tend to develop stable routines and cultures, any organization change tends to occur in terms of the stages identified in this model.

Insert Table 1 about here

As Table 1 shows, one can logically analyze and order the steps necessary in each stage of the change process, though these steps often occur out of sequence or simultaneously. Most of these steps occur through the intervention of some human, to be labelled for this purpose a "change agent," and it is these interventions on which I wish to focus. The question to be considered is whether and how CEO's act as change agents, and around which of these steps.

IA. DISCONFIRMATION -- THE CEO AS A DISCONFIRMER

CEO's are uniquely suited to be disconfirmers because of their power position in the organization, the information to which they have access, and the responsibilities they have for maintaining organizational health. If things are not going right in their view, they have the obligation to start an organizational change process by disconfirming the present state. Normal routines that have become habits in an organization will not change unless someone ceases to respond in the expected manner. Such disconfirming responses will obviously have more weight if they come from the CEO than from someone lower in the hierarchy.

A clear example was one of our respondents who decided to start the change process toward greater use of IT by announcing that he was personally going to start using a desk top terminal and would henceforth send all critical communications to his subordinates via electronic mail. In other words, if they sent something by the old system he would simply not respond, and if they did not get a terminal of their own, they would miss important messages from him.

Disconfirmation in its simplest form means that things no longer work that used to work. External circumstances can disconfirm as when sales fall off, or the price of the company's stock falls, but more typically in organizational change, it is a human change agent who starts the process by sending different signals such as when a CEO brings the organization together and announces that a major downturn in business will require downsizing, or that a change in technology will require reorganization, or that a merger will require realignment of people, or, as in the example above, he will change his own behavior in such a way as to force others to change theirs. In each case, the initial impact of the message can be described as a disconfirmation of the present behavior, values, and assumptions.

If there is no disconfirmation from any source, no motivation to change will be aroused. In a complacent organization, therefore, one of the CEO's most critical functions is to generate information or announce decisions that will have a disconfirming effect. But that is not enough, as many CEO's find.

IB. INDUCTION OF ANXIETY/GUILT -- THE CEO AS THE "BAD PARENT"

Disconfirming messages only have an impact if they connect to something we care about. If the CEO ceases to respond to subordinate behavior in an area irrelevant to their concern, they may simply not pay attention. However, if continuing to behave in the old way makes the subordinates anxious because some important goals may not be met, or makes them feel guilty because some valued ideals will not be met unless a change occurs, then the message will be attended to and discomfort will motivate some activity. It is this step that leads to quips like "no pain, no gain," or the common assertion among change agents that unless the system is "hurting somehow," no change will occur.

CEO's are clearly in a good position to play a key role in anxiety or guilt induction because they are symbolically and psychologically in a parent role. Even if they do not try to be parental, many subordinates will, for their own psychological reasons, attribute parental power to them, and react strongly to any signals that the CEO is pleased or displeased with them.

Probably the best example is the CEO who states outright or subtly implies to his subordinates that their failure to learn to use IT means either that they will fail in their work (anxiety induction), or that they are technologically "backward" (guilt induction). Whether it is intended or not, a force toward

change is induced when the subordinate feels obsolete, out of touch, or in some other way uncomfortable about maintaining his or her old behavior.

IC. CREATION OF PSYCHOLOGICAL SAFETY -- THE CEO AS THE "GOOD PARENT"

If too much anxiety or guilt is created, there is the danger that the change targets will react defensively. One of the most likely defenses in this situation is denial which, in this case, means that the subordinates will cease to "hear" the disconfirming signals or will rationalize them away. Subordinates will say to themselves-- "The boss doesn't really mean it; he is just showing off his own new toy; he won't persist if I don't go along," and so on.

Given this state of affairs, motivation and readiness for change will not really develop unless the target also feels psychologically safe. In other words, giving up the old behavior, value, or assumption is intrinsically anxiety provoking and people will not tolerate that kind of anxiety unless they feel some support during the transition period (Schein, 1985).

In the case of the introduction of IT, they may feel that they will be embarrassed by their slow learning ability, or by their inability to type, or poor grammar or spelling, all of which they could hide by dealing directly with a secretary. A common diagnostic error here is to assume that the resistance to change is only the lack of motivation or the unwillingness to put out the effort to learn something new. Much more likely is the defensive avoidance that results from inability to face one's own presumed inadequacies if one does not feel psychologically safe.

CEO's should and do attend to this issue in a variety of ways. One of the commonest was to be totally inflexible on the ultimate goals to be achieved (i.e. that desktop workstations would eventually be used by all senior management), but to be highly flexible and supportive on 1) the pace of their introduction, 2) the degree to which selected subordinates could continue to use their secretaries to enter data or memos, and, most important, 3) the amount and type of training help they would provide no matter what the cost. Subordinates could use individual coaches if "going to class" would cause tension, and, in some cases, this meant individual coaching for long periods of time. Some CEO's felt that sending their subordinates to formal classes would threaten them further, so an individual coach would provide the psychological safety necessary to learn something new.

We cannot count how many CEO's played each of these three unfreezing roles because local circumstances varied or we did not have the data. However, we heard many vivid stories about the disconfirming and anxiety/guilt inducing roles. It was less common to hear stories from CEO's about the necessity to provide psychological safety, even though they were often in the best position to provide it. We have to assume that they are either less sensitive to the need for this step or are less willing to talk about it because it appears to be more "soft."

ID. CREATING CHANGE THROUGH COGNITIVE REDEFINITION: STIMULATING IMITATION OR IDENTIFICATION -- THE CEO AS ROLE MODEL

Ultimately what unfreezing does is to create a motivation and readiness to change. The change target becomes sensitized to the need to learn something new and starts to look around for relevant information. For lasting change to occur, the target must not only learn new behaviors, but must also cognitively redefine the issue so that new perceptions, attitudes, and feelings are created as well. Sometimes such cognitive redefinition occurs prior to behavior change, sometimes afterwards in an effort to reduce dissonance (Festinger, 1957). But if it does not occur at all, we are dealing only with temporary change of the sort one sees when people are coerced but not convinced.

The commonest source for new information is someone else in the organization who seems to be "doing it right," in the sense that his or her behavior is getting positively confirmed. Such role models not only provide behavioral cues on what to do, but, more importantly, permit the target to psychologically identify with the model and, thereby, absorb some of the new cognitive point of view.

Many CEO's in our interviews discussed how the use of IT made it possible to think in a fundamentally different way about "managing the business," and part of their problem was to get across these new concepts. For some of their subordinates this meant new assumptions about what a manager does and how a business can and should be managed. If the CEO felt comfortable with his own vision and level of understanding, he became a willing role model, teacher, and object of psychological identification. If he did not, he could deliberately stay away from the situation, conceal his own behavior to a greater degree, and disconfirm efforts on the part of subordinates to imitate him or identify with him.

Some CEO's were outspoken about not wanting to be role models. They sent the message "Do what I say, not what I do," a situation that arose frequently with entrepreneurs who often recognized that their own personal style was unusual and not necessarily the correct model for others. Another reason why some CEO's deliberately tried not to be role models was that they wanted to avoid cloning themselves. They believed that an effective organization needs innovative behavior, so they stimulated as much as possible people's efforts to learn in their own way and from their own sources.

If the CEO felt that he personally was the wrong model, but he believed that a correct model existed and that learning from a role model was the best way to learn, he could, of course, manage the change process by bringing into the organization consultants, trainers, or other executives who represented what he wanted to teach.

IE. STIMULATING COGNITIVE REDEFINITION THROUGH SCANNING-- THE CEO AS PROCESS CONSULTANT

Imitation and identification have the virtue that learning can occur rapidly and behavior can be standardized fairly quickly. However, if the goal is for the new behavior to be innovative, then this change mechanism is a disadvantage because it prematurely funnels all changes into the same channels. If the CEO wishes to avoid such premature channeling, he must create circumstances that will "help the subordinate to learn" by becoming more of a process consultant and/or by sending subordinates "out into the world," to find out what is out there and learn from it (Schein, 1969, 1987, 1988).

The essence of process consultation in this context is for the CEO to become genuinely interested in the subordinate as a learner and to provide whatever help the subordinate appears to need to learn new behavior, much as a coach elicits from an athlete what that athlete is most capable of. The CEO as process consultant does not advise, teach, or tell. Instead he listens, helps the subordinate to identify what the problem is, and helps the subordinate figure out what he or she will do about the problem. The CEO may offer options and alternatives, but never recommends any particular course of action as the correct one.

The best example of this kind of behavior is the one provided by McGregor years ago in the description of the CEO who wanted his company to have a better management development program. McGregor advised him not to design such a

program and impose it, but simply to say to his key subordinates that starting now he was expecting them to develop better management development processes (disconfirming and anxiety inducing), that he did not know how to do this (refusing to be a role model), but that he would start to measure their performance and assign part of their annual bonus on the basis of how well they were doing (anxiety induction), and that he would provide resources and help if anyone needed it. He provided psychological safety through his tone and demeanor, and through offering whatever resources they needed to make the program happen. He also requested quarterly reviews to discuss what they each had done (disconfirming and anxiety inducing), but during those reviews functioned as a process consultant rather than as a teacher or boss (stimulating scanning).

This combination of circumstances forced the subordinates to scan their environment, to seek help from consultants, to read, to ask around in other companies, to create task forces, and in other ways get information on what to do and how to do it. They were not under orders to come up with a common program (another way of creating psychological safety), so each could creatively seek his or her own solutions. The quarterly reports served as a good vehicle for the CEO to confirm positively innovative efforts and to provide help. By the end of the year the company had an active and effective management development program.

In our interviews we saw many examples of this kind of forced scanning. The CEO would announce that the company had to learn to make better use of IT, would disclaim any special visions or skills in this area, but expect reports on progress. Often with the help of the IT department, key subordinates would create committees or task forces to scan the environment, inform themselves, and begin to redefine in their own heads what tools and processes they needed. They would then be in a position to educate the CEO.

If this scanning process was to work, however, the steps involved in unfreezing had to have occurred. We found good examples of where CEO's had earlier disconfirmed present practice by strongly asserting that "something" was not right, without, however, offering a vision or a solution themselves.

IF. REFREEZING: CONSOLIDATING AND STABILIZING THE CHANGE IN THE CHANGE TARGET AND THE SURROUNDING SOCIAL SYSTEM-- THE CEO AS REINFORCER

One of the most frustrating aspects of organizational change is that new behaviors and attitudes do not stick once the initial "Hawthorne Effect" is

gone. The system either reverts to its original state or moves in some brand new direction that may not be desired by the change agent if the new behavior or attitudes are not "refrozen." What this means is that the new response must fit into both the personality of the change target and into his or her key relationships. Otherwise a new unfreezing process begins because of personal discomfort or disconfirmation by others in the system.

In order to avoid either of these undesirable outcomes, change agents generally favor projects that involve as much of the total system as possible, and encourage change mechanisms that draw more on scanning than identification or imitation. If a person learns through scanning he or she automatically incorporates only things that fit into the personality, whereas with imitation and identification one often adopts behavior to please the role model, only to drop it when the role model is no longer an audience.

The implications for CEO behavior are obvious. If the CEO is the original change agent, he must view as his change target entire groups or sub-systems, not isolated individuals, and he must avoid becoming the object of imitation. Finally, since he is a prime audience for and reinforcer of change, when change in the right direction occurs, he should strongly confirm the new behavior and attitudes.

We infer from our interviews that many CEO's were sensitive to these kinds of issues, but only at an intuitive level. They did not talk as articulately about group norms and the subtleties of change as they did about unfreezing and setting a direction for change. And how they chose to reinforce had much to do with their vision for IT and the longer range goals they saw for it, a topic we will discuss below.

SUMMARY

I have tried to show that one can classify CEO change agent behavior in terms of a model of the change process. By identifying the separate components of the change process, one can analyze what may be missing and what behavior, therefore, the CEO should especially concentrate on.

In ongoing change programs one will see various of these roles being played simultaneously and repeatedly as the change process works its way through the system. Each time a new subsystem is encountered a new unfreezing, changing, and refreezing cycle has to begin. The effective CEO as change agent will constantly monitor what is needed and supply the missing functions rather than trying to play all of the roles himself. And his consistency over long periods

of time with respect to what he confirms and what he disconfirms will play a critical role in the ultimate success of the total change effort.

II. FACTORS INFLUENCING CEO CHANGE AGENT BEHAVIOR

Having identified the generic change agent roles, we now need to know what, if anything, will determine how a given CEO will actually behave in the process of initiating and managing change. The factors identified below can all be thought of as "partially causal" or influential, and they probably act in complex combinations rather than as single forces (see Figure 1). In terms of change theory, each factor can be thought of as either a "driving" force leading to increased pressure for the system to move in a certain direction, or as a "restraining" force leading to resistance (Schein, 1985, 1987).

Insert Figure 1 about here

IIA. CEO BASIC ASSUMPTIONS ABOUT INFORMATION TECHNOLOGY.

It was our own assumption that whether they were explicitly aware of it or not, all CEO's had a set of assumptions about IT and a vision of what it could or could not do for them. A typology of such assumptions based on 1) basic faith that IT is a good thing for organizations, and 2) conviction that those things will or will not come about, is shown in Table 2 and Figure 2.

Insert Table 2 and Figure 2 about here

Though the coding was not always totally reliable, we were able to agree enough on the basic types to give a rough approximation of how many of our CEO's fell into each basic category, as shown in Table 3 (based on the 84 cases analyzed later).

Insert Table 3

In terms of basic assumptions, one can see a degree of realism prevailing. A few CEO's were totally utopian about the potential of IT, but the bulk of them were realistic about the difficulties of changing their organizations. Both of these groups would be expected to exert primarily driving forces in the sense

that they would try to unfreeze and change their organizations. The ambivalents and those that saw IT as "merely a tool," clearly were more cautious in their approach to implementation and would thus be expected to be as much on the restraining as driving force side. There were few real skeptics, so one would not expect strong restraining forces from CEO's except in the form of caution about the potential costs of IT.

IIB. SPECIFIC IT VISIONS.

For those CEO's who had a positive vision for IT, it is important to distinguish the nature and strength of that vision if one is to decipher further how they would behave in the change agent role. Because we were limited to interview data, we do not have detailed information about this aspect of CEO attitudes and behavior, but it is nevertheless important to outline the major possibilities. For this purpose it is useful to distinguish several levels of "impact" of IT on organizations, as shown in Table 4.

Insert Table 4 here

1. THE VISION TO AUTOMATE.

Some CEO's in our sample saw the ultimate role of IT to be a way of replacing expensive, unreliable human labor with sophisticated robots, systems, and other IT devices. The promise of IT for them was that it would ultimately save money, improve quality, and, thereby, make the organization more effective. They tended to look at their organizations from a manufacturing point of view and were preoccupied with cost and/or technological issues.

Such CEO's would tend to be less utopian and more ambivalent or skeptical. The change agent role that they would be most likely to play is either to disconfirm the present cost structure by insisting on automation, or by disconfirming the present use of technology by insisting on technological upgrading. In both cases they would focus more on the primary role of IT in the manufacturing process and would be relatively less sensitive to the possible role of IT in the management system or the impact on the management system of the automation they were advocating.

As has also been pointed out, though this vision has long range implications technologically and may involve major capital expenditures, it often proves to be short-sighted because the human implications are not carefully

thought through and the systems in the end do not work as well as they should because they do not take advantage of operator creativity and innovation. In other words, the deeper assumption that human behavior can be automated in a complex technological environment may not be valid in some cases.

2. THE VISION TO INFORMATE UP-- "CONTROL UTOPIA"

The term "informate" is taken from Zuboff (1988) and refers to the impact that IT has in making previously concealed parts of a system's processes visible more widely both to people higher up and lower down in the organization. Some CEO's saw IT to be the "ultimate management control tool." They assumed that by installing the right kind of information system they could be completely informed about every aspect of every operation in their organization. Such information would enable them to pinpoint problems rapidly and set into motion remedial measures.

Needless to say such a vision appeals to the more control oriented executive and probably is functionally similar to the automation solution except that what is being automated here is not the production process but the control process. The human organization is being replaced with an information system. Toward this ultimate goal a number of CEO's insisted on installing terminals on their own and their subordinates' desks in order to facilitate the introduction of a complete communication network and a common information and control system.

Some of the resistance encountered from subordinates was probably motivated by their recognition that once such a system was installed, it could easily be abused by a control oriented CEO. Abuse here would be micro-management on the part of the CEO, thereby undermining the rest of the organization, and possibly even the validity of the information fed into the system because of the tendency to falsify input data as a counter reaction to the discomfort and anxiety that the system creates. Unfortunately the system designers often collude with this type of CEO by reassuring him that they can make the system invulnerable to any kind falsification.

In terms of our model of change, the type of CEO who is oriented toward control via an upward informing system will be an effective disconfirmer, but will have trouble really unfreezing the system because he will not be sensitive to the need to provide psychological safety. He may successfully coerce change, but the change will only be surface and unstable because it will not involve any

cognitive redefinition on the part of the subordinates who are the change targets.

Such CEO's may be utopian about the potential of IT, but they are expressing an extreme degree of skepticism about human behavior, what McGregor would have labelled "Theory X." The very existence of the complete information and control system signals to the rest of the organization that top management does not trust the human organization to inform and control itself adequately (McGregor, 1960).

3. THE VISION TO INFORMATE DOWN

"Informating down" is what Zuboff observed to be the consequences of computerizing production processes and creating automated factories. If the production process was to be automated, it had first to be understood as a total system. In order to teach operators how to manage the new processes, the whole system had to be made transparent to them. Zuboff observed that not everyone could make the transition from manual work and the use of all the senses to primarily mental work that required a complex diagnosis of what was going on by deciphering what a particular configuration of data on a computer screen or a control panel revealed.

For those who could make the transition, the production process was demystified. One consequence was that supervisors no longer had the power that special knowledge or understanding had previously given them. This "knowledge power" was now distributed throughout the ~~Fwork~~ ~~anyc~~ middle managers this loss of power was a direct threat, but for CEO's looking to create the "factory of the future" this could be an entirely positive vision if they also had a Theory Y set of assumptions about human nature (McGregor, 1960) and were willing to push operational control down in the organization.

In our interviews we could not always tell whether or not the executive advocating this kind of IT solution was genuinely interested in "informating" his organization, or whether he was secretly hoping for lower costs and more centralized control. But at least in their words these CEO's were advocating a much more radical IT usage than what was proposed in either of the above visions.

In any case, such CEO's would be much more sensitive to the issues of creating psychological safety, both for operators who had to drastically change their concept of what their work would be in the future, and for middle managers whose role might disappear altogether. They would also realize that changes of

this magnitude would not occur without strong external and internal disconfirmation and induction of guilt/anxiety, and thus be forced to consider all of the stages of getting a change process started.

4. THE VISION TO TRANSFORM

A few CEO's saw IT as the basis for a complete transformation of their organization and industry. They could see how IT would change the organization's fundamental relationship to its suppliers and customers, how the introduction of networking, executive support systems, teleconferencing, and other IT innovations would fundamentally alter the nature of the products, markets, and organizational structure, and how these in combination would alter organizational boundaries, inter-organizational relationships, and even the management process itself.

The role of hierarchy would change in that distributed information would make local problem solving and lateral information sharing much more feasible, and the role of the executive team in the strategy process would change if modelling and various kinds of decision support tools would make it possible to develop alternatives much more rapidly. In a sense IT would make it possible to be simultaneously more centralized around basic strategy and goals, and more decentralized around implementation and control.

Power and authority would shift away from position and status toward knowledge and information, and leadership would become a function that is more widely distributed as a function of the requirements of the task to be accomplished. More emphasis would fall on groups and teamwork, and boundaries between jobs and roles would become more fluid. That, in turn, would require a higher level of professionalization of the work force to deal with higher anxiety levels resulting from role ambiguity (Hirschhorn, 1988).

We encountered a few executives who seemed to be pushing toward this kind of vision but most of them acknowledged that it would take some time before IT itself would be good enough and cheap enough to make this possible. They correctly foresaw that such transformations would require major cultural change that would take some time and effort to accomplish. Perhaps most troubling to them was the implication that the present workforce might not be well enough educated or trained to fulfill the necessary roles in the transformed organization, an issue that is also present in the informed organization.

Such CEO's clearly fell into our utopian idealist category and their behavior in terms of the change model seemed to be oriented toward consistent

but careful unfreezing because of their concern that their organizations might not be ready to handle the level of change ultimately required. They were, in this sense, another group sensitive to psychological safety as an issue in the change process.

In summary, the basic assumptions held by the CEO were obviously a critical factor both in terms of how they saw the ultimate potential of IT and how optimistic they felt about the implementation of various IT projects within their organizations. But clearly, their own assumptions were not a sufficient explanation of their behavior. We found in the interview data that a number of other factors operated as powerful driving and restraining forces.

IIC. TECHNOLOGICAL REALITIES AND LIMITS

For many CEO's a major restraining force limiting their vision of IT was their perception that the technology was not yet good enough or cheap enough to deliver on its potential. Their change agent behavior would then be to press harder on the IT community to improve the technology itself, while restraining their organization in order not to "waste money" on solutions that might not work well enough anyway.

Such perceptions might arise either from total lack of experience with computers or, paradoxically, from great experience with computers in that they could see through some of the promises that their own IT people were making. And we found a surprising number of CEO's who argued that desk top work stations were not an appropriate tool for them in their role as CEO even though they had used them extensively and happily in all of their prior jobs. They felt that IT did not have the capacity to deal with the soft, probabilistic, rapidly changing kind of information that they had to deal with in their CEO role. As a consequence such CEO's might strongly resist the use of IT in the executive suite but drive its use at lower levels with great vigor.

IID. INDUSTRY REALITIES

One of the most powerful forces determining CEO attitudes and behavior was the behavior of their competitors in their industry. CEO's often seemed unsure how to use IT, how much to invest in it, how to assess its potential benefits, and whether or not there were operational or strategic benefits to be derived, so they scanned their competitors and tried to at least stay even. What other companies were doing thus became a kind of benchmark for some CEO's, especially those who had less personal experience with IT. They would

override their own convictions about IT if they found it necessary to do or not do certain things simply because their competitors were or were not doing them.

It should be noted that in those companies where the CEO was using this kind of benchmarking, IT managers could use information about what other companies were doing as a change lever of their own to disconfirm the CEO's present behavior and get him started on a change process of his own. In such situations the IT manager acquired unusual power unless the CEO had his own network of peer contacts to check out what other companies were doing.

A second powerful industry reality was the degree to which the industry was intrinsically involved with information products and had, therefore, already learned a great deal about IT. Particularly in the financial services, transportation (airlines), and telecommunications industries there appeared to be a generally higher level of insight into the realities of IT among CEO's, and, because of the benchmarking noted above, we found the same kind of IT usage in all of these companies. Some of the more aggressive CEO's who initiated total IT change programs were found in companies that were already well versed at the product level in the necessity for sophisticated IT solutions.

In contrast, the manufacturing industry seemed to be very heterogeneous, with some companies trying very hard to introduce IT at all levels, while others viewed it with total skepticism. Some of the CEO's who had been most "burned" by past IT projects that failed or had proved to be overly expensive, came primarily from manufacturing companies.

IIE. ORGANIZATIONAL REALITIES

Organizational size and age appeared to make a difference. Larger, older, multi-divisional companies tended to have CEO's who delegated the major IT decisions and implementation programs to special task forces and to divisional management. In contrast, in young and/or small companies CEO's said they had to be directly involved with IT matters at all times. They could not afford to delegate such decisions or to hire IT staffs.

The more structurally decentralized the company, in the sense of having multiple divisions and geographic units, the more the CEO felt constrained by the presence of multiple sub-cultures that would be hard to tie together. Not only was the initiative for IT innovations more likely to be in the units, but the innovations themselves were more likely to be operational ones that were

motivated and managed at unit level. Company wide integration efforts such as electronic mail and common information and control systems were much harder to implement in multi-unit structures. In such organizations CEO's often took the role of monitor and controller of IT, regardless of their own assumptions about it.

The company's financial condition was cited as a factor restraining IT experimentation if money was in short supply and the company was trying to become more profitable. Even if the CEO was very utopian in his personal vision, he often had to put IT projects lower on the priority list. On the other hand, if money was plentiful we found energetic utopian CEO's willing and able to push through entire IT systems single handedly, even though no one could prove that the innovations were cost effective or strategically critical.

Finally, the state of training of the senior management and employees was cited by some CEO's as a constraining force. Sometimes these were experienced, knowledgeable CEO's with a thorough background in IT who recognized that they had to move slowly because their people were not ready for some of the more sophisticated IT applications.

IIF. PERSONAL EXPERIENCE WITH COMPUTERS AND IT

Many of the CEO's were knowledgeable and experienced in the use of computers and IT. Such knowledge could work either as a driving or restraining force, however, because greater knowledge also meant greater insight into the problems of IT, its probable costs, its technological limitations, and its tendency to promise more than it could deliver.

SUMMARY

The six sets of factors identified by our CEO's as major influences on their decisions with regard to IT are, of course, interrelated and interactive. The most striking result, therefore, is the diversity of situations we encountered at the level of the CEO. We were seeking the common elements in how CEO's would structure their own behavior as change agents and found, instead, that the multiplicity of technological, industry, organizational, and personal forces operating made such generalizations very tenuous.

At the same time, we could see that not every CEO's situation was unique. There were common patterns evident, so we set out to cluster the common factors into a set of "implementation scenarios" (Sutherland, 1988).

III. CEO IMPLEMENTATION SCENARIOS

The scenarios identified below were based on coding all 94 interviews and looking for patterns and clusters in the data. The coding was not precise or reliable enough to warrant actual correlations and factor analysis, so these clusters are based more on inspection, as will be seen. The clusters accounted for 84 of the cases, as will be shown in Table 6. The ten cases that did not fit any cluster were omitted from this analysis. The results should be seen as a basis for further hypotheses rather than generalizable findings, though we found in follow-up interviews in selected companies clear examples of each scenario.

IIIA. "DELEGATING SKEPTICS"

This group of CEO's, comprising 20 percent of the population interviewed, was characterized by a pattern of attitudes and self-described behaviors that reflected basic doubts about IT. They were older than the other groups, were found mostly in manufacturing companies, and played an essentially passive cost containment role vis-a-vis IT.

They did not believe that CEO's should be involved in IT decisions, they tended to respond to rather than initiate IT issues, they made IT implementation decisions primarily in terms of their cost, did not see any critical reason for personal use of terminals (only 12 percent used terminals), saw the negative consequences of IT as being equal to the positive consequences in terms of overall human impact of IT, and were the highest group in terms of the number of negative effects of IT they cited, with the top of the list being that IT tended to "waste time and resources."

In terms of our change model this type of CEO would be a restraining force on IT implementation. He would not unfreeze the system nor would he be any kind of role model, though he would encourage refreezing if he saw benefits. One can presume that their IT vision was limited to automation and perhaps informing up. In terms of their assumptions, 65 percent were rated as "ambivalent" and only 35 percent were rated as "realistic utopians."

IIIB. "INFORMATION DEPENDENT SERVICE MANAGERS"

This group of CEO's, comprising roughly 14 percent of the group, were usually in charge of medium size financial service organizations such as banks and insurance companies that have had to develop their IT systems in order to

remain competitive. They tended to be the youngest group and their most salient attitude was that they seemed to take IT for granted.

In terms of IT related decisions they were predominantly in the "routine review" category. They, like the skeptics, tended to respond rather than initiate, they saw little need to get involved with implementation issues (partly because their organizations had mature, competent IT departments), and they saw themselves as supportive to IT implementation in their companies.

On personal use, the group was divided with 69 percent reporting no use. In terms of positive and negative aspects of IT, this group was the most positive in terms of human impacts and saw the fewest number of negatives overall. They were highest in seeing IT as something that "helps people to think," "improves service and company performance," "cuts personnel," "makes more information available," "saves costs and time," and "provides major strategic/competitive benefits."

I would guess that this group is the most committed to IT, with 31 percent utopian idealists and 62 percent realistic utopians. Interestingly one of these CEO's was a realistic skeptic but he clearly did not interfere with his company's program. One would also hypothesize that this group would be high in seeing the transformation potential of IT, partly because it is already happening in their businesses and partly because they see the strategic potential of IT.

As change agents they present a mixed picture of being positive and supportive, but not likely to initiate or be strong role models. The unfreezing forces in their companies had probably begun to operate years ago due to economic and competitive pressures, and further active change projects have tended to be delegated more to the IT group.

IIIC. "HANDS ON ADOPTERS"

This group of CEO's, comprising 40 percent of the total, was distinguished primarily by their belief that CEO's should be actively involved in IT decisions (only 19 percent favored review by exception or no involvement), and in IT implementation (only 5 percent favored little or no CEO role). Almost half stated that CEO's should initiate IT projects (compared to 0 and 15 percent in the above two groups), and their companies were the highest in percentage of full scale, aggressive implementation of IT. This group was spread over small, medium, and large companies, but was predominantly in the manufacturing sector. In age they were average.

This group was the highest in favoring personal use by CEO's and highest in actual reported use (49 percent reported some or extensive use). Their attitude toward positive and negative aspects of IT was balanced in that they saw more positives than negatives but only 16 percent said that the effect of IT was "mostly positive" while 24 percent said that the positives and negatives were about equal. They cited most of the positives that the information dependent saw, but they saw many more negatives, almost as many as the skeptics (41 percent saw IT as wasting time and resources, 38 percent said that people resist learning it, and 30 percent said that it impedes thinking).

What we have in the hands on adopters is predominantly realistic utopians (70 percent) with the remainder scattered in the other categories. By virtue of their close involvement with IT decisions and implementation projects they have acquired a more balanced and realistic point of view toward IT, suggesting that their IT visions probably vary all the way from automation to transformation depending on other factors.

It is in this group that one would find the most active change agents among the CEO's, probably playing the whole gamut of change roles. Being the most active users, they are also the most likely to be role models, but being realistic they would see the value of encouraging scanning. It is in this group that one would expect to see the most effective creation of psychological safety.

IIID. "THE POSITIVELY FOCUSED"

This group of CEO's, comprising another 20 percent of the total, is distinguished by their positive, idealistic stance toward IT combined with a rather hands-off approach and some evidence of Pollyannaish thinking about IT. The hands on adopters discussed above feel positive but also see all the problems because they are close to them. The positively focused, in contrast, are often in very large companies (47 percent are in companies of over 50,000 employees) where their own involvement in IT is minimal because the real action is down in the divisions. Only a few of them have the conviction to impose common systems at the corporate level if divisional opposition is strong, but they feel that they get their money's worth out of IT anyway because of utilization at lower levels.

A number of them are in service oriented industries like telecommunications and airlines where the use of IT is so central to their business that there is little problem getting money for IT implementation. One hypothesis put forth

by Sutherland is that these companies can afford to be idealistic because they have not faced the cost issues that plague manufacturers. Their attitudes are derived more from their background in the utilities industries where direct competition and hence cost control was not a central issue.

The positively focused tend to have little or no involvement in IT decisions because they have excellent technical staffs to whom they delegate, but they are more likely to initiate and be supportive of implementation efforts than the information dependent or skeptical groups. Their companies along with those of the hands on adopters are the most aggressive implementers. They are the highest group in terms of belief that the use of IT is critical for the CEO, but only 41 percent of them are personal users.

Like the information dependent they are very positive about the human impacts of IT and see virtually no negatives (hence the Pollyanna label), when you contrast them with the hands on adopters. As might be expected they are predominantly utopian idealists (41 percent) and realistic utopians (35 percent). The remainder are ambivalent.

I would expect to find many CEO's in this group with strong visions of organizational transformation. In a number of cases that we have analyzed we see a CEO not only encouraging implementation throughout, but strongly unfreezing his immediate executive team by strong disconfirmation of the old ways along with provision of psychological safety to make the transition feasible. Some of our best examples in the early section of this paper on executive change agent roles came from this and the hands on adopter groups.

SUMMARY AND CONCLUSIONS

What we have, then, in the implementation scenarios is two groups that are relatively uninvolved but for opposite reasons. The information dependent are knowledgeable, take IT for granted, and comfortably delegate IT issues. The delegating skeptics are cynical, aloof, and controlling, seeing IT as just another expensive tool to be watched carefully.

Then we have two groups that are involved, but in very different ways. The hands on adopters personally push IT projects through and, thereby, become very familiar with all the problems and prospects that this technology will bring to organizations. On the other hand, we have the positively focused who are in organizations that can afford to implement IT, who need IT in terms of their core business, but who do not need to be personally and directly involved in projects, and, therefore, are less familiar with IT problems and prospects.

The change agent roles that these different executives will take will, of course, differ with their basic orientation and the situation of their organizations. As noted above, all of the CEO's were driven by the state of affairs in their industry. Only a small number had utopian transformation visions that went substantially beyond what other companies in their industry were doing. Those few get singled out as heroic change agents by academics and the media, but the reminder from our data is that they are a distinct minority.

The "bottom line" seems to be that CEO's find themselves in very complex force fields and vary their behavior as change agents accordingly. They feel that the realities of their particular situation in terms of the size, age, structure, and financial condition of their companies, the technological possibilities and limitations, industry benchmarks, employee readiness, and the credibility and skill of their IT management, all have to be taken into account in deciding how far and how fast to push the adoption of new IT tools. Many of them believe, therefore, that this complexity calls for the CEO to be an integrative force

instead of an IT zealot, though they acknowledge that future generations of CEO's who will have been educated much more thoroughly in the possibilities of the computer and IT, thus making it possible for them to take more of a hands on adopter stance.

For the IT skeptic it will be reassuring to realize that there are a good many CEO's out there who are cautious, who have been burned, and who, therefore, are quite realistic about the limitations of today's IT solutions. On the other hand, for the IT utopian it will be very reassuring to note that 40 percent of our CEO's do involve themselves actively in IT projects, even if they personally do not use desk top workstations, and many more take IT for granted as a technology and a set of tools that will help their companies in many ways.

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Table 1
A Stage Model of Planned Change

Unfreezing: Creating motivation to change

Disconfirmation

Induction of anxiety / guilt

Creation of psychological safety

Creating change through cognitive redefinition

Stimulating imitation or identification

Stimulating scanning

Refreezing: Stabilizing the change

Integration into personality

Integration into key relationships and social system

Table 2

A Typology of CEO Assumptions about I.T.

I.T. UTOPIAN IDEALIST

This CEO sees nothing but benefits deriving from the increased use of I.T. in all areas of his business and personal life. He may not see all these benefits in actual use, but he believes firmly that in time all the benefits will be realized.

I.T. REALISTIC UTOPIAN

This CEO sees great potential benefits in I.T., but is not sure that they will all be realized because of hidden costs, resistances in others, and various other sources of difficulty that are not inherent in I.T., but in its implementation.

I.T. AMBIVALENT

This CEO sees some benefits in some areas but sees potential harm in other areas and/or perceives that the costs may in the end outweigh the benefits; therefore, he is ambivalent in the sense of wanting to push ahead, but being cautious and doubtful at the same time.

I.T. REALISTIC SKEPTIC

This CEO is basically doubtful about the benefits of I.T., short-run or long-run, but realizes that the appeal of the technology will bring much of it into organizations anyway; given this reality the CEO must control carefully what is introduced so as to minimize potential harm or excessive costs.

I.T. UTOPIAN SKEPTIC

This CEO believes that I.T. is primarily harmful in that it undermines other effective managerial processes. It is not merely excessively costly, but actually harms organizational effectiveness by encouraging the use of tools, categories of information, and processes of doing work that are less effective than what is presently or potentially possible in terms of other managerial models; he therefore sees his role to be to minimize the harm that I.T. can do, to undermine its implementation in any way possible, and to control its costs to the utmost degree.

Table 3
Number of CEOs Holding Different Assumptions

	<u>Payoff</u>	<u>Probability of Occurrence</u>	<u>Number</u>	<u>%</u>
Utopian Idealist	+	+	17	20
Realistic Utopian	+	-	46	55
Ambivalent	±	±	19	23
Realistic Skeptic	-	+	2	2
Utopian Skeptic	-	-	<u>0</u>	<u>0</u>
		Total	84	100

Table 4
CEO Visions of the Potential Impact of I.T.

The vision to *automate*

The vision to *informate up*

The vision to *informate down*

The vision to *transform*

Table 5
CEO Implementation Scenarios

The delegating skeptic

The information-dependent service manager

The hands-on adopter

The positively focused

TABLE 6

CHARACTERISTICS OF CEO'S IN DIFFERENT IMPLEMENTATION SCENARIOS

	DS*	ID*	HOA*	PF*

<u>Age:</u> % over 60	35	8	29	24
% under 50	12	31	22	29

<u>Industry:</u> % Manufacturing	71	0	57	29
% Financial Services	6	100	19	6
% Other Serv. & Misc.	24	0	24	65

<u>Co. Size:</u> % Under 3000 Empl.	41	15	32	18
% 3000 to 50000 Empl.	35	85	46	35
% Over 50000 Empl.	24	0	22	47

<u>What role is appropriate for CEO in making IT decisions?</u>				
% Little or no role	59	23	3	29
% Review by exception only	29	8	16	29
% Routine review	12	69	35	29
% Hands on active in all decis.	0	0	46	12

<u>What was your most recent role?</u>				
% None or review by exception	94	46	27	41
% Routine or active	6	54	73	59

<u>What role is appropriate for CEO in adopting and implementing IT?</u>				
% Little or no role	82	92	5	35
% Support/set example	12	8	43	41
% Be routinely personally involved	6	0	51	24

<u>What was your own most recent involvement?</u>				
% None	100	88	14	41
% Created supportive envir.	0	12	32	24
% Personally involved	0	0	54	35

* DS-- Delegating skeptic (N 17, 20 %)
 ID-- Information dependent (N 13, 14 %)
 HOA-- Hands on adopter (N 37, 40 %)
 PF-- Positively focused (N 17, 20 %)

TABLE 6 (Cont.)

	DS*	ID*	HOA*	PF*
<u>How appropriate is it for CEO to personally use IT?</u>				
% Critical	6	23	27	47
% Depends/matter of style	41	54	57	29
% Not helpful/inappropriate	53	23	16	24
<u>Do you personally use a terminal?</u>				
% Some or extensive use	12	31	49	41
% None	88	69	51	59
<u>Perceived level of IT implementation in company?</u>				
% Aggressive implementation	0	38	73	64
% Supportive to impl. efforts	53	54	27	30
% Passive/support based on cost	47	8	0	6
<u>What are the main barriers to IT implementation?</u>				
% Human interface/user problems	24	85	46	65
% Lack of mgt. involv. or control	24	54	30	29
% Systems integration/networking	41	77	32	24
% Cost	47	69	54	41
% Low output/waste of capacity	41	15	41	18
<u>Attitude toward overall human impacts of IT</u>				
% Mostly positive	0	92	16	77
% More positive than negative	24	8	60	18
% Negatives equal positives	77	0	24	6
<u>Positive aspects of IT</u>				
% Helps people think	47	92	49	41
% Makes people more efficient	47	62	59	65
% Makes more info. available	18	54	35	12
% Improves company performance	29	62	54	53
% Cuts personnel cost	0	62	24	41

* DS-- Delegating skeptic
 ID-- Information dependent
 HOA--Hands on adopter
 PF--Positively focused

TABLE 6 (Cont.)

	DS*	ID*	HOA*	PF*
<u>Areas of positive impact of IT</u>				
% Production/operations/mfg.	71	77	81	82
% Managerial decision support	77	31	87	59
% Strategic/competitive advant.	35	77	59	47
% Cost savings	23	85	46	23
% Time savings	6	85	38	18
<u>Negative aspects of IT</u>				
% Impedes thinking	24	0	30	0
% Impedes communication	24	0	16	6
% Causes skills to deteriorate	24	8	11	0
% Wastes time and resources	59	8	41	12
% People resist learning it	24	15	38	24
<u>Number of negatives cited</u>				
% None	12	61	13	59
% One	29	39	35	41
% Two or more	59	0	52	0
<u>Basic assumptions about IT</u>				
% Utopian idealists	0	31	16	41
% Realistic utopians	35	62	70	35
% Ambivalent	65	0	11	24
% Realistic skeptic	0	8	3	0
% Utopian skeptic	0	0	0	0

* DS-- Delegating skeptic
 ID-- Information dependent
 HOA-- Hands on adopter
 PF-- Positively focused

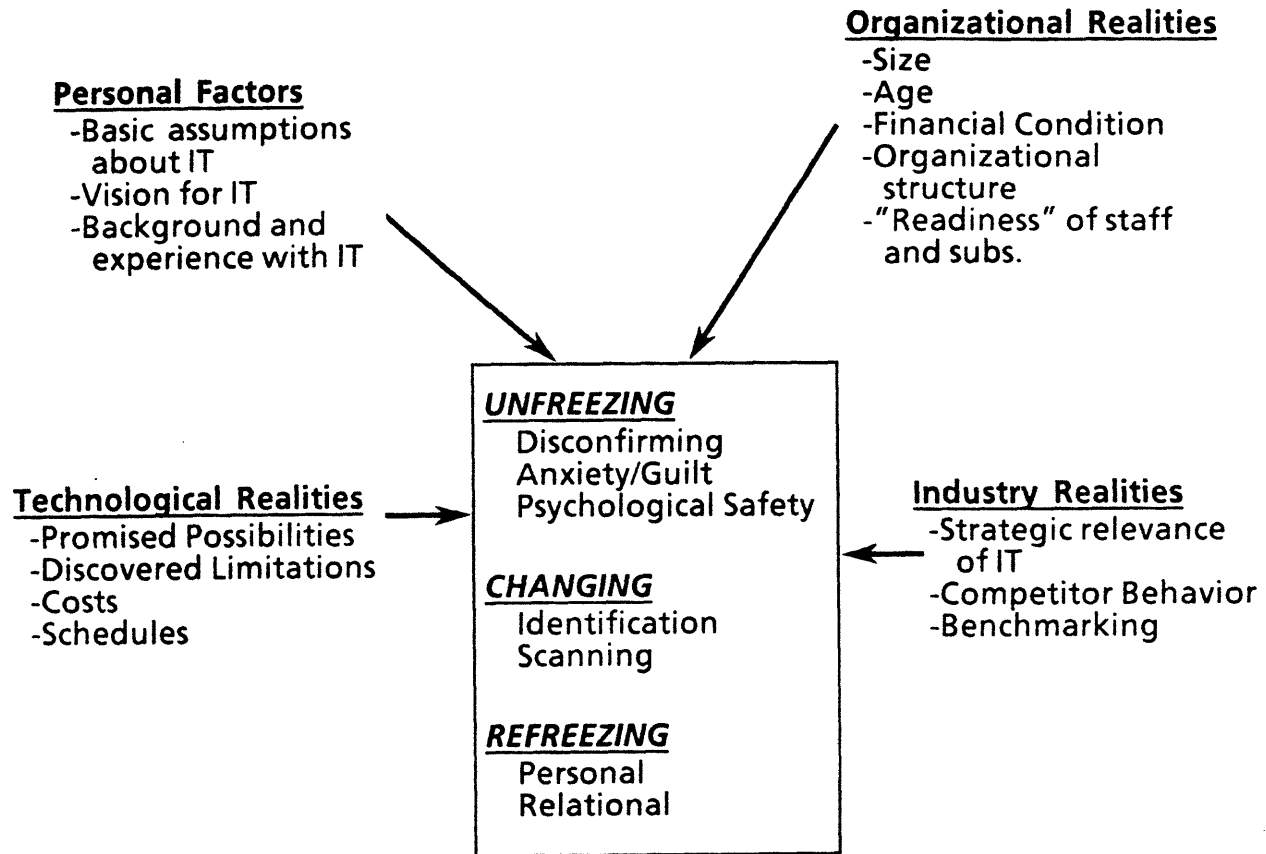


Figure 1. CEO Change Roles and Their Determinants

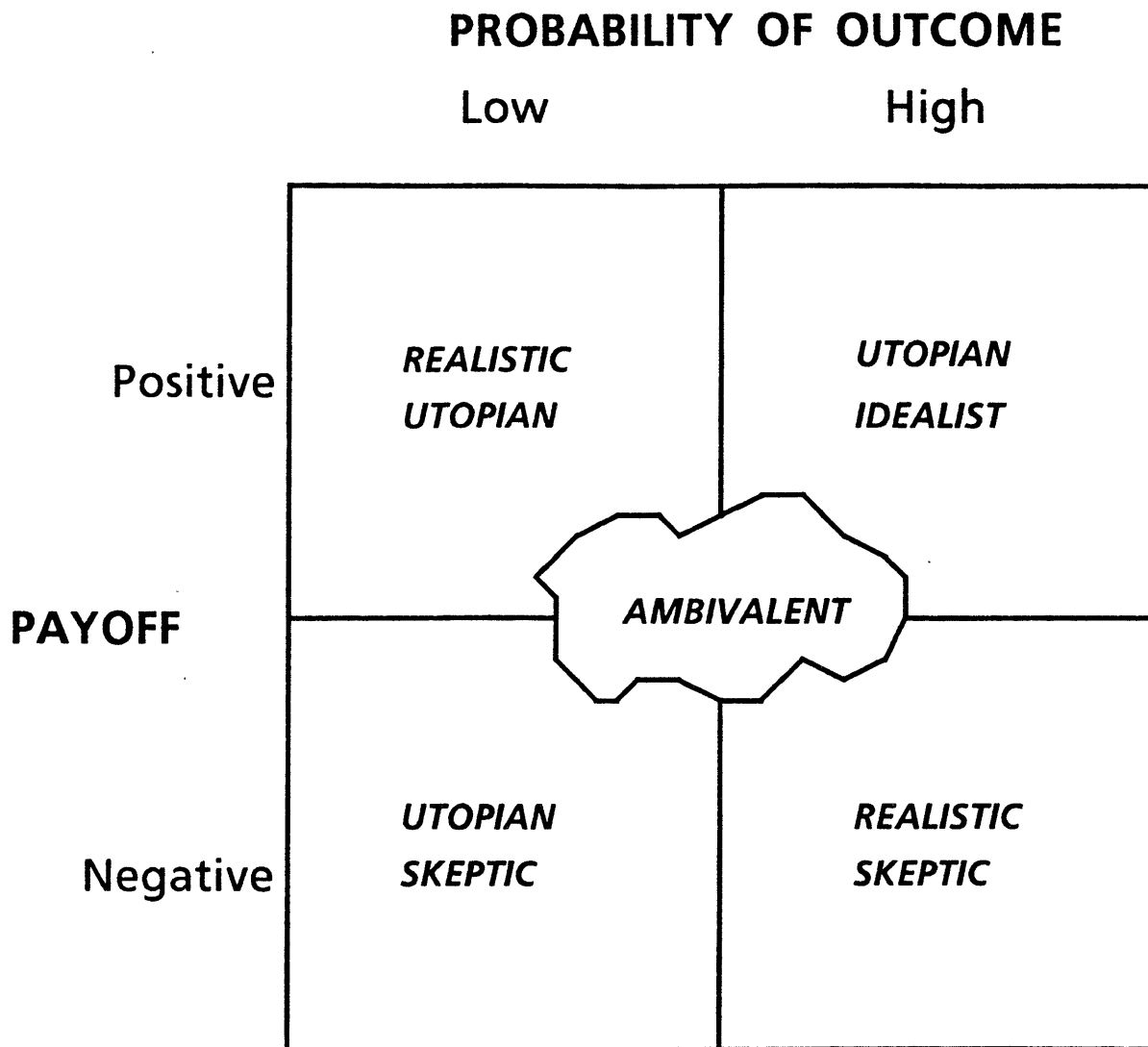


Figure 2. CEO Assumptions about I.T.

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