CEO'S ROLE IN IT-DRIVEN ORGANIZATIONAL CHANGE

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ABSTRACT

This study is on the role of chief executive officers (CEOs) of large non-dotcom companies undergoing major information technology (IT) induced organizational changes. Interviews were conducted with Australian CEOs to determine their perception of their role in IT induced organizational change. Two questions that this study answers are: How did CEOs provide leadership when dealing with issues beyond their area of technical expertise? How did CEOs perceive they influenced the effective use of IT? It was found that while the CEOs acknowledged their relatively low level of IT expertise, they felt they achieved technological leadership in the organization by providing the context for IT development. The activities they engaged in to provide such contexts were analyzed in terms of Mintzberg's managerial roles. The roles of the CEO were found to correspond with the managerial roles of Disseminator, Disturbance Handler and Resource Allocator. This has implications for the way IT managers in organizations interact with their CEOs, and for the role of CEOs in IT related issues.

The issue of how to improve information technology's organizational effectiveness lies at the heart of a significant number of studies in information systems (Allen and Scott Morton 1994; Applegate, Cash, and Mills 1988; Checkland and Holwell 1998; Earl 1989; Keen 1991a; Watson et al. 1997). Information systems research has approached the problem from the point of what can be done by information professionals to improve systems, technology, and operations. It has not taken into account the role of other stakeholders in the organization who have the power to affect technology outcomes. Studies of user satisfaction, user expectations, and user participation, exemplify recognition of the influence of 'others' in evaluating system performance and goal attainment (Barki and Hartwick 1994; McKeen, Guimaraes, and Wetherbe 1994; Nicholas 1991; Szajna and Scamell 1993) as does the soft systems approach (Checkland and Holwell 1998). In this paper we focus on the chief executive officer (CEO) as the stakeholder who represents the formal 'project owner' in

information systems development terms. The technological ignorance of CEOs has been cited in the information systems and management literature as a factor limiting their ability to (i) provide effective leadership of information technology (IT), (ii) to control technological projects, and (iii) to facilitate the successful implementation of IT (Allen and Scott Morton 1994; Applegate, Cash, and Mills 1988; Davenport, Hammer, and Metsisto 1989; Keen 1991b; Levine and Rossmore 1994; Scott Morton 1991).

"Most of our top management team really don't have a clue what to do about IT. They are at the mercy of the techies. They just nod their head and hope they don't show their ignorance." (Keen 1991b:9)

However, not everyone accepts a causal link between CEOs' lack of technical competence and a weakness in their role as project owner. Though admitting less knowledge about IT than their technical subordinates, some CEOs strongly disagree with the premise. This paper argues that CEOs do not perceive their lack of IT specific knowledge as being a barrier to the effective use of technology in their organizations. Rather they see their role as ensuring that the context and parameters for the IT project remain foremost in the IT professionals' thinking. The strategies and tactics they employ to achieve this outcome can be mapped onto the definitive Mintzberg (1973) managerial roles as normative behavior of CEOs in the carrying out of their duties. The failure of IS professionals to consider as feasible, the technological leadership competence of a generalist model CEO, has led to tensions between them and the executive suite. This occurred in particular when technical staff did not allow the CEO to control the context of the IT development, either through the use of 'jargon' or through trying to submerge CEOs in what CEOs thought amounted to technological subterfuge. Awareness of these tensions is an important issue for researchers not only because it is likely to re-occur in many organizational settings, but as practical advice for IT professionals to allow executive stakeholders to fully play their legitimate managerial roles

rather than to subsume them with their own specialist technological criteria.

THE LITERATURE ON CEO'S ROLE IN IT DRIVEN ORGANIZATIONAL CHANGE

"Given the inflated perception of their position in relation to other organizational participants, CEOs are often credited with being the sole agent of organizational change. Success or blame is attributed to them alone." (Brewer 1995)

While few would disagree with the heuristic notion of centrality and the power of the CEO to influence change, well known change researchers see the role in slightly different ways. Noted Professor Edgar Schein (1994) discusses the necessity of CEOs to act as 'change agents' by disconfirming the present state of the organization, that is, acknowledging that what used to work, doesn't work anymore. Harvard's Rosabeth Moss Kanter (1992) sees CEOs as 'change strategists', responsible for identifying the need for change and 'crafting' a vision of the desired outcome. Research conducted in Australia by Watts (2001) found that CEOs' perceptions of organizational change were consistent with the actions of both change agents, by disconfirming the technological state of their organization, and change strategists, by identifying impending technological change and having a vision of how IT could be used to achieve organizational goals. CEOs in her study, identified the threat of organizational change, set the change process into motion and were seen to take responsibility for ensuring the success of IT enabled organizational change. That information technology was driving a need for substantial change was not in doubt.

"... there's going to be huge -- there's going to be a bloody revolution, I reckon. And we won't be able to stop it." Excerpt from CEO interview (Watts 2001:137)

Managerial Roles. The roles played by CEOs were identified and categorized by Mintzberg (1973) in his seminal study, have been cumulatively validated (Sarantakos 1993) by subsequent research (Beggs and Doolittle

1988; Kurke and Aldrich 1983; Shapira and Dunbar 1980). While the naming of these roles predated the waves of discourse about the need to adapt to technological change, Mintzberg's *Entrepreneur* and *Disturbance Handler* roles dealt with planned and unplanned organizational change, respectively. In fact, many of the activities of CEOs relative to IT driven organizational change fit within these and other categories of managerial role groupings. For example, Mintzberg found that in their role as *Monitor*, CEOs acted as nerve centers for their organizations in the collection of information. As corporate *Leaders*, CEOs were both free to bypass formal lines of authority in search of tangible bits of information, and to 'meddle' in affairs by virtue of their positions. In their *Liaison* role, CEOs used networks of contacts for the purposes of gathering data from outside the organization. As *Entrepreneurs*, CEOs assumed project owner status in order to initiate and supervise projects to bring about controlled change. Technological change was a powerful catalyst for CEOs to assume the *Disturbance Handler* role where they contemplated corrective action when faced with unexpected and potentially disruptive stimuli that was to a large extent, beyond their control.

CEOs Deficient in IT Knowledge. In carrying out these roles, the popular and academic literature suggests that problems can arise if CEOs lack of technical expertise inhibits their leadership for IT related changes. The business press (for example, Alberthal 1992; Drucker ; Kador 1995; Lear 1993; Violano 1989; Wang 1994) frequently portrays CEOs as deficient in IT knowledge and skills, lacking the capacity for effective strategic management of IT in the organization, and often being the subject of ridicule.

"At a ... technology boot camp for chief executives, a Fortune 500 big-shot took a seat in front of a Windows-based PC. He admired the color graphics on the screen and hit the space bar a few times. Nothing happened. Then he noticed something that looked like a plastic foot pedal. He looked around, placed it on the floor and stepped on - the mouse. " (King 1995)

Many writers argue that CEOs are blatantly deficient in IT knowledge and skills. Geisler (1993) agrees that the growing literature on corporate failures of information technology management has placed the blame at the feet of top managers who are said to have misunderstood IT and it's strategic significance mainly through ignorance, fear, neglect and delegation of responsibility. Dixon and John's (1989) forecast of technology issues for the 1990s, targets CEO competence as being especially significant in constructing the new paradigm of line responsibility for managing the business use of technology. Keen (1991b) asserts that senior business executives lack a well-established management process for taking charge of IT. On the other hand, Schein's (1994) studies at the Massachusetts Institute of Technology, found that many CEOs *were* knowledgeable about and experienced in the use of information technology.

CEOs' Profile. Reflecting back on the introduction of computers in the 1970s, Argyris' work with senior executives found then that they experienced feelings of psychological failure, a feeling of being in a double bind[1], concerns that leadership that was based more on competence than formal power, and decreased feelings of essentiality (Er 1989). While the literature on leadership in general reveals that leaders do experience feelings of failure and insecurity (Gardner 1995; Kets deVries and Miller 1989; Kets deVries 1995; Quinn 1996; Sarros and Butchatsky 1996) the more prevalent portrayal is one of people who possess a strong sense of inner direction and self-assurance (Bennis 1989; Gardner 1995; Kets deVries 1993; Kotter 1990; Zand 1997). These feelings of self-assurance are being tested by technology as evidenced by one CEO in Watts (2001) study who suspected that communication difficulties between executives and IT

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[1] A double bind is generally defined as "a situation of conflict from which there is no escape; an unresolvable dilemma". In many of his works, Argyris refers to the 'double bind' that leads to organizational defensive routines as a result of the theories-in-use held by individuals.

specialists could be attributed to business people feeling "uncomfortable talking to people who were specialists unless they were specialists themselves." He further surmised that CEOs hesitated to get involved in technology decisions because they either "*felt* incompetent or *were* incompetent" in computers and information technology. Watts also found that CEOs' deficiencies in IT knowledge and instances of defensiveness, appeared to have little effect on their ability to have an IT vision, or to establish a course of action to advance the effective use of IT in the organization. Interviewed CEOs' self-assessment of IT knowledge revealed that they were not only aware of their limitations, but sought to use them to advantage. They spoke forthrightly about the limits of their technological expertise.

"I should add that I am not overly computer literate, and I have found that to be not a particular disadvantage, nor an advantage, but it does afford me the opportunity then, of pretending to be even more illiterate than I am and asking questions that force people to respond in everyday terms, rather than some of the arcane technology of the IT industry." Excerpt from CEO interview. (Watts 2001)

"...when we were looking at new computers, I'd sit in on the first meeting invariably to get things started, and five minutes into the conversation, I'd stop it and say, "Hey now listen, you know, I don't know much about computers. You're going to have to talk my language, or you might as well leave right now because we're wasting our time." Excerpt from CEO interview. (Watts 2001)

Generalist CEO as IT Leader. For CEOs to be unfazed by their technological illiteracy is not an inappropriate response in these times of flat organizational structures and the use of teams and groups to achieve corporate objectives. To be undeterred by lacking knowledge in a specialist area is in keeping with the model of the generalist CEO supported by specialist subordinates as described by Mintzberg (1973). The concerns expressed by CEOs interviewed were more about the requisite IT knowledge being present in the skill base of the organization or if not present, then at least accessible through consultants and other specialists. Keen

(1991b) has articulated the question that many IS researchers and practitioners have alluded to during the past decade: "What is the role of business managers in directing and overseeing the application of IT and building an effective dialogue with the firm's technical managers and specialists?" Some of his suggestions for senior managers include (i) recognizing the truly urgent and critical decisions about IT that only they can make; (ii) anticipating key IT engendered human resource and organizational issues in order to establish policies that guide technical planning; (iii) evaluating technical decisions in terms of their impact on the range of business options; and (iv) becoming as effective in setting performance criteria for IT as for other corporate functions (Keen 1991b). The questions remain: how are these objectives to be operationalized, to what extent are they being enacted by CEOs, and how much can be delegated? Importantly, what role in IT leadership then, do CEOs see *themselves* having when supported by technical staff? This study wanted to learn if, when asked indirectly, the explanations and descriptions given by CEOs of Australian companies of their activities and perceptions of their influence over IT, would fit the model and roles of a generalist CEO supported by specialists as described by Mintzberg (1973).

RESEARCH METHOD

Interpretive Inquiry. To understand what a CEO thinks and does when confronted with the option of using information technology to bring about organizational change, one had to, as much as possible, enter the actor's world and hear the actor's voice. An interpretive inquiry was considered the appropriate model for gaining a deeper understanding of the human and social aspects of the phenomenon. Accordingly, qualitative methodology was employed, and challenges to the research design were approached within this intellectual framework.

Research Design Challenges. A consequence of the decision to use semi-structured interviews for data collection involved 'theories of action' identified by Argyris, Putnam, and Smith (1985:81-82). Relying on the taped semi-structured

interviews meant that the researcher was hearing the actors' *espoused* theories without having enough data to infer their *theories-in-use*. Another challenge faced was that the system for data analysis needed to acknowledge the subjectivity of the researcher without obscuring the CEO perceptions of reality, or descriptions of their actions around IT-enabled organizational change.

The Population. The population for the study was selected using the following criteria: (1) Australian owned private or public sector entities; (2) IT was vital to corporate operations; (3) the organization faced significant organizational change; (4) the CEO was an Australian citizen or permanent resident; (5) the CEO was the top operational decision-maker. Private and public sector targets were obtained from the Australian Stock Exchange, Australia's Top 100 1996, The Business Who's Who of Australia, Australia's Top 500 companies 1996-97 (Australian Stock Exchange Limited 1996; Beck 1997; Bevan 1996), and through federal and state government information sources.

Sampling Method. In keeping with the nature of qualitative research, a non-probabilistic sampling selection was used combining theoretical, purposive, and snowball sampling. Theoretical sampling based on the researchers prior knowledge, experiences, and emerging theory was the over-arching philosophy guiding the sample selection. Purposive sampling was used to target organizations from which an appropriate selection could be made. Once the targets had been identified, snowball sampling was employed to select CEOs serially. The resulting sample included female and male CEOs from the private and public sector, representing manufacturing and service industries.

Problems of Access. While qualitative research based on one-to-one interviews has the potential to reveal thick, rich data not usually found in quantitative surveys, a 'down-side' in the case of CEOs is the problem of access. CEOs are very busy and their time is greatly in demand. In order to cope with this problem generally, research involving CEOs has employed various data collection strategies. Pervan (1997:4) attempted a postal survey of CEOs in Australia, using quantitative methodology and the positivist paradigm, similar to Galliers et al's (1994) study in the UK. Even with the use of minimally intrusive questionnaires, Pervan was not able to overcome the CEO access problem, as only 33 valid surveys were received out of an original 500 targeted CEOs, a response rate of only 6.6%. Limited access to the CEO is recognized world over as contributing to information systems research problems.

> *"They (senior managers) do not believe the validity of many ISR surveys (especially ones about CEO's - CEO's do not fill out questionnaires; they give them to someone else)." (Keen 1991b)*

Having considered the difficulties of access, it was nevertheless determined that personal interviews with CEOs were the only way to gain insights into their thoughts and actions, and to incorporate aspects of the critical incident technique into the data collection process.

Key Issues Studies. Deciding on the format of the interview and the nature of the questions, was a dilemma. The search for the most effective way to glean information was complicated by the portrayal of CEOs as 'technologically-challenged', 'technophobes', or 'technological illiterates'. To ask CEOs open-ended questions about technology topics, or 'how they used IT to leverage organizational change', was considered to be putting them on the spot without giving them any clues about the range of technical issues that might be useful for discussion. From Mintzberg's (1973) work we know that CEOs are used to dealing with a wide variety of problems. A better strategy was deemed to be to refer to specific technical topics that would give CEOs a frame of reference. It was expected that these topics would lead to the recall of associated 'incidents' or 'episodes`. Deciding upon the technical topics to select for discussion, was the next problem. The well-known "Key Issues" studies (Brancheau, Janz, and Wetherbe 1996; Galliers, Merali, and Spearing 1994; Pervan 1994; Watson 1989; Watson et al. 1997) provided the answer.

Since Key Issues studies had identified the topics most critical or problematic by information systems managers worldwide, these items were most likely being addressed in organizations of the CEOs being interviewed. The 'Key Issues' studies also had the benefit of being well researched, established over many years, and recognized for their importance to information systems managers. Of particular interest for this study were the managerial issues on the interface between the organization and the technical department. Thus the 'Key Issues' were chosen as the mechanism for eliciting discussion on specific topics, using concrete examples to surface the desired objective of gaining a deeper understanding of CEO behavior around technology and organizational change.

Interview Process. Semi-structured interviews were conducted at a venue chosen by the CEO (office, home, or CBD location), and taped recorded when agreed. In keeping with the evolving nature of qualitative research, the format for interviews was altered to accommodate new knowledge about the process. The evolved interview consisted of three parts: (1) a discussion about the organizational change challenges facing the CEO, (2) questions that used the Key IT management Issues for eliciting specific information about the CEO's perceptions and actions regarding the use of IT for organizational change, and (3) discussion of CEO's perception of the most critical information system in the organization. CEOs were asked to categorize the top 20 Key Issues as ranked by averaging the rankings of IT managers and CEOs, using the most recent longitudinal study done in Australia (Pervan 1997). To facilitate this process and to insure that CEOs had a common understanding, buff-colored cards were used with the name of each Key Issue followed by three or four dot points taken from IS researchers' definitions (Pervan 1998) to illustrate the concept. CEOs were asked to separate the cards into three piles representing whether they saw the issue as either *high*, *medium* or *low* priority for their organization. For each of the Key Issues in their *high priority* pile, CEOs were asked four questions. The first question, '*Why* did you choose this Key Issue as a high priority,' was to lead off the questions in a logical sequence designed to facilitate the recall of incidents. The second question, '*What* lead you to think about that,' was intended to probe the CEO's memory for descriptions of episodes or critical incidents. The third question, '*How* do you influence that Key Issue,' was designed to give CEOs the opportunity to describe the actions they took (or they perceived they took) with regard to the technology or system under discussion. The question was changed to "How DID you influence Key Issue," in order to find out as much as possible what had actually been done, rather than what they wanted to portray as having been done. However, this proved to cause some confusion, so the question was asked both ways: How DID you ... ? and How DO you ... ? The final question, "Have you ever considered other things that you could do to affect the outcome," was intended to probe their understanding of alternatives -- to plumb the depths or range of their technical knowledge.

Data Analysis. While this research design was intended to obtain data about CEO perceptions, and gather data to assist the process of disclosing theories-in-use from what CEOs say they do, it was acknowledged that *espoused* theories constituted the majority of the interviewee data. The data were sorted by Key Issues, and coded according to various concepts. Several rounds of coding constituted an iterative process of allowing themes such as, "the CEO's role in leading information technology', and 'the CEO's view of information technology specialists', to emerge.

FINDINGS

The voices of the CEOs are summarized and presented under the relevant groupings of managerial activities categorized by Mintzberg (1973) as *interpersonal*, *informational*, or *decisional*, and according to his definition of the *managerial roles* performed by CEOs. As the authors thought it important that the words of the CEO be heard as much as possible, a series of quotes is presented to illustrate each of the categories listed. Conclusions will be drawn and implications for Information Systems practitioners, presented in the Discussion.

Leader Role (Interpersonal). According to Mintzberg's (1973) findings, the role of Leader is enacted in virtually all the activities of CEOs as they guide their organizations and motivate their subordinates to operate in the atmosphere that they themselves have defined. It appears to have been a role exercised extensively by interviewed CEOs as they sought to bring about IT driven organizational change.

> "... I think ... at this time in our industry, **this is a key role of CEOs**. It is getting organizations to understand what the environment is leading to and what it requires of them, and **getting them to feel challenged by it**, but not totally defeated --. sometimes **shaking people out of complacency**. This is the pointy end of leading change."

> "I think you influence it by **the sort of person you are**."

> "You identify the mountain they've got to climb. You put a time limit on when they have got to get to the top, but you don't tell them how they do it. You just let them go, but monitor them with checks on the way."

Liaison Role (Interpersonal). In the Liaison role (Mintzberg 1973), CEOs use their web of horizontal relationships to exchange information and favors. This external influencing role has been suggested as being critically important to public sector chiefs due to their high level of public accountability and visibility.

> "Trying to contribute to **driving the central government agenda** which is generally a fairly frustrating exercise because of the lack of control that you've got. The return on your time seems pretty low. It's sort of **'managing the environment'** really."

> 'We've got a process underway developing a strategic plan, and I guess the main way in which I influenced it was to **establish a context that it needed to be a strategic plan for (industry segment)** within the (geographic region) rather than just for my organization."

Monitor Role (Informational). In the pivotal information seeking role of Monitor (Mintzberg 1973), the CEO continually seeks out bits of data, information and knowledge that enables a clearer picture of the organization and its environment to be formed. In the pursuit of this quest, formal lines of authority and communication are abandoned as the CEO searches for tangible evidence rather than sanitized reports.

> "There is no substitute for **'management by walking around'**. And the secret of doing that is that you must never, ever give instructions. **You must just listen**. .... I just sat at a (software designer's) desk with a cup of coffee **and chatted**...."

> When analyzing information for decision-making, this CEO would continually question – **looking for things that had been forgotten** that might later proved to be to the organization's detriment.

Disseminator Role (Informational). The role of Disseminator (Mintzberg 1973) is a powerful mechanism for CEOs to transmit information from the external environment, largely based on *facts*, and information about *values* that indicate the CEOs' preferences intended as a guide to decision-making and action-taking within the organization.

> "The way I am involved in that (key issue) is by first of all, **saying that it is important** to the organization. .... And by putting a framework on it that is about integrating (operational) with management resources. So if information systems are going to deliver in (this industry) what they potentially could, then it's got to be that as someone put it, that you manage what you measure.... So setting that kind of framework for it, is at a very broad philosophical level, really, is what I think I do about that - and let other people figure out how."

> "Everybody has access to my screen (Executive Information System), when I say everybody, (the senior executive team) has access to my screen. .... **By designating what I want to look at. I think it flows down in a pyramid fashion.** So if I watch (designated) things, that means that my executives have probably got to watch (what CEO watches plus supporting information), and that means that their people have got to watch (what executives watch plus more detailed

information), and so it moves down from that basis. .... Everyone in the organization knows what I'm looking at. If they know what I'm looking at, they're all getting it ten minutes before me."

"I set priorities in advance which are approved by the Board. .... So all the people in this organization know what the objectives are, and what has got to be achieved."

"I influence it by asking the question all the time, whenever I get a proposal, a business proposal, a budget review, a management meeting, 'Tell me how you are going to gain a competitive advantage over your competitors?''

"But you had to start with your people saying, 'Now don't tell me that we're different and therefore this doesn't apply', because that's the first reaction you get every time."

Entrepreneur Role (Decisional). Mintzberg (1973) uses the term *Entrepreneur* to describe the activities taken for the purpose of bringing about planned and controlled change within the organization. The manager acts as initiator and designer of strategies that are chosen to exploit opportunities, solve non-pressing problems, and bring about changes that effectively represent the CEO's exercise of free will, of choice.

"The quality of the information and the timeliness of the information is a factor that is very hard to put a value on, and are some of the most important benefits of any computer system. But I guess I always tried to put a dollar value on them, any new computer system that we were going to install, to determine what the savings were going to be. And I expected to see some or I would be very doubtful about going ahead with it."

"I have increasingly had the view that there's a potential, not just to be able to establish a competitive database that can be accessed across the organization, but to drive it much further and harder than that for real competitive advantage."

"IT is potentially a competitive advantage for us if we can be smart enough about it. .... we see opportunities for – let's simply

say internet marketing and methods of interfacing with customers and suppliers ...."

Disturbance Handler Role (Decisional). The *Disturbance Handler* (Mintzberg 1973) is the critical role played by CEOs when encountering unexpected or disruptive stimuli that threatens to harm their organizations. There are five aspects that influence behavior in this role: (i) disturbances are generally of three types, conflicts between subordinates, exposure difficulties between organizations; and resource losses, or threats thereof; (ii) they arise suddenly; (iii) they are defined by ad hoc stimuli, often in the form of 'instant communication'; (iv) they become the top priority for the CEO; and (v) leaders are seen to have more influence during times of crisis than in non-crisis periods.

"Initially we expanded geographically, things were built on or added on. But now we are in a position to much more logically look at running our business by worldwide (business) lines.... So there is nowhere to hide, full accountability, full transparency."

"The fact that we are going to be involved in (remote service delivery) will put immense demands on our staff and facilities. And we die if we don't do a hell of a lot of stuff away from (organization's home base). Whether or not we think it's good ..., that is actually a fact of life."

"We have NO option. (Competitor) has an option .... But we don't have an option so our strategic development and our IT development are absolutely driven by our organizational position."

"The first thing to do is to look at how effective we are against known parameters or benchmarks within Australia and internationally. Measure performance, improve performance. And as we go down that path, we'll be able in time to clearly assess whether we are better to have in-house capabilities, outsource some of it, but either way, to have cost effective IT."

"I basically come from the position in IS that the last thing you do is throw lots of dollars or lots of people at a problem. What you

*need to do is **have a good think and go back to the basic of what you are trying to achieve**. And we have saved ourselves, I believe with that approach, countless millions of dollars, and we continue to do that, will continue to do that, hopefully."*

*"**By insisting that they have their objective clearly in mind, and that's an economic business objective**, not just an elegant software objective, that the economic business imperative is there."*

Resource Allocator Role (Decisional). The role of Resource Allocator (Mintzberg 1973) is defined broadly to encompass the scheduling of time, the programming of work, and the authorizing of actions within the organization, for the purposes of achieving strategic goals.

*"**I hired in a new (CIO) who reports directly to me**. That's a signal I'm sending throughout the whole company. I want IT to report to all of the (business) managers, not always to their finance managers which is the usual way of doing it."*

*"... **just insisting that we have and we move towards common IT systems across our various business units**. .... The phase we're now in, which is seeking for competitive advantage, ... is to ask the business units to develop in their strategic planning process, and require them to develop as part of the strategic plan, how they propose to use information technology as a strategic tool going forward."*

*"I think my greatest influence is going to be **having established that framework, to support it, and require improvement in performance** there, as we do in financial performance, or productivity, or safety, or any of the other issues that we monitor."*

*"**By insisting on their (Executive Support Systems) use** and at the same time, insisting that if their conclusions, the conclusions drawn from them, don't accord with reasonable expectations and common sense, well, we go back to square one and start again."*

*"Predominantly by establishing a ... **personal involvement** in the process...."*

*"I guess my involvement in it is predominantly support for (CIO), and I guess I will be **breaking log jams**, if any occur."*

DISCUSSION

Although Mintzberg (1973) identified ten roles within three groupings that combine to form an integrated whole, or a *gestalt*, we have only discussed those that described the activities of the interviewed CEOs using their words as they related their perceptions of how they influenced IT driven organizational change. The roles of Figurehead, Spokesman, and Negotiator have been omitted. The authors acknowledge that a different interpretation of the data by other researchers may have led to the presentation of the remaining roles as well. Our argument is not that CEOs use only certain of the Mintzberg roles. Rather it is that CEOs act in accordance with the roles identified by Mintzberg in the course of performing their duties as 'specialists in corporate leadership'. It is through the performance of this unique specialism that non-technologically oriented CEOs are able to perform competently in the leadership of organizational IT.

The above quotes clearly indicate that these CEOs from traditional industries (not dotcom) espouse attitudes, strategies, and behaviors that exemplify the role of top management in providing central guidance and encouraging local initiative. It should also be noted that they did so while acknowledging unapologetically the limitations of their technical knowledge as indicated by the following three quotes: *"I can't use a computer to the depth that my (children) can. Nor do I intend to learn. I can do enough that I know how to use it." "Well, CEOs are very odd people, as you know. They know bugger all -- and they don't need to!" "As a CEO you don't have to be able to do a lot of things --you have to be aware of the needs. The CEOs jobs aren't 'doing' jobs'...."* Importantly, the CEOs interviewed did not think it necessary to have a high level of IT technical expertise. Rather they felt their job was to manage the broader environment within which IT-driven organizational change takes place. In doing so, they engaged in activities identifiable as managerial role functions. The carrying out of

the duties associated with effective corporate leadership by so-called 'generalist CEOs' over a myriad of specialist functions (including in particular, IS and IT) contrasts with much of the IS literature which, the authors believe, unfortunately assumes that CEOs *do* need technical or user skills in order to lead change. By focusing on these skills, the literature has condemned CEOs' impressions of IS managers to being non-strategic in their outlook, and therefore, of little value for consultation and advice. In addition, the IS research literature has failed to advise CEOs on strategic issues such as how CEOs might best keep themselves informed about the market and whole-of-organization level implications of new IT. Consequently, futurologists and flamboyant technology forecasters are eagerly filling the void left by the strategic IS literature and some introspective IS managers.

CONCLUSION

Whether it is possible to effectively manage the broader environment within which IT driven organizational change takes place is not clear. As indicated by some of the interview quotes, CEOs' accepted this as part of their responsibility although they did acknowledge the difficulties involved. Indeed, the interviewed CEOs implied that they would be failing in their role if they focused on developing IT skills, rather than on scanning and influencing the broader environment consistent with the duties accorded by the formal authority of their positions and their status. However, it does seem important to call upon IS researchers to give more thought to the implications of IT at the market and whole-of-organization level, and to the ways in which they can assist IS professionals to understand and facilitate the roles played by CEO in leading IT driven organizational change. It may only be through recognising the competence of the CEO as a specialist corporate leader, that IS researchers and practitioners can begin to see the real IT needs of CEOs as they perform their appointed managerial roles.

REFERENCES

Alberthal, L., "The Black Box", *Chief Executive* November/December 1992, 25-27.

Allen, T.J., and M.S. Scott Morton, eds., *Information Technology and the Corporation of the 1990s: Research Studies*, Oxford University Press, New York, 1994.

Applegate, L.M., J.I. Jr. Cash, and D. Quinn Mills, "Information Technology and Tomorrow's Manager", *Harvard Business Review* November/December 1988 (HBR Reprint Special CollectionManaging Change), 128-136.

Argyris, C., R. Putnam, and D. McLain Smith, *Action Science*, Jossey-Bass Publishers, San Francisco, 1985.

Australian Stock Exchange Limited, ed., *Australia's Top 100* 1996, Australian Stock Exchange Limited, Sydney, 1996.

Barki, H., and J. Hartwick, "Measuring User Participation, User Involvement, and User Attitude", *MIS Quarterly* March 1994, 59-82.

Beck, P, ed., *The Business Who's Who of Australia*, 31 ed. 2 vols. Vol. 1, Dun & Bradstreet Marketing Pty. Ltd., Sydney, 1997.

Beggs, J.M., and D.C. Doolittle, "Mintzberg Revisited: A Study of Chief Executive Officers", *Leadership & Organizational Development*, 1988.

Bennis, W., *On Becoming a Leader*, Reading, Addison-Wesley Publishing Company, Massachusetts, 1989.

Bevan, S., ed., *Australia's Top 500 Companies* 1996-97, Dun & Bradstreet (Australia) Pty. Ltd., Sydney, 1996.

Brancheau, J.C., B.D. Janz, and J.C. Wetherbe, "Key Issues in Information Systems Management 1994-95 SIM Delphi Results", *MIS Quarterly* June 1996, 225-242.

Brewer, A.M., *Change Management: Strategies for Australian Organizations*, edited by Dr. B. Carey, GSM, Macquarie University, The Allen & Unwin Business and Management Series, St. Leonards, Allen & Unwin Pty. Ltd., N.S.W., 1995.

Checkland, P., and S. Holwell, *Information, Systems and Information Systems*, John Wiley & Sons, Chichester, 1998.

Davenport, T.H., M. Hammer, and T.J. Metsisto, "How Executives Can Shape Their Company's Information Systems". *Harvard Business Review* March/April 1989 (HBR Reprint Special Collection Managing Change), 130-134.

Dixon, P.J., and A.J. Darwin, "Technology Issues Facing Corporate Management in the 1990s", *MIS Quarterly* September 1989, 247-255.

Drucker, P., "Infoliteracy", *Forbes* ASAP, 104-109.

Earl, M.J., *Management Strategies for Information Technology*, Prentice-Hall, New York, 1989.

Er, M., "A Critical Review of the Literature on the Organizational Impact of Information Technology", *IEEE Technology and Society Magazine* June 1989, 17-23.

Galliers, R.D., Y. Merali, and L. Spearing, "Coping with information technology? How British executives perceive the key information systems management issues in the mid-1990's", *Journal of Information Technology* September 1994, 9 (3):223-38.

Gardner, H., *Leading Minds: An Anatomy of Leadership,* Basic Books, New York, 1995.

Geisler, E., "How Strategic is Your Information Technology?" *Information Management*, Jan/Feb 1993, 31-32.

Kador, J., "Overcoming Technology Illiteracy", *Chief Executive*, 1995, 14-16.

Kanter, R.M., B.A. Stein, and T.D. Jick, *The Challenge of Organizational Change: How Companies Experience It and Leaders Guide It*, The Free Press, a division of Macmillan, Inc., New York, 1992.

Keen, P.G.W., "Relevance and Rigor in Information Systems Research: Improving Quality, Confidence, Cohesion and Impact", *Information Systems Research: Contemporary Approaches & Emergent Traditions*, edited by H.E. Nissen, H.K. Klein and R. Hirschheim, North-Holland, Amsterdam, 1991a.

Keen, P.G.W., *Shaping the Future: Business Design through Information Technology*, Harvard Business School Press, Boston, 1991b.

Kets deVries, F.R. Manfred, and D. Miller, *Unstable at the Top: Inside the Troubled Organization*, Mentor Book ed., New American Library, New York, 1989.

Kets deVries, and F.R. Manfred, *Leaders, Fools and Impostors*, edited by Jossey-Bass, Jossey-Bass management series, Jossey-Bass social and behavioral science series, San Francisco, 1993.

Kets deVries, and F.R. Manfred, *Life and Death in the Executive Fast Lane: Essays on Irrational Organizations and Their Leaders*, Jossey-Bass Publishers, San Francisco, 1995.

King, J., "The CIO/CEO Gap", *Management* May 22, 1995, 84-86.

Kotter, J.P., *A Force for Change: How Leadership Differs from Management*, The Free Press, A Division of Macmillan, Inc., New York, 1990.

Kurke, L.B., and H.E. Aldrich, "Mintzberg Was Right!: A Replication and Extension of The Nature of Managerial Work", *Management Science*, 1983.

Lear, R.W., "The Obsolescent CEO", *Chief Executive* September 1993:14.

Levine, H.G., and D. Rossmore, "Politics and the Function of Power in a Case Study of IT Implementation", *Journal of Management Information Systems*, 1994, 11(3): 115-133.

McKeen, J.D., T. Guimaraes, and J.C. Wetherbe, "The Relationship Between User Participation and User Satisfaction: An Investigation of Four Contingency Factors", *MIS Quarterly* December 1994, 427-451.

Mintzberg, H., *The Nature of Managerial Work*, Harper & Row, New York, 1973.

Nicholas, P., "MIS SUCCESS Why does it vary among users?", *Managing Information Technology's Organizational Impact*, edited by R. Clarke, and J. Cameron, North-Holland, Amsterdam, 1991.

Pervan, G., "A CEO View of the Key Issues in Australian Information Systems Management", paper read at 8th *Australasian Conference on Information Systems*, Adelaide, 1997.

Pervan, G., "How chief executive officers in large organizations view the management of their information systems". *Journal of Information Technology*, 1998, 13: 95-109.

Pervan, G., "Information Systems Management: An Australian View of the Key Issues", *Australian Journal of Information Systems* May 1994, 1(2): 32-39.

Quinn, R.E., *Deep Change: Discovering the Leader Within*, Jossey-Bass Publishers, San Francisco, 1996.

Sarantakos, S., *Social Research,* Macmillan Education Australia Pty. Ltd., South Melbourne, 1993.

Sarros, J.C., and O. Butchatsky, *Leadership : Australia's top CEOs: finding out what makes them the best*, Pymble, HarperBusiness, N.S.W., 1996.

Schein, E.H., "The Role of the CEO in the Management of Change: The Case of Information Technology", *Information Technology and the Corporation of the 1990s: Research Studies*, edited by T.J. Allen and M.S.S. Morton, Oxford University Press, New York, 1994.

Scott Morton, M.S., ed., *The Corporation of the 1990s: Information Technology and Organizational Transformation*, Oxford University Press, New York, 1991.

Shapira, Z., and R.L.M. Dunbar, "Testing Mintzberg's Managerial Roles Classification Using an In-Basket Simulation", *Journal of Applied Psychology* February 1980.

Szajna, B., and R.W. Scamell, "The Effects of Information System User Expectations on Their Performance and Perceptions", *MIS Quarterly* December 1993, 493-514.

Violano, M., "I Was Terrified of Technology", *Bankers Monthly*, 1989, 57-62.

Wang, C.B., *Techno Vision*, McGraw-Hill, Inc., New York, 1994.

Watson, R.T., "Key Issues in information systems management: An Australian perspective--1988", *The Australian Computer Journal*, 1989, 21 (2):118-129.

Watson, R.T, G.G. Kelly, R.D. Galliers, and J.C. Brancheau, "Key issues in information systems management: An international perspective", *Journal of Management Information Systems*, Spring 1997 13(4): 91-.

Watts, D.L., *CEO Perceptions of Information Technology Enabled Organizational Change,* Master of Business (Research), International Graduate School of Management, University of South Australia, Adelaide, 2001.

Zand, D.E., *The Leadership Triad: Knowledge, Trust, and Power*, Oxford University Press, New York, 1997.

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