TITLE WAVE: THE DIFFUSION
OF THE CEO TITLE THROUGHOUT
THE US CORPORATE NETWORK

by

David W. Allison and Blyden B. Potts

CENTER FOR RESEARCH ON SOCIAL ORGANIZATION
WORKING PAPER SERIES

**Title Wave: The Diffusion of the CEO Title
throughout the US Corporate Network**

David W. Allison and Blyden B. Potts
Center for Research on Social Organization Working Paper
University of Michigan
January 9, 1999

ABSTRACT

In 1955 only one of the 200 largest industrial corporations in the United States used the title Chief Executive Officer (CEO) to denote its chief executive. By 1975 all but one of these firms had a CEO. This innovation can not reasonably be argued to either have been the result of strategic considerations, nor to have had a measurable effect on firm performance; in fact, it is probably most accurately described as a fad. But as such, it provides us with a near-perfect test of contagion via cohesion, contagion via structural equivalence models, and other explanations of diffusion. Relying primarily upon corporate director interlock data for the period 1955-75, we test these explanations and draw conclusions about both the spread of the innovation through the intercorporate network as well as diffusion research in general.

Director Interlocks and Intercorporate Diffusion[1]

In the past decade, studies have begun to recognize the impact which corporate board director interlocks may have on interorganizational diffusion. While these studies have focused on explaining specific diffusions, such as the spread of poison pill takeover defenses or the multi-divisional corporate form, the fact that a number of such studies find director interlocks to be a significant factor suggests that they may be an important causal factor in the diffusion of all corporate decisions taken at the corporate board or top management levels. This is an especially interesting possibility to explore since it may help answer a question which has been the focus of debate among social scientists: What effect do interlocking corporate directorates have of corporate behavior?

There are several common answers to this question. Critics of capitalism suggest that director interlocks are a prime mechanism of capitalist class social cohesion (Zeitlin 1974, 1989; Domhoff, 1998 [1967]), while a related line of thought (Domhoff 1998 [1967]; Mizruchi 1982, 1992; Useem 1984) contends that interlocks at least provide a means to coordinate political and economic interests among business elites. A different perspective is that interlocks serve, not the interest of a business class, but the institutional needs of corporations by reducing uncertainty with respect to needed resources on which they depend. The basic resource dependence model (Pfeffer 1974, Pennings, 1980) suggests that interlocks are made to cement access to suppliers, academic & legal expertise, and especially capital. In stronger versions of this perspective interlocks do more than facilitate access to resources, they allow more powerful corporations to influence or even control the decision-making in other firms. Bank control or financial hegemony (Mintz and Schwartz, 1985) models are special versions of resource dependence which perceive that interlocks provide financial institutions influence or control over the industrial firms which are (at least potential) borrowers of their resources, and through which financial institutions become central control organizations for entire regional economies.

Regardless of which of these models is most accurate, each presumes that director interlocks must at least serve as channels of communication between persons in different companies. The diffusion of innovations adopted by boards of directors or by executives are thus important to study not only in their own right but because they provide another test of this underlying assumption. Diffusion requires transmission of information to potential adopters. If director interlocks are channels of communication between corporate elites – as the above models suggest – then we should expect interlocks to play a significant part in these diffusions.

Prior Studies

There has been a fair amount of research aimed at understanding the diffusion of board-adopted innovations. Taken as a whole these studies are suggestive, but hardly conclusive. In explaining diffusion of poison pill takeover defenses, Davis (1991) found that firms having corporate board interlocks ties to corporations which had previously adopted the poison pill were significantly more likely to adopt the poison pill themselves. Those having ties to two or more adopters were between 1.5 and 2.5 times as likely to adopt as those without ties. In researching acquisition behavior, Haunschild (1993) similarly found that the number of acquisitions in the previous three years by firms to which a focal firm was tied was a significant factor in predicting a firm's own decision to engage in acquisitions. Though the authors offer an alternative explanation, astudy by Westphal and Zajac (1997) on board "independence" also offered data consistent with the idea that interlocks are key to intercorporate diffusions. Other, non-diffusion studies including work on political contributions (Mizruchi, 1992) and organizational philanthropy (Galaskiewicz and Burt, 1991) also suggested that director interlocks serve as channels of communication which influence company behavior, but the evidence in these studies was less than fully supportive. Palmer, Jennings, and Zhou (1993) found that while non-directional ties to previous adopters of the Multidivisional Form (MDF) increased chances of adopting during the late MDF adoption period they studied, directional ties to MDF firms actually decreased MDF adoption. Work on similar diffusions by Fligstein (1985) and by Kosnick (1987) did not produce evidence that interlocks were key factors. More importantly, in each of these studies a number of other factors affected the likelihood of adopting as strongly or more strongly than did director interlocks with prior adopters. For poison pill adopters these included firm size measured by

market value, ownership variables, and existence of other takeover deterrents. For acquisitions, debt-to-equity ratio was a powerful factor, while a variety of other factors significantly affected MDF adoption.

Why is there not stronger evidence of a director interlock effect? One conclusion which the data suggest is that director interlocks play a key role in at least some of these diffusions, but they are not the major cause which one would expect if director interlocks were the only channel through which the information necessary for these diffusions was flowing. This could be because direct channels between adopters are not required for adoption since adoption-relevant information is usually widely available, as has been suggested by Burt (1987), or because alternate channels exist which reduce the impact of director interlocks. However, while we believe that while both of these might play a role in mitigating and/or diluting the role of the director interlocks, we argue that researchers' tendency to conflate two distinct sub-processes within the diffusion process is also to blame. In this paper we hope to illustrate how the full import of director interlocks on these diffusions may have been underestimated by these studies of interorganizational diffusion because of this conceptual conflation of distinct sub-processes within the diffusion process. Our goal with this paper is to use data on the diffusion of the title CEO throughout the American corporate network as an example which we think allows for the separation of these two sub-processes, toward the goal of better illuminating the impact of director interlocks.

A Theory of Two Diffusion Sub-processes: Contact and Choice

When first trying to understand why there was not stronger evidence of a director interlock effect in board-adopted diffusions, one of the first things we noticed about existing studies is that each of them involves the diffusion of a substantively important innovation. By substantively important we mean that in each of these cases a firm's decision to adopt or not had clear, non-trivial costs and consequences to the firm, and that related to this, the utility of the adoption varied across firms. For example, in Davis' poison pill study, firm size has an impact on the probability of adoption because larger firms were almost immune from the threat of takeover, the primary motive for adopting the poison pill, while smaller Fortune 500 firms were not. Even more interesting, when looking at the sum of this research it appears that there is a rough negative

correlation in these studies between the substantive importance of the adoption studied and the reported significance of director interlocks.

Even by focusing on substantive importance, we had already implicitly marked a distinction between variables that were included because of their effect on the utility of adoption decision and those, such as director interlocks, that were included for other reasons, most obviously because they provide the access to information about a potential adoption. From there it was only a small step to the central argument of this paper, that what these studies had been treating as a single diffusion process should more properly be conceptualized as two distinct sub-processes. We call these the contact process and the choice (or choice-resistance) process. The contact process is that part of the diffusion wherein each company is exposed to the elements of adoption or contagion. The choice-resistance process is that part of the diffusion after contact has occurred in which a company chooses to adopt or takes actions to resist or avoid adopting.

Any adoption requires access to a contagion. Whether or not the contagion includes a physical object, it nearly always involves the transfer of information (Marsden and Friedkin: p. 129). Access to the contagion is in some instances sufficient to adopt, but in most instances there is the added necessity that the agent succumb to the adoption or choose to adopt. Thus, we conceptually separate the diffusion process into two parts: a contact process that focuses on the way agents make contact with a contagion, including information, and a choice-resistance process that focuses on the factors that make them more or less likely to adopt after coming into contact. In an epidemiological analogy, the first is exposure to the disease while the second is a process of either showing symptoms or remaining healthy. Diffusion processes vary with respect to these process. In some instances one or the other of these processes may be trivial. If there is no choice or resistance, as might occur with an extremely virulent disease, contact alone may be destiny, but this seems uncommon in the context of corporate diffusions where most adoptions are voluntary and involve some choice. When contact is nearly universally available the diffusion process reduces to a question of choosing or resisting the innovation. In most corporate diffusions, either both contact and choice processes are significant, or just the choice process is significant[2].

---

[2] Burt (1987; *see also* Marsden and Friedkin, 1993) contends the latter is generally true of corporate diffusions., a view evident in his interpretation of cohesion and structural equivalence measures. Cohesion suggests to Burt "normative understanding of adoption's costs and benefits" that emerge from discussions and shared attitudes that may result from social proximity, both of which lead to adopting similarities. Structural equivalence suggests similarity of social environment, thus similar status, thus competitive pressure, which leads to similar adoptions (Burt, 1987: p.1291-94). When contagion is widely available the

To return to the epidemiology analogy, the problem with prior studies is that they focus on whether companies show symptoms, but they have no way of controlling for when (or even if) firms were exposed to the contagion. That is, they have conflated the two distinct sub-processes. The likely result of this is that they have incorrectly estimated the true effects of contact and choice process variables relative to each other. Director interlocks may be an important contact mechanism, but probably have little influence on choice or resistance phase. Most other variables used affect decision-making, but seldom do they have contact implications. If we assume that the relative importance of contact and choice processes varies across diffusions, we should expect to find interlocks most significant when contact is most important and choice most trivial. When choice is most important, the impact of interlocks may be suppressed or "drowned" by performance-related factors which influence choice and resistance, despite the fact that interlocks serve a prerequisite contact function in many of these adoptions.

It is somewhat surprising that researchers in board-adopted intercorporate diffusion have not made a distinction between separate sub-process within diffusion, because when we sought previous work that did make such a distinction, we found that Everett Rogers (1983 [1962]), widely regarded as the seminal authority on diffusion research, not only divided diffusion into several stages but drew explicit attention to the lag between what he called the knowledge stage (that is, the contact process) and the decision or implementation stages, which together roughly correspond to our choice process. A work by Strang (1993) emphasizing the difference between

---

interpretation of cohesion and equivalence is as competing bases for mimesis. But this interpretation is only possible because Burt contends access to contagion is generally not a problem: "With the omnipresence of mass media and people paid to disseminate information on an innovation, obtaining information is less a problem... than finding trustworthy information; even worse, the problem lies in finding ways to ignore as much as possible of the otherwise overwhelming horde of facts." (Burt, 1987: p.1289) How could equivalence function unless companies had general access to information about their competitors? Contact as a basis of transmittal of contagion, the focus of what we have called the contact subprocess, is assumed away in the overabundance of information. In this view, adoption of any innovation, whether best explained through cohesion or equivalence, is viewed solely as an effect on the choice subprocess.

Our view differs. We argue that contagion information is not always as available as Burt contends. If we recognize sifted and trustworthy information as a contagion transmitted in a contact process, then contact is not as trivial as Burt would have us believe. In this case it is not access to information *per se* that constitutes contagion, but access to evaluated information. Free of the assumption of abundant information and making a distinction between contact and choice processes, we offer a different interpretation: when access is nearly universally available, diffusions *could* be affected by equivalence or cohesion in the way Burt suggests, but under the more prevalent condition of restricted access to contagion, cohesion typically has effect through direct transmission of the adoption information from firm to firm. Though he assumes all large corporations were aware of poison pills fairly early because of extensive media coverage and promotion of poison pills by investment banks and law firms, Davis (1991) generally agrees with our view when he argues that ties to adopters are important as sources of "trustworthy information" (*see* Burt: p.1289). He also concludes there is "no evidence that firms imitated others in their industry, as the structural equivalence model of diffusion would suggest" (Davis: p. 608). Davis suggests some diffusions may be driven by cohesion and others by equivalence, and he claims the interlock network "supports a kind of stability or social order among corporations... [and] *provides a diffusion mechanism for information* and strategies" [emphasis added].

choice-theoretic and network (or institutional) accounts may also be seen as suggesting that diffusions vary regarding contact and choice processes.

A Method for Isolating Contact Factors

Assuming that substantive variables may in fact be suppressing estimates of the impact of contact process variables such as director interlocks, we would prefer to study the sub-processes in isolation. How can this be done? The best way to do this would probably by studying the diffusion of knowledge of a contagion rather than the actual adoption of the contagion, or by performing a dual-event history analysis of contact and choice. Unfortunately, most corporate diffusion studies are done retrospectively and data about contact is nearly always less readily available than data concerning actual adoption, which is probably the main reason that the two process have been conflated in the first place. An alternative strategy would be to research a diffusion where choice-resistance was trivial. If adoption hinged almost entirely on contagion, then adoption data would approximate contact data.

What kind of diffusion would this be? The best situation would be a "no-brainer"; a situation where, once in contact with a diffusion, adoption is rapid and (nearly) automatic. That is, when an innovation is irresistible and everyone at risk to adopt is equal capable of, and eager to, adopt. In epidemiology, this is the case of the extremely virulent disease, but in the world of board-adopted interorganizational diffusions, we are not sure what would constitute a parallel case. Fortunately fads, those situations where adoption has almost no consequences and whatever consequences do exist are perceived by the adopters as positive, are only a little less ideal. While adoption might not be rapid or absolutely automatic, there would be little reason not to adopt, and little or no systematic variation in the adoption decision. Thus, for purposes of isolating the impact which director interlocks or any other contract process variables have upon interfirm diffusion, we suggest studying diffusions that almost wholly lack substantive importance to the adopting firms and are adopted as fads, lacking a significant choice-resistance process.

The CEO Title Wave: A Contact-Only Diffusion?

Arguably, one possible real-world example of such a fad adoption is the diffusion of the CEO title. Today, Chief Executive Officers, or CEOs, are found at the top of the organizational

chart of nearly every large or mid-size U.S. Corporation, as well as most international firms. Yet this was not always so. While the term "CEO" is part of both the business and common vocabulary today, before the middle of this century companies were headed by Chairmen or Presidents, and the title Chief Executive Officer did not exist. Only two Fortune 200 industrial companies had CEOs at the beginning of 1955, but by 1966 over half of these same companies had a designated CEO, and by the late 1970s nearly all these companies had adopted use of the CEO title.

To determine whether the CEO title diffusion is an appropriate case, we must first have some idea of why it spread. Work on organizational isomorphism and innovation adoption (Fligstein, 1985; Palmer et al, 1993) suggest various explanations for adopting an organizational form or innovation, which we have grouped into three categories: (1) what DiMaggio and Powell (1983) refer to as competitive isomorphism[3], that is perceived performance improvement in terms of sales, profitability, survival, growth, reduced transaction costs (Williamson, 1975), or other tangible benefit; (2) political motivations within or between firms; and (3) mimetic or normative isomorphic processes.

With respect to the CEO title diffusion specifically there are two extant explanations which fall roughly into categories one and three above. First, there are those (Chandler, 1976; McDermott, 1991) who speculate that the CEO title was adopted to designate the single operating head of a firm in the contexts of multidivisional form, team leadership, or variance in the official roles of President and Chairman[4]. Adoption is explained as a way of reducing a minor transaction cost. Second, there are those who assume the CEO title is best understood as a fad: mimetic or normative isomorphism.

We have found no serious investigation of the topic which supports or undermines either of these two theories, but after reviewing the evidence we discuss here, we have concluded that the mimetic or normative isomorphism explanation is most likely. First and foremost, we have found no indication that the CEO title has any non-trivial economic benefit or cost to adopters.

---

[3] DiMaggio and Powell coin the term competitive isomorphism, but indicate (p. 149) they follow Meyer (1979) and Fennell (1980).

[4] It is interesting to note that the years when Chandler claims General Motors or other companies had a CEO, the official designation in all sources we located was still President. For example, Chandler asserts "In 1923... Pierce appointed Sloan as president and Chief Executive Officer [of GM]" (1976: p.47 & restated p.48). Since use of this title is not confirmed in Moody's or any other source to our knowledge, we conclude Chandler uses the term to indicate the scope of Sloan's authority rather than his formal title.

We have found no studies that relate the designation of a CEO to any measure of corporate performance, nor have we found an hint that there was a substantive reason for adopting the CEO title. Discussions with an early CEO and a business source personally familiar with several early adopting companies suggest adoption of the CEO title was of virtually no importance to firms. These source do not remember it being a significant decision at the time, but agree that a simple desire to differentiate between the President and Chairman may have been the motive to designate a CEO. As one of our informants explained, "No new function was created" (Interview, 1994).

This is consistent with the absence of the terms "Chief Executive Officer" or "CEO" in the business press until several years into the adoption process. Certainly if adopting a CEO was of much importance to businesses, it would be mentioned in the business press, but a review of literature on Chief Executives yields no reference to Chief Executive Officers or CEOs in the academic, business, or popular press prior until the mid-1960s[5]. The earliest use of the term "CEO" or "Chief Executive Officer" which we could find in a title or as an index subject was a 1970 Harvard Business Review article by Eastlack and McDonald. Curiously, these early articles use the title CEO as if it had always existed. This suggests that the advent of the title went largely unheralded and unnoticed - a new label for an existing concept. This might be explained by the possibility that the term "Chief Executive" was used informally among the business community prior to its formal implementation as an official title[6]. Again however, recollections from individuals well-placed among early adopters suggest that this was not so. "[The CEO Title] began to come into play in the late 1940s and early Fifties" (Telephone Interview, 1994). Their personal accounts match well with the record that emerges from formal sources, with no suggestion of a period of informal usage prior to the emergence of the formal title.

Second, there is no reason to believe that interorganizational pressures or coercive isomorphism (DiMaggio and Powell, 1983) were a factor. There is no theory explaining the CEO

---

[5] A few publications, mostly authored and published by Harold Stieglitz and the Conference Board or appearing in the Wall Street Journal, use the term "Chief Executives" in the early 1960s, a term which other sources continued with throughout the decade. In these sources the term means not only those with the Chief Executive Officer title, which only a handful bore at that time, but "that individual whom the owners of a business – or their representatives – give the power to run the business" (Steiglitz, 1961 [no.214]; Steiglitz and Janger, 1963). That is, the corporate head whether they were Chairman, President, or other. These publications also attest to the variety of roles and functions in which the Chief Executive may serve, which again suggests the title lacked substance especially since those with a formal CEO title, who were always also either the President or Chairman, performed duties similar to those performed in other companies by persons who held only the title of President or Chairman. Baran and Sweezy's Monopoly Capital appears to have one of the earliest (1966) references to "Chief Executive Officers" (p.15-16) by which they also appear to mean all top managers, not the single operating head, of a corporation.
[6] Another possibility which we have yet to explore is that use of the title transferred from the military. One of the very early adopters had a prominent military officer among their directors.

title in this way, we could find no law or tax incentive to adopting the CEO title at that time, there is again the lack of media attention, and it is difficult to imagine what benefit a firm would gain by pressuring other firms to designate a CEO. The CEO title appears to be an innovation largely without consequence to adopters.

Which brings us to the third alternative. Companies may adopt an innovation such as the CEO title simply through emulation of other companies, or because the innovations become normative in the population, the media, or the educational institutions which train corporate officers, processes which DiMaggio and Powell (1983) refer to respectively as mimetic isomorphism and normative isomorphism. Together, these explanations are most consistent with the idea that the CEO title is a fad[7].

Does this mean the CEO title was a contact-only diffusion? The primary difference between mimetic and normative isomorphism is the availability and locus of contact with the innovation. Mimetic models suppose that contact is in the form of knowledge from or about other organizations, but normative models suggest widespread availability through media or education. The lack of media attention to the CEO title until relatively late is one clue that the CEO title diffused more mimetically, rather than normatively, but stronger evidence comes from a more formal analysis of early adoptions.

As part of his classic paper on diffusion, Burt (1987; *see also* Coleman *et al*, 1977) reviews the distinction between diffusion with contagion and diffusion without contagion. Paradoxically, a diffusion-without-contagion model applies under two conditions: lack of contagion in the diffusion process, or contagion so widely available that the probability of contact approaches unity[8]. On the other hand, diffusion-with-contagion occurs when contagion, access to information or objects of diffusion, is available only through a limited supply of agents, typically those who already have adopted.

---

[7] An informal survey of business school faculty, primarily those affiliated with the University of Michigan though including others, lent added support to our view of the title as unsubstantive and that it spread due to mimetic adoption. Most of the experts surveyed agreed that the spread of the CEO title was probably best understood as a fad with no real impact on firm longevity, profitability, or other measures of corporate success. As one source remarked, "It probably was a case of follow the leader. What big, aspiring company could be without a CEO if General Motors and a few other big firms had them?"

[8] As may be the case when distribution of access or information is far faster than the acceptance of the diffusion which depends on it (e.g. popular media reports or electronic communication concerning a fad) so that access is commonly available before people or organizations actually adopt, or when one set of information or objects is the contagion for a resulting adoption and may temporally precede those objects by a relatively long period of time.
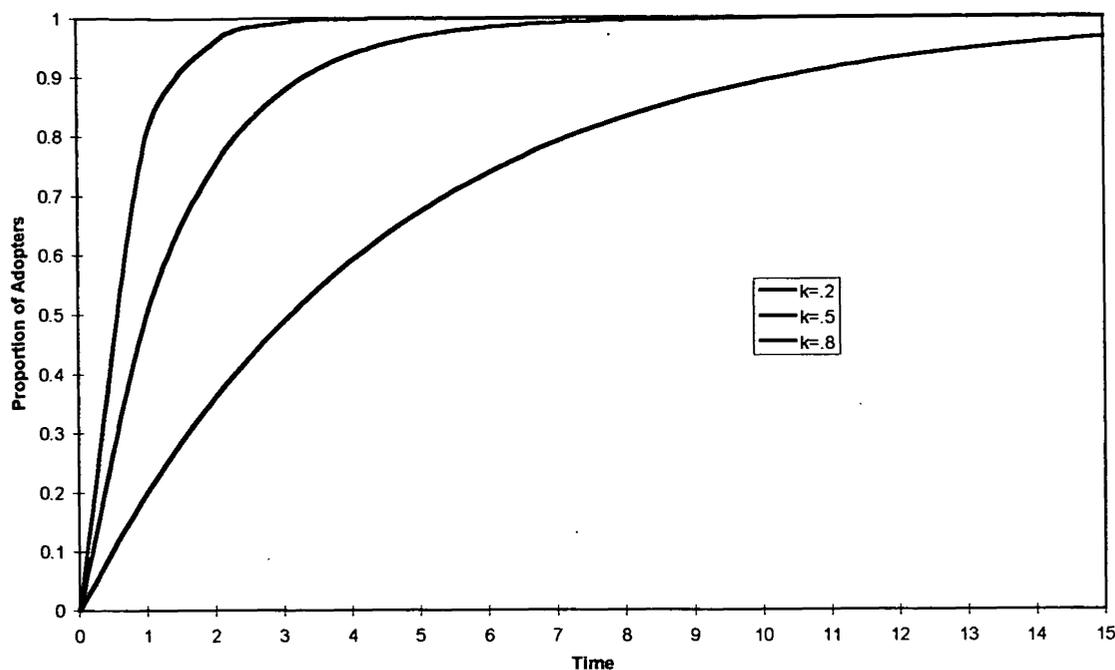
Figure 1a: Diffusion Without Contagion

Diffusion without contagion "is driven by two factors: [Corporations'] predisposition to adopt independently... and the proportion of [corporations] available to adopt," (Burt: p.1303). Thus the expected rate of diffusion is a function of the proportion at risk to adopt weighted by their propensities to adopt. In diffusion with contagion, however, "the rate of diffusion is given by the [previous] two factors,... weighted by the extent to which the innovation is already adopted" (Burt: p.1303), assuming that anyone who has already adopted is potentially contagious. This is because adoption is influenced by contact with others who have already adopted. The cumulative frequency diffusion curve, now weighted by the probability of contact with contagious agents[9], dramatically changes from an inverted-J curve to an S-curve, as illustrated in Figure 1a and 1b. (Coleman *et al*, 1977 [1957]; Burt, 1987).

---

[9] Burt's "weighted by the extent to which the innovation is already adopted" simplifies this by assuming that the probability of with contagious agents is approximated by the proportion who have already adopted.
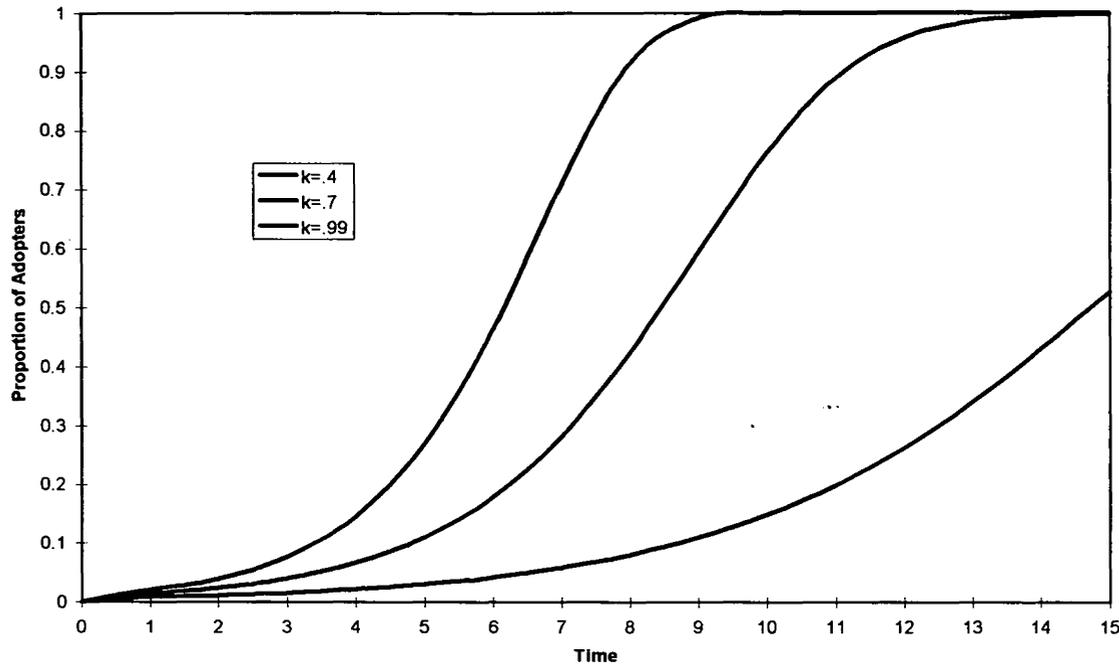
Figure 1b: Diffusion With Contagion

Following earlier diffusion work, Burt (1987) represents the expected rate of without-contagion diffusion using the equation $dy/dt = k(1-y)$, while diffusion with contagion is represented as $dy/dt = ky(1-y)$, where k is the average adopters predisposition to adopt, y is the proportion of the population already adopted, and $(1-y)$ is the proportion yet to adopt. The latter equation incorporates the additional y to weight the equation by an estimated probability of contacting the contagion.

In arguing against the likelihood of with-contagion diffusion in Coleman *et al*'s data (1977 [1957]), Burt notes "a steep rate of diffusion need not indicate social contagion... [it can] be generated by strong personal preferences toward adoption... the most distinctive evidence of social contagion is the initial period of slow diffusion among pioneer adopters." (Burt, 1987: p.1304) In other words, the existence of the lower tail which distinguishes the S-curve from the inverted J-curve is the most important clue in determining if a diffusion is with-contagion. As the proportion of previous adopters increases, the with-contagion curve looks more and more like the without-contagion curve. That is, as contagion becomes widely available, mimetic isomorphism

becomes normative isomorphism. This transition suggests that specific contacts may become less relevant the further a diffusion progresses[10]. The early part of a fad, when there are still few adopters, is the best place to observe whether it is transmitted mimetically or normatively.

The diffusion of the CEO title among the Fortune 200 largest industries of 1955, the S-curve presented in Figure 2, bears strong visual resemblance to the diffusion-with-contagion model, supporting the view that it was mimetic. We can surmise that adoption of the CEO title was probably contact-dependent, relying on information diffused through specific agents and was not, at least early on, information generally available among corporate boards. That, again, is congruent with the lack of published information on the CEO title during early years of the diffusion, and with the personal accounts of our telephone interviewees.

To review, we are led to believe that the CEO case approaches the ideal of a contact-only diffusion for a variety of reasons. First, the only articulated non-mimetic reason to adopt the title appears to be the trivial, but positive, benefit of clarifying to outsiders who is the corporate head. Second, most experts seem to agree it was a mimetic process. Third, adoption of the CEO title was nearly universal after several years, suggesting the absence of any substantive rational for some companies not to adopt. Finally, the shape of the cumulative frequency distribution makes it clear there was a meaningful contact process, so it is entirely plausible that diffusion of the CEO title was strictly mimetic, a true fad. If so, it might offer far stronger evidence than previous studies of the importance interlocks have for corporate diffusion because there would be no substantive variables to suppress their apparent effect, a possibility which we test.

Some Preliminary Evidence for Director Interlocks

Up to this point we have not discussed at all the plausibility of director interlocks versus other possible agents of contagion for the CEO title. The simplest and most plausible agents of contact are usually assumed, as in Burt's formulation, to be previous adopters. In this case that means other firms already having designated a CEO. Communication between firms, of course, means communication between people in those firms. For decisions made by the upper echelon of

---

[10] Which may explain Coleman *et al*'s (1977) finding that sociometric choices among physicians affected the date of Tetracycline adoption among early adopters, but did not have a significant impact on later adopters.
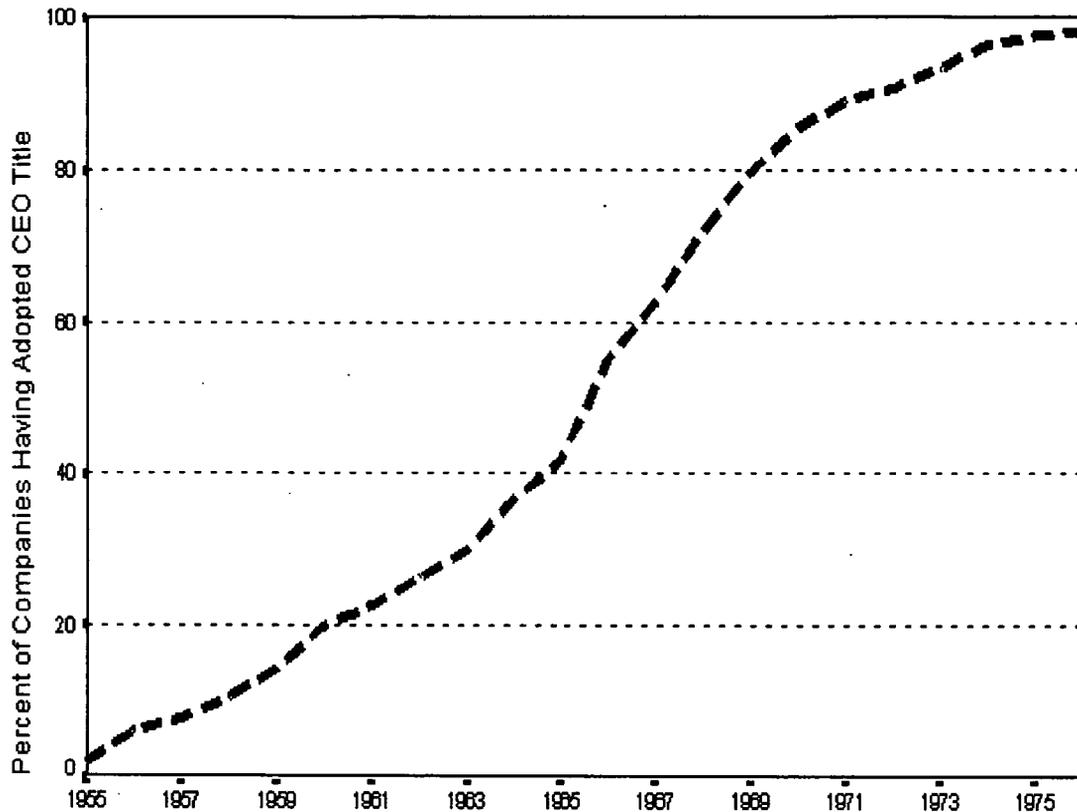
Figure 2. Cumulative CEO Title Adoptions, 1955-1976

executives or by directors, director interlocks are a natural suspect because they are the most obvious of only a few channels which offer the necessary connectivity. Still, alternatives exist.

Before we conducted a full analysis, we began with a preliminary investigation to get some idea of whether interlocks were part of the story. This investigation suggested to us that our line of inquiry was likely to bear fruit. We first selected the first eight companies which adopted the title CEO and we researched the board interlock ties among the directors of each of them. The results were dramatic.

Figure 3a shows there were a total five interlocks in the group, of a possible twenty-eight, one of which was a double interlock. Nearly every one of these companies was interlocked with at least one other adopter at the time of their adoption[11]. To ascertain if this rate of interlocks was typical of non-adopting companies we compared these first eight adopters with

---

[11] If we include an interlock between Container Corp. and FMC that occurred just one year after FMC's adoption, which might suggest earlier communication between these boards, then *every* company is interlocked to at least one other adopter!

a random sample of eight other companies from the Fortune 200 of 1955. For this sample we considered *all* interlocks for these firms occurring between 1955 and 1963, the years during which the first set of companies adopted the CEO title. As illustrated in Figure 3b, there was only one interlock[12]. Accounts from our telephone interviews agreed with the perception that interlocks do serve as sources of some information. When asked directly about the CEO title,
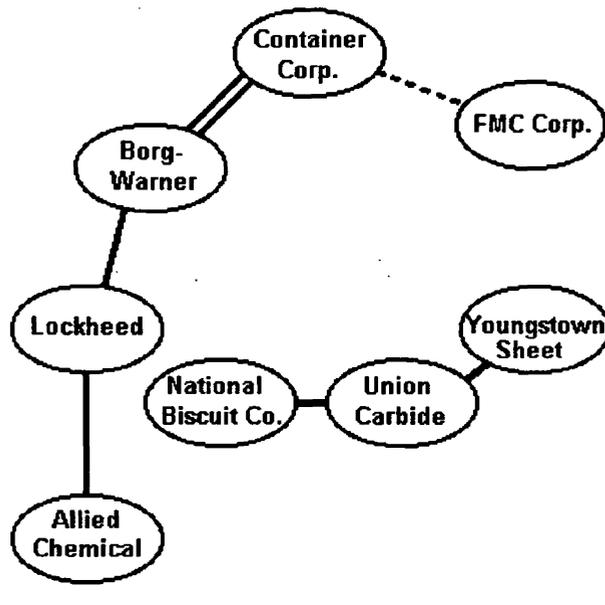

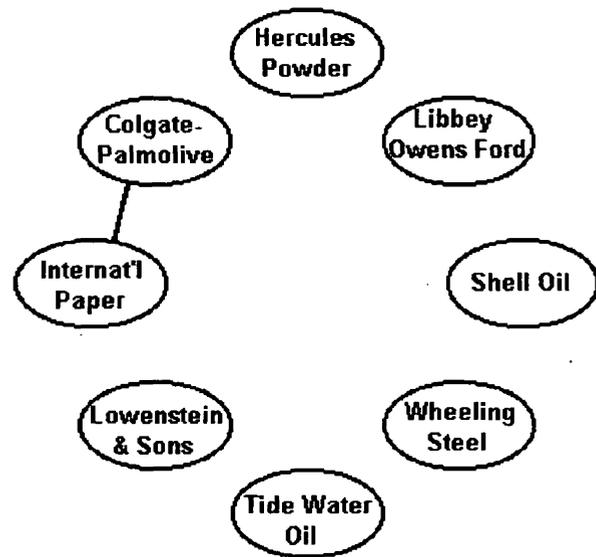**Fig. 3a. Interlocks among 8 Early Adopters** **Fig. 3b. Interlocks among 8 Non-Adopters**

each of our respondents said they could not recall the title being spread this way, but neither of them ruled the possibility out (Telephone interviews, 1994). From the striking differences in interlock density between early adopters and a comparison group of firms, we assumed that director interlocks are the primary channel of contact for this diffusion especially in early adoptions, although other contact mechanism might also be in effect in later time periods.

---

[12] There were also two interlocks that occurred between the sample of non-adopters and the adopting corporations (eg. Colgate-Palmolive & Container Corp, Shell Oil & FMC Corp.)

Contact, Choice, and CEO Title Diffusion: A Hypothesis

If the CEO diffusion is an unusual instance where the choice process is minimal and the overall diffusion relies heavily on contact, and if director interlocks are the primary mechanism of contact, we expect director interlocks to be an especially strong predictor of CEO title adoption.

> HYPOTHESIS: THE EXISTENCE OF INTERLOCKS BETWEEN FOCAL COMPANIES
> AND PREVIOUS ADOPTERS OF THE CEO TITLE SHOULD STRONGLY PREDICT
> ADOPTION BY A COMPANY, ESPECIALLY IN THE EARLIER YEARS OF THE
> ADOPTION.

If we are correct that CEO diffusion is predominantly a contact process, economic and strategy related variables which impact the choice process in most corporate diffusions should not effect CEO adoption. While we cannot exhaust all such variables, we have collected data on select variables of this variety. It is our expectation is that each of them will be insignificant: (1) size, (2) profitability, (3) market value, (4) debt level, (5) industrial classification. Unlike poison pill adoption where size offered an alternative form of protection (Davis, 1991), we have no reason to believe that size (among Fortune 200 firms) should effect CEO adoption. We have found no studies or stated rationale relating the existence of a CEO to any measure of corporate success such as sales, debt level, market value, profitability, or longevity, nor to differences in industry classification. These variables are included in the analysis with the expectation that they will not be significant.

Nor do we have reason to believe adoption of the CEO title would be more beneficial to or common among any one segment of a firm. Nevertheless, following Fligstein's (1985) findings of a relationship between the background of the corporate head and adoption of the Multi-Divisional Form, we will control for the background of the corporate head.

CEO Diffusion Data and Method

Mizruchi and Stearns collected data on interlocking directorates between each of the 1955 Fortune largest 200 industrial companies for the years 1955-1994[13] using *Standard & Poor's*

---

[13] From 1955-1994 a significant number of these companies were acquired and merged into other companies, went out of business, or suffer other forms of corporate death and were dropped from the dataset. Corporate mergers where the business and management of company from the dataset constituted an overwhelming majority of the business of the merged company were continued in the dataset. Companies where the business and management of a company constituted approximately half of

Register. The name of each director for each company in each year were entered into a database where each record was a director-corporate-year, as was an indication of whether they were outside or inside directors, and their title if they were President, Chairman, and/or CEO[14]. These data were cleaned by cross-checking similar names using *Who's Who in America* biographical information and standardizing all spellings of identical persons' names. Then a count was made of the number of shared directors for each dyad of companies, and a count for each corporation-year of the number of other companies the focal company was interlocked with that had previously adopted the CEO title and the number that did not[15]. To this were added financial data, SIC codes, board size, board composition, and other data. Meanwhile the biography of each corporate head was researched in *Who's Who in America*, and data included for each corporation-year.

Our preliminary investigation of early adopters revealed significant shortcomings in data on the CEO title in *Standard & Poor's*. In cleaning and cross-checking the data against other sources we found that while the director lists were usually very accurate, indications of whether there was a CEO often did not appear until significantly after mention in other sources. We dealt with this problem by adding names and dates from *Moody's*, and since that was not consistently accurate either, cross-referenced the earliest CEO candidate from each firm either against *Who's Who in America*[16]. Analyses were run using the earliest data from any of the three sources.

The total dataset (1955-1994) covers a total of 6454 corporation-years. Since few CEO title adoptions occur after 1976[17], we truncate the dataset in that year. So that each record represents a company-year *at risk*, companies were deselected from the data set the year after their adoption of the CEO title. Two companies in the dataset adopted prior to 1955: Container Corp. of America and Curtis Publishing[18]. In 26 years, there are 18 companies which are right-

---

the merged company were replaced in the dataset after the merge with a new record for the resulting company. This resulted in 9 additional corporations in the dataset.

[14] In fact, it was through cleaning the data for Mizruchi and Sterns that the diffusion of the CEO title initially came to our attention.

[15] A very small number of companies, having adopted a CEO at some point, later had one or more years without a CEO.

[16] *Who's Who in America*, a self-reported biographical resource, offered an added challenge since corporate heads had a tendency to retrodate designation as CEO to the date of their appointment as President or Chairman, a further indication the title had no new significance to those involved. Listings retrodated more than 1 year from publication were disregarded in favor of publication year. Every *Moody's* or *S&P* first CEO candidate was cross-checked against *Who's Who*, and usually the preceding head of the corporation was also checked to confirm he did not hold the CEO title previously.

[17] Eight surviving companies fail to adopt by 1976.

[18] The earliest adopter, Container Corp., first had a CEO in 1947. With only two companies adopting prior to 1955, we do not believe left-censoring is a significant problem.

censored due to company death prior to adoption, which we assume to be random. This yields an operating N of 2231 corporation-years.
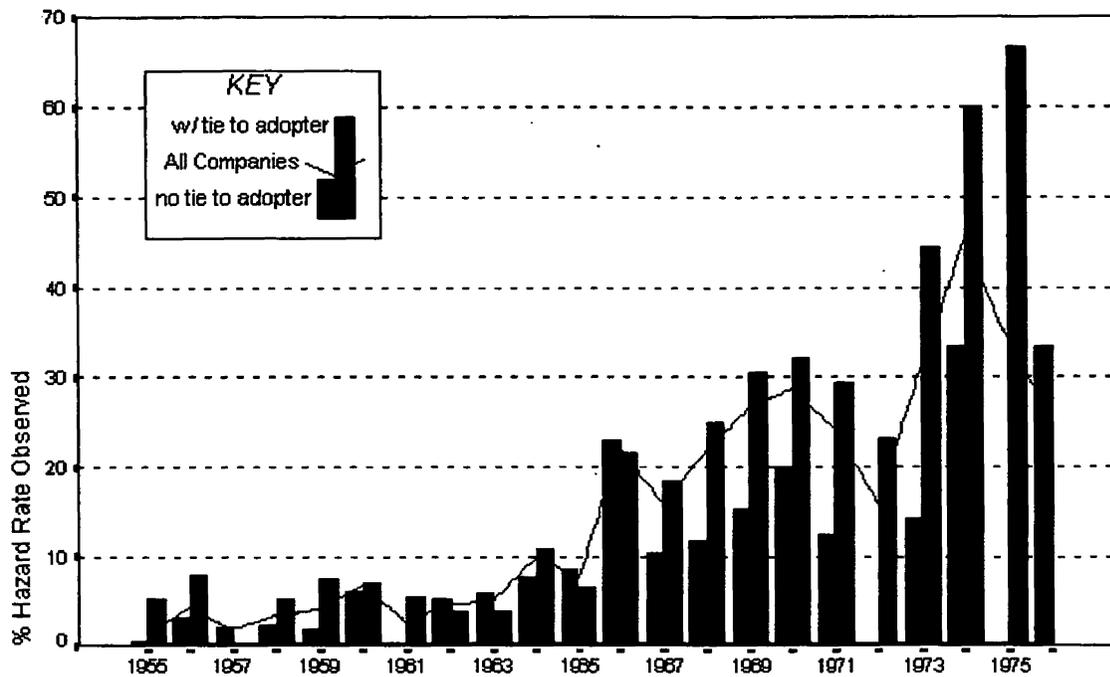

Figure 4. Observed Rate of Adopting CEO Title by Year, 1955-76

Figure 4 presents the observed rates of CEO title adoption by year and Figure 5 presents the raw number of adoptions by year. Based on these figures and the cumulative frequency distribution shown in Figure 2, we divided the diffusion into four periods: (1) an early period with adoption rates below 10% from 1955-1961, (2) an early middle period where adoption rates climb dramatically from 1962-1965, the midpoint of the diffusion, (3) a late middle period from the midpoint to the approximate inflection point 1966-1971, and (4) a late period where rates vary greatly year to year due in part to the small remaining number of non-adopters 1972-1976. In Figure 2, we see that these periods correspond approximately to segments between the inflection points which divide the cumulative frequency S-curve into a lower tail, increasing adoptions phase, decreasing adoptions phase, and upper tail.

Our method is an event history analysis of a single, non-repeating event. The annual publication of our data sources and number of co-occurring adoptions makes a discrete time model preferable (Yamaguchi, 1991; Allison, 1984). Since the original dependent variable, adoption of the CEO title, is binary, we use (SPSS) logistic regression to compute Maximum
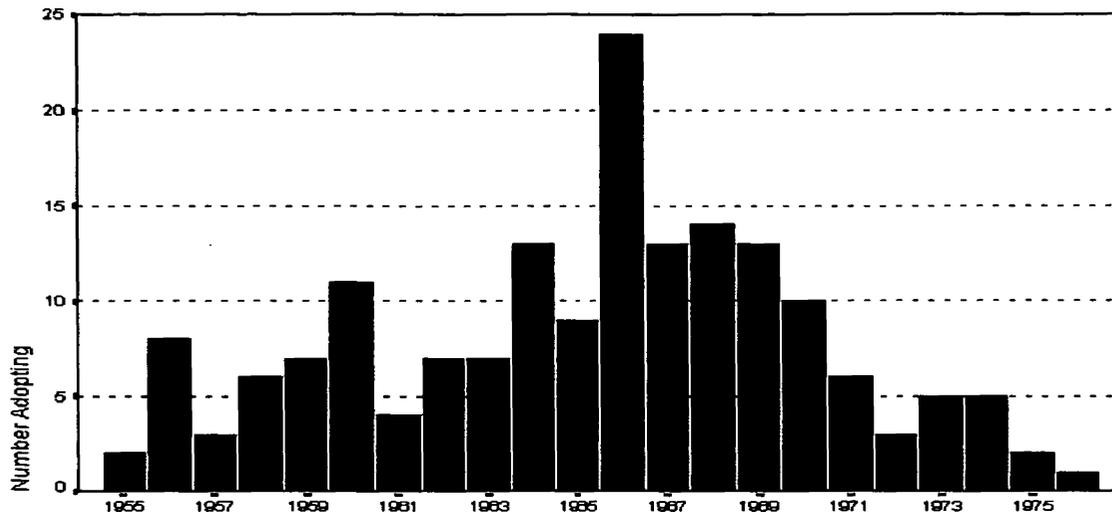
Figure 5. Number of CEO Title Adoptions by Year, 1955-76

Likelihood Estimates for the independent variables in each model. This avoids difficulties caused by bounded variables when using a linear model by taking a logit transformation to make our dependent variable the logit or log-odds hazard probability of adopting the CEO title.

We allow separate estimates of the hazard rate constant and yearly slope within each time period rather than assume a constant for the whole period or use a series of estimates for each year. This is done by using the period variable, YearCat, as a categorical variable, and using an interaction of a year-in-period, YrInPhaS, variable with the period variable.

The primary independent variable is a binary indicator of having ties to previous adopters, TxAnyBn. Some models use a dummy variable TxAnyX2 to indicate multiple ties. Interactions with the period variable allow for effects to differ across periods, and interactions with the year-in-phase allow the effects of a tie to increase with time in each period.

The distribution of number of employees, sales, and long-term debt, earnings, and assets are skewed in any given year and are not-independent of time. The natural log was taken of each of these variables to normalize the skew. To control for annual change, the variables were standardized as z-score deviations from the expected value for the year, derived by regressing the variable on time. These variables are coded as Empl_Z, Sales_Z, Earn_Z, Assets_Z, and Debt_Z. Reported results are for unlagged variables. Analyses with lagged data were run and proved no more significant.

To assess the impact of changes in performance the change in Earn_Z and in Sales_Z, the extent to which a company climbed or dropped in the distribution between years, were included as Earn_D and Sales_D, respectively.

Table 1

Correlations	YearCat	YrInPhas	TxAnybn	Asset_Z	Debt_Z	Earn_Z	Sales_Z	Empl_Z
YearCat	1.000							
YrInPhas	-.305	1.000						
TxAnyBn	.300	.078	1.000					
Asset_Z	-.107	-.023	.147	1.000				
Debt_Z	-.110	-.039	.038	.730	1.000			
Earn_Z	-.093	-.039	.128	.866	.525	1.000		
Sales_Z	-.145	-.042	.151	.825	.578	.740	1.000	
Empl_Z	-.004	-.023	.212	.703	.488	.580	.830	1.000
Earn_D	.082	-.047	.000	-.044	-.054	.143	-.012	-.037
Sales_D	.139	-.087	.016	.055	.025	.143	.083	.073
SicCat	-.034	.003	.000	-.057	-.029	-.108	-.036	.234
HdCarCat	.036	.025	-.036	-.033	-.055	-.073	-.113	-.060

Correlations	Earn_D	Sales_D	SicCat	HdCarcat
Earn_D	1.000			
Sales_D	.435	1.000		
SicCat	-.010	-.007	1.000	
HdCarCat	.041	-.007	.109	1.000

There are a number of SIC codes in the data set, many of which are represented by a small number of companies in this dataset. Therefore SIC has been recoded as SicCat, with all industries in the 1000-3999 range grouped solely by first digit (i.e. 1,2,3) and all other industries put in category 4. Multiple aspects of the corporate head's biography are available. One coding is HdISpec which codes firms C,I,J respectively if they are headed by someone promoted from within the company, within the industry, or from outside the industry. HdCarCat, codes company chief executives from financial (#11), manufacturing (#12), sales (#13), legal (#15), and unspecified (#16) backgrounds within the firm, from financial institutions (#20), outside industrial firms (#40), and other backgrounds (#50). Hdbario is a reduced form of this variable that codes firms B,I,O respectively if headed by a bank officer, insider (modal), or outside director.

There are some significant correlations between certain of the independent variables. Asset_Z, Debt_Z, Earn_Z, Empl_Z, and Sales_Z are highly correlated with one another. In some models they appear together, but they are also compared independently in models V-VII. Earn_D and Sales_D are correlated, and YearCat is somewhat correlated with YrInPhas and TxAnyBn.

Results and Interpretation

Table 2 presents the results of several different models of event history analysis. Model I includes only level and slope effects for each time period. Following these effects across models we observe that the third and usually the fourth time periods have a significantly higher hazard rate than the first period. Firms are from 6 to 14 times as likely to adopt in periods three and four depending on the model. The difference between time periods one and two is less severe, and not significant in most models. In most time periods, the annual slope is either not significant or only marginally so, except in period two where each additional year increases the probability of adopting. This is the early middle stage of the diffusion where the rate of adoption is increasing annually.

Models II and III add the independent variable and allow separate estimates across the four periods. The significance of ties to previous adopters ranges from $p=.011$ to just above $p=.001$ depending on other variables in the model. The general, though somewhat weaker effect appears to hold for periods three and period four[19], but not for period two. Curiously, in all models the effect of having a tie to a previous adopter during period two is not only insignificant, but tends to give worse odds than not having a tie! With this remarkable exception, however, the data offer strong support for the importance of director interlocks as a channel of contagion, especially in the earliest phase of the diffusion. Selected models are shown in Table 3. In the initial stages of the diffusion companies with a tie to a previous adopter are minimally 2.3 times as likely to adopt, and according to most models between 3 and 4.5 times as likely to adopt. This is an even stronger multiplier effect of director interlocks than was reported in Davis' (1991) study.

---

[19] Period Four, with few remaining companies has the most volatile adoption rates. This is reflected in slightly higher standard errors for most estimators.

Table 2.a

#	Variable		I	II	III	Ia	IIa	IIIa
					Some Models			
	Intercept		-3.834	-3.914	-3.989	-4.003	-4.078	-4.114
1	YearCat (2) [0]		.566	.337	.756	.346	.133	.412
	YearCat (3)		2.289****	1.971****	1.830****	2.405****	2.090****	1.941****
	YearCat (4)		2.580****	2.273****	1.571+	2.726****	2.395****	1.754*
2	YrInPhas [0]		.142+	.105	.079	.236*	.196+	.182+
3	YrInPhas (2)		.300*	.316*	.366**	.192	.211	.242+
	YrInPhas (3)		.033	.068	.093	.013	.043	.056
	YrInPhas (4)		.105	.195	.334	-.061	.021	.109
4	TxAnvBn			.548**	.894**		.544***	.735*
5	TxAnvBn (2)				-.966*			-.639
	TxAnvBn (3)				-.069			.050
	TxAnvBn (4)				.619			.634
6	Earn Z							
7	Asset Z							
8	Sales Z							
9	Empl Z							
10	Debt Z							
11	Earn D							
12	Sales D							
13	SICCat 2							
	SICCat 3							
	SICCat Other							
14	Hdbario (B)							
	Hdbario (O)							
15	HdlSpec (U)							
	HdlSpec (O)							
	HdlSpec (I)							
	HdlSpec (J)							
16	HdCarCat (12)							
	HdCarCat (13)							
	HdCarCat (15)							
	HdCarCat (16)							
	HdCarCat (20)							
	HdCarCat (40)							
	HdCarCat (50)							
	χ^2		143.44	152.69	160.92	145.62	154.75	159.971
	d.f.		7	8	11	7	8	11
	N		2230	2230	2230	2230	2230	2230

+ p<.10   * p<.05   ** p<.01   *** p<.005   **** p<.001

[0] Models Ia, IIa, IIIa use an alternate YearCat breakdown.

Table 2.b

Variable		IV	V	VI	VII	VIII	IX	X
				Some	Models			
Intercept		-3.971	-3.999	-3.995	-3.929	-4.050	-3.917	-3.827
YearCat (2)		.879[+]	.873[+]	.952[+]	.828	1.254*	1.134*	.543
YearCat (3)		2.062****	2.059****	2.036****	2.040****	2.184***	2.083****	1.863***
YearCat (4)		1.974*	2.017*	1.993*	1.952*	1.976*	1.831[+]	1.716[+]
YrInPhas		.023	.024	.022	.025	.054	.060	-.001
YrInPhas (2)		.446***	.460***	.431***	.445***	.402**	.377*	.508***
YrInPhas (3)		.176	.194	.193	.184	.182	.162	.193
YrInPhas (4)		.368	.358	.375	.365	.268	.267	.432
TxAnvBn		1.155***	1.134***	1.164***	1.096***	1.170**	1.137**	1.074**
TxAnvBn (2)		-1.333**	-1.309**	-1.332**	-1.248*	-1.540***	-1.467**	-1.167*
TxAnvBn (3)		-644	-.618	-.617	-.626	-.724	-.718	-.513
TxAnvBn (4)		.059	.077	.062	.103	.171	.231	.228
Earn Z		.110					.396	
Asset Z			.138				-.395	
Sales Z				.072			-.392	
Empl Z					.146		.337[+]	
Debt Z						.146	.307[+]	
Earn D								.552
Sales D								-.626[+]
SICCat 2								
SICCat 3								
SICCat Other								
Hdbario (B)								
Hdbario (O)								
HdlSpec (U)								
HdlSpec (O)								
HdlSpec (I)								
HdlSpec (J)								
HdCarCat (12)								
HdCarCat (13)								
HdCarCat (15)								
HdCarCat (16)								
HdCarCat (20)								
HdCarCat (40)								
HdCarCat (50)								
χ^2				152.75	148.91	137.87		
d.f.		12	12	12	12	12	16	13
N		1775	1816	1823	1767	1535	1452	1595

+ p<.10 * p<.05 ** p<.01 *** p<.005 **** p<.001

Table 2.c

Variable	XI	XII	XIII	XIV	XV	XVI
			Some	Models		
Intercept	-4.461	-4.1852	-4.221	-3.866	-4.280	-4.145
YearCat (2)	.872[+]	.972[+]	1.382*	1.054	1.465*	.911*
YearCat (3)	1.966****	2.053****	2.477****	2.022**	2.594****	2.048****
YearCat (4)	1.883*	2.140*	2.223*	1.984[+]	2.586***	2.263****
YrInPhas [o]	.077	.088	.093	.030	.152	.133*
YrInPhas (2)	.378**	.379*	.371*	.452*	.332*	.313*
YrInPhas (3)	.113	.113	.136	.215		
YrInPhas (4)	.341	.223	.169	.235		
TxAnvBn	.995***	1.215***	1.435***	1.488***	1.370***	.835*
TxAnvBn (2)	-1.101*	-1.317**	-1.644***	-1.672**	-1.564**	-.906*
TxAnvBn (3)	-.294	-.478	-1.011[+]	-.924	-.822	-.010
TxAnvBn (4)	.314	.045	.030	-.248	-.226	.448
Earn Z				.276	.269	
Asset Z				-.264	-.258	
Sales Z				-.670[+]	-.641[+]	
Empl Z				.430	.416	
Debt Z				.103	.311[+]	
Earn D				.468	.481	
Sales D				-.628	-.647	
SICCat 2	.465			-.029	-.021	
SICCat 3	.505			-.329	-.313	
SICCat Other	1.035			.380	.382	
Hdbario (B)		-.272				
Hdbario (O)		-.373				
HdlSpec (U)		.718		1.105[+]	1.100	
HdlSpec (O)		.222		.176	.176	
HdlSpec (I)		-.001		-.449	-.442	
HdlSpec (J)		.078		-.161	-.140	
HdCarCat (12)			-.031	.267	.258	
HdCarCat (13)			-.425	-.261	-.273	
HdCarCat (15)			.371	.798[+]	.795[+]	
HdCarCat (16)			-.169	-.118	-.125	
HdCarCat (20)			-.250	-.334	-.368	
HdCarCat (40)			-1.013	-2.026	-2.068	
HdCarCat (50)			.477	-.558	-.555	
χ^2	159.05	146.83	123.64	122.63	115.14	159.25
d.f.	14	17	18	32	30	9
N	1976	1748	1325	1182	1182	2230

+ p<.10   * p<.05   ** p<.01   *** p<.005   **** p<.001

[o] Models XIII and XIV use YrInPhas for categories 1,3,and 4 combined and category 2 separate.

Table 3. Odds Multipliers of Having a Tie to Previous Adopter.

	Model III	Model XIV	Model XV
Period One	3.18	4.43	3.94
Period Two	0.81	0.83	0.82
Period Three	1.57	1.76	1.73
Period Four	4.06	3.46	3.14

Models Ia, IIa, IIIa (shown in Table 2) are equivalent but with an alternate year categorization: Period 1 from 1955-60, Period 2 from 1961-66, Period 3 from 1967-70, and Period 4 from 1971-76. The lack of substantial difference between these models and the primary year catergorization shows that the effect is not an artifact of a particular scheme for distinguishing time periods. Altering the variables included in the model has some impact on the significance and multiplier effect (as shown in Table 3) but in each model director interlocks to prior adopters remains significant. Consistent with our argument nearly all of these other variables fail to be significant in any model. A few are marginally significant.

The effect of each set of competitive isomorphism variables is explored in models IV-X, shown in Table 2. Model XIV is a full model as is XV where the YrInPhas variable set is reduced to a single slope with a dummy to allow a separate slope for period two, based on lack of effects in earlier models. Model XVI, where TxAnyBn is weakest, is the pared down model including only significant variables.

Discussion

The marginal significance of some substantive variables suggest CEO title diffusion does not *fully* approach the ideal contact-only (i.e. simple mimesis) diffusion, but it appears to come close. However, the overall lack of explanatory power on the part of the variables included, and the dramatic significance of the contact variable, director interlocks, especially in period one, suggests the basic soundness of our interpretation. In sum, the CEO title diffusion is a good approximation of a diffusion by contact alone, and as such has given us one of the strongest findings yet on the importance of director interlocks to corporate diffusions.

The only especially unusual result is the strange pattern of period two where there is no benefit of having ties to previous adopters and in fact there may be a slight disadvantage. This is also the only period which has a significant annual slope, which is not too surprising since this is where the fad is really catching on. But what explains the effect of TxAnyBn during this period? We can only speculate. Perhaps this is related to the first appearances of the CEO title concept in business press. Period two is from 1962 through 1965. It is in 1963 that the very first mentions of Chief Executive Officer reach the press. Perhaps the idea became public knowledge among the big business community immediately prior to this publication. That would level the playing field considerably. But if that is the case, then what accounts for return of the effect in periods three and four? Because there are so few companies left in the final period, any one company might affect the estimates, but there is no refuting the improved odds of having a tie to an adopter during the third period. By this time most companies are interlocked with at least one adopter. Perhaps many of the companies without ties to adopters are isolates or fringe firms in the corporate network generally. The period three effect may be a proxy for general corporate connectivity, in which case these companies may still not have heard about or care about the CEO title innovation. Put in other words, our basic premise may be undermined beginning in the second period because information about the adoption is available from sources other than those who have adopted previously.

Although the uncertainty surrounding period two is a potential hole in our argument, generally we believe the data support our contention that corporate diffusions consist of two conceptually distinct processes: contact and choice. The data are largely consistent with these assumptions. The strong multiplier and significance of the TxAnyBn variable and insignificance of those variables which would suggest competitive isomorphism (i.e. a choice process) is at work, support this view. Even if period two introduces a question mark, our argument holds for the earliest adoption period. The importance of director interlocks, which may have been suppressed by previous studies, lies in their office which provides a unique vantage for channeling corporate contagion. Future work on corporate diffusions should take account of this division when they model the diffusion process. We believe future studies that do so may reveal an even stronger role played by director interlocks.

REFERENCES

Allison, Paul D.. 1984. *Event History Analysis: Regression of Longitudinal Event Data.* Sage University Paper series on Quantitative Applications in the Social Sciences no. 46. Beverly Hills: Sage.

Baran, Paul A. and Paul M. Sweezy. 1966. *Monopoly Capital.* New York: Monthly Review Press.

Berle, Adolph, Jr. and Gardiner Means, 1932. *The Modern Corporation and Private Property.* New York: Macmillan.

Burt, Ronald S.. 1987. "Social Contagion and Innovation: Cohesion versus Structural Equivalence". *American Journal of Sociology* 92:1287-1335.

Chandler, Alfred D. Jr.. 1976. "The Chief Executive's Office in Historical Perspective" p.38-49 in *The Chief Executive's Handbook,* edited by John D. Glover and Gerald A. Simon. Homewood, IL: Dow Jones - Irwin.

Coleman, James, Elihu Katz and Herbert Menzel. 1977. "The Diffusion of an Innovation among Physicians" p.107-124 in *Social Networks: A Developing Paradigm,* Samuel Leinhardt, ed.. [Originally published 1957 in *Sociometry* 20:253-270].

Conference Board. 1962. "The President Looks at His Job". *Management Record* (May 1962):2-11+

Connor, John T.. 1976. "The Legal, Ideological, and Philosophical Foundations of the Corporate Presidency" p.22-37 in *The Chief Executive's Handbook,* John D. Glover and Gerald A. Simon, eds. Homewood, IL: Dow Jones - Irwin.

Davis, Gerald F.. 1991. "Agents without Principles? The Spread of the Poison Pill through the Intercorporate Network". *Administrative Science Quarterly* 36:583-613.

DiMaggio, Paul J. and Walter W. Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields". *American Sociological Review* 48:147-160

Domhoff, G. William. 1967. *Who Rules America?* Englewood Cliffs, NJ: Prentice-Hall
------.1983. *Who Rules America Now?* Englewood Cliffs, NJ: Prentice-Hall. p. 66-72 especially.

Eastlack, Joseph O. Jr. and Philip R. McDonald. 1970. "CEO's role in corporate growth". *Harvard Business Review* (May-June 1970):150+

Fligstein, Neil. 1985. "The Spread of the Multidivisional Form among Large Firms, 1919-1979". *American Sociological Review* 50:377-391.

Friedkin, Noah E. 1982. "Information Flow Through Strong and Weak Ties in Interorganizational Social Networks". *Social Networks* 3:273-285

Galaskiewicz, Joseph and Ronald S. Burt. 1991. "Interorganization Contagion in Corporate Philanthropy". *Administrative Science Quarterly* 36:88-105.

Haunschild, Pamela R. 1993. "Interorganizational Imitation: The Impact of Interlocks on Corporate Acquisition Activity". *Administrative Science Quarterly* 38:564-592

Kosnick, Rita D.. 1987. "Greenmail: A Study of Board Performance in Corporate Governance". *Administrative Science Quarterly* 32:163-185.

Marsden, Peter V. and Noah E. Friedkin. 1993. "Network Studies of Social Influence." *Sociological Methods & Research* 22(1):127-151

McDermott, John. 1991. *Corporate Society: Class, Property, and Contemporary Capitalism.* Boulder, CO:Westview Press. p. 23-31.

Mintz, Beth and Michael Schwartz. 1985. *The Power Structure of American Business.* University of Chicago Press.

Mizruchi, Mark S. 1982. *The American Corporate Network, 1904-1974.* Beverly Hills: Sage.
------.1992. *The Structure of Corporate Political Action.* Harvard University Press.

Moody's Industrial Manual. 1954-1995 Editions. New York: Moody's Investor's Services.

Palmer, Donald A., P. Devereux Jennings and Xueguang Zhou. 1993. "Late Adoption of the Multidivisional Form by Large U.S. Corporations: Institutional, Political and Economic Accounts". *Administrative Science Quarterly* 38:100-131.

Pennings, Johannes. 1980. *Interlocking Directorates.* San Francisco: Jossey-Bass.

Pfeffer, Jeffrey. 1987. "A resource dependence perspective on intercorporate relations." p. 25-55 in Mark S. Mizruchi and Michael Schwartz, editors, *Intercorporate Relations: The Structural Analysis of Business.* New York: Cambridge University Press.

Pfeffer, Jeffrey and Gerald R. Salancik. 1978. *The External Control of Organizations: A resource dependence perspective.* New York: Harper & Row.

Rogers, Everett M. 1983. The Diffusion of Innovations, 3rd edition. New York: Free Press. [First edition published 1962]

Standard and Poor's Register of Corporations, Directors, and Executives. 1954-1994 editions. New York: Standard & Poor's Corporation.

Steiglitz, Harold. 1961. "Organization of the Chief Executive's Job". *Management Record* (February 1961):2-9
------. 1961. "Developing Patterns in Organization Structures". *Management Record* (July-August 1961):2-7
------. 1969. "The Chief Executive and His Job". *National Industrial Conference Board Personnel Policy Study No. 214.*

Steiglitz, Harold and Allen Janger. 1963. "When the Chairman is Chief Executive". *Business Management Record* (August 1963):7-11

Strang, David. 1993. *Institutional and Network Effects in the Sociology of Diffusion.* Technical Report 93-4: Department of Sociology at Cornell University.

Strang, David and Sarah Soule. 1997. *Diffusion in Organizations and Social Movements: From hybrid corn to poison pills.* Technical Report 97-2: Department of Sociology at Cornell University.

Telephone interviews. 1994. Blyden Potts interviewed two individuals well placed to report on the early diffusion of the CEO title: one of the earliest CEOs, and the head of a management consulting and executive search firm with contacts to the boards of early adopters at the time of adoption.

Thomas, Robert J.. 1993. "Interviewing Important People in Big Companies". *Journal of Contemporary Ethnography* 22(1):80-96

Useem, Michael. 1984. *The Inner Circle*. New York: Oxford University Press.

Who's Who in America. 1952-1994 editions. Chicago: A.N. Marquis

Westphal, James D. and Edward Zajac. 1997. "Defections from the Inner Circle: Social Exchange, Reciprocity, and the Diffusion of Board Independence in U.S. Corporations." *Administrative Science Quarterly* 42:161-183.

Williamson, Oliver. 1975. *Markets and Hierarchies*. New York: Free Press

Yamaguchi, Kazuo. 1991. *Event History Analysis*. Volume 28 in the Applied Social Research Methods Series. Beverly Hills: Sage.

Zeitlin, Maurice. 1974. "Corporate Ownership and control: The large corporation and the capitalist class." *American Journal of Sociology* 79:1073-1119
------. 1989. The Large Corporation and Contemporary Classes. New Brunswick, NJ: Rutgers University Press