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The Evolution of Naming Strategies Among U.S. Hotel Chains, 1896-1980**

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ORGANIZATIONAL FORM AS A SOLUTION TO THE PROBLEM OF CREDIBLE COMMITMENT: THE EVOLUTION OF NAMING STRATEGIES AMONG U.S. HOTEL CHAINS, 1896–1980

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This paper describes how organizational form can solve the problem of commitment that complicates exchange. I illustrate this by analyzing the commitment problem of hotel chains. Consideration of the commitment problem indicates that hotel chains are better off naming their units the same, so as to create the potential for future business from customers. However, some hoteliers believed units should be named differently so they are not identified with the chain. These two strategies illustrate a powerful tension between strategies that allow the organization to be more consistent, and strategies that facilitate adaptation to local conditions. I analyze the failure rates of hotel chains to show that selection favored chains that employed the naming strategy that generates commitment.

Paradoxically, the ability to restrict one's own freedom of action can be extremely valuable. There are common circumstances where an actor (an individual or an organization) would like to eliminate an action from the set of potential actions that will be available to it at some future time. If possible, the actor would commit now to *not* choosing some action in the future. This is referred to as the commitment problem.

The commitment problem is the basic challenge to exchange over time and geographic space. It is so important that North (1990) claims that the presence of institutions that facilitate credible commitment is the key to explaining the relative performance of economies. Such institutions include well-defined property rights and a legal system that is effective at enforcing contracts. However, contracts are imperfect mechanisms for generating credible commitment. They are expensive to write, and impossible to make sufficiently comprehensive. In this paper I consider organizational form—defined as the combination

of an organizational structure and an organizational strategy—as an alternative to institutional mechanisms of generating credible commitment. Sometimes, an organizational form can structure exchange to overcome the commitment problem.

Specifically, I consider the commitment problem of hotels interacting with travelers. Since travelers often do not have the opportunity to return to a particular hotel the likelihood of future business from a traveler is small. This means that hotels lack the incentive of future business which usually allows an organization to commit to providing good service. Hotel chains that give their units the same name solve this problem because they create the opportunity for repeat business, which gives the hotel chain an interest in satisfying the customer.

The commitment problem suggests that naming units the same is an effective strategy for hotel chains. However, as I will describe, early in the population's history a different strategy was also popular. Together, these two strategies illustrate on one dimension the tension between strategies that generate consistency for the organization, and strategies that facilitate adaptation to local conditions. I test the effectiveness of the strategies

Key words: commitment; evolution; names; hotels; chains

with an analysis of the failure rate of hotel chains and find that chains which named more of their units the same had a survival advantage over chains that didn't.

THE COMMITMENT PROBLEM IN MORE DETAIL

Schelling (1960) illustrates the importance of generating commitment by describing the predicament of a kidnapper who, after a kidnapping, has a change of heart and wants to release the victim. The victim happily promises not to reveal the kidnapper's identity if released. However, the kidnapper realizes that, once released, the victim will have no incentive to keep the promise of secrecy; reluctantly, the kidnapper decides the victim must be killed. Schelling notes that a happier ending could be achieved if the victim could somehow generate a *credible* commitment (one that the victim would rationally uphold after release) not to reveal the kidnapper. In the kidnapping case credible commitment could be created if the victim told the kidnapper a shameful personal secret. Then, the victim will rationally protect the kidnapper's identity to avoid exposure of the secret.

Any exchange that is not simultaneous requires credible commitment of some type, and almost no exchange is perfectly simultaneous (Salancik and Leblebici, 1992). Therefore, organizations must generate credible commitment. For example, consider an organization that manufactures a product that requires significant after-sales service. It is only because the organization can legally bind itself to a guarantee, and perhaps because it can demonstrate its solvency, that it can sell any of the product.

Commitment devices such as guarantees work by increasing the cost in the future of a particular action. In this way, incentives are realigned so that a rational actor will choose not to engage in the behavior that is committed against. This incentive-realigning character of commitment devices is clearly illustrated in the common performance bond. A performance bond is money that an actor puts up, to be forfeited if the actor fails to act in a specified way. So, a construction company may place \$1,000,000 in trust, to be forfeited if the highway they are building is not completed on time. Assume that the construction

company could save \$100,000 by adding a month to the construction time and avoiding overtime wages. In the absence of the performance bond, the profit-maximizing construction company will increase its profits by \$100,000 by not paying overtime, and will miss the deadline. But, with the bond in place, the decision not to pay overtime would result in a \$900,000 loss (\$100,000 in saved overtime less \$1,000,000 in forfeited bond), and the profit-maximizing firm will pay overtime and meet the deadline.

The recognition that credible commitment is generated by making it costly not to meet the commitment suggests two commitment devices which are particularly important to modern organizations: future business and reputation. These commitment devices differ from contracts and bonds in that they don't rely on costly third-party enforcement for their effectiveness. Instead, commitment is generated wholly from the structure of the exchanges between the organization and its interaction partners. If the organization cheats or otherwise disappoints a customer it will lose all future business from the customer. Reputation extends this effect to other customers and potential customers who hear about the organization's failure to satisfy its customers. This penalty for disappointing customers can be useful to the organization. It allows the organization to credibly commit to satisfy the customer if it can. Where there is a potential of valuable future business, or when the organization relies on reputation, the organization can say before the exchange, 'You can be confident we won't disappoint you because we will lose so much if we do.' Obviously, such a commitment can be instrumental in convincing the customer to participate in the exchange.

THE COMMITMENT PROBLEM OF HOTELS

The pattern of interaction between hotels and travelers (their customers) creates a challenging commitment problem. Some travelers visit the same cities frequently and stay at favorite hotels, but many others pass through a city only once and must stay at an unfamiliar hotel. Typically a first-time visitor to a hotel will be uncertain as to the quality of the accommodation and service. More importantly, the hotel owner has little

incentive to please a one-time visitor. The one-time visitor does not represent the potential of future business. Further, the customers of hotels are geographically dispersed, and unlikely to communicate with each other, which makes it unlikely that the hotel relies on reputation (Brickley and Dark, 1987; Hill, 1990). Once the traveler has decided to stay at a hotel there is little recourse if the bed is too soft or the ice machine is broken. The guest will go away unhappy but, since there was little chance of the guest returning anyway, and no reputation to damage, no harm is done from the perspective of the hotel.

Such an incentive structure makes it impossible for the hotel to commit, before the guest registers, to providing a good stay. In the absence of such commitment, we would expect guests to expend substantial effort to verify the quality of the hotel before choosing it, and to develop alternatives to staying at hotels. Historically, both of those things happened in the early part of the twentieth century. A common complaint of hotel and early motel operators was that guests insisted on seeing all the rooms and 'bouncing on the beds' before registering. Travelers ultimately became so dissatisfied with the service of hotels that they turned to camping out of their cars. Autocamping became a craze in the 1920s, with estimates ranging as high as 20 million campers per year (Belasco, 1979).

A new organizational structure, the hotel chain (in 1900 there were only 12), had the ability of changing the structure of the interaction between hotel and traveler and thereby overcoming the commitment problem of hotels. Chains turn one-shot encounters into repeated interactions. Even if the traveler never visits the same city twice he or she will have many opportunities to patronize a large chain. Similarly, the traveler can tell friends about the chain because they too are likely to encounter it on their travels. If a traveler has a pleasant stay at the Holiday Inn at Memphis, the Holiday Inn at Little Rock will get more business. A traveler can be more confident that a large chain will provide good service because the chain has an incentive to encourage future patronage. This interpretation is supported by a 1936 advertisement for the American Hotel Corporation that claimed 'the manager is thinking not only of himself and his hotel. He is thinking of the good name of EVERY OTHER HOTEL IN THE SYSTEM' (emphasis in original).

The ability of hotel chains to generate commitment through repeated interactions depends on the ability of customers to recognize various hotels as part of the same chain. Such recognition would be facilitated by naming the units of the chain the same. So, the commitment argument suggests a clear implication for the naming strategy of chains: chains that name more of their units the same will be more successful.

AN ALTERNATIVE NAMING STRATEGY

Some chain managers recognized the commitment-generating possibilities of linking the fates of chain units together, but not all chain managers saw things the same way. Some thought that chains were perceived as cold, impersonal bureaucracies, an image which was inconsistent with hospitality. These chain managers thought the best strategy was to hide the fact that their units were part of a chain. Indeed, this was the strategy of the largest hotel chain in the first half of the twentieth century, United Hotels operated by Frank Dudley. Dudley felt it was more important for hotels to be identified with the communities they operated in than the chain, and therefore gave every hotel its own name, typically rooted in the history of the city where the hotel was located (American Hotel and Motel Association (AHMA) Archives, Washington DC).

So, there were two mutually exclusive naming strategies for hotel chains: the first to name the units the same for the purpose of generating credible commitment, the second to name the units differently for the purpose of identification with the local community rather than the chain. The tension between these two naming strategies is representative of a more general tension in choosing strategies: whether to select strategies that allow for flexibility and adaptation to local conditions, or to select strategies that cause the organization to be consistent. Certainly, it is a good thing for organizations to adapt to local conditions, even on a dimension such as name. However, there are also benefits to consistency across markets, which precludes local adjustment. The commitment argument outlines one benefit of consistency. Also important are benefits from operational standardization.

Figure 1 shows historically how prominent each

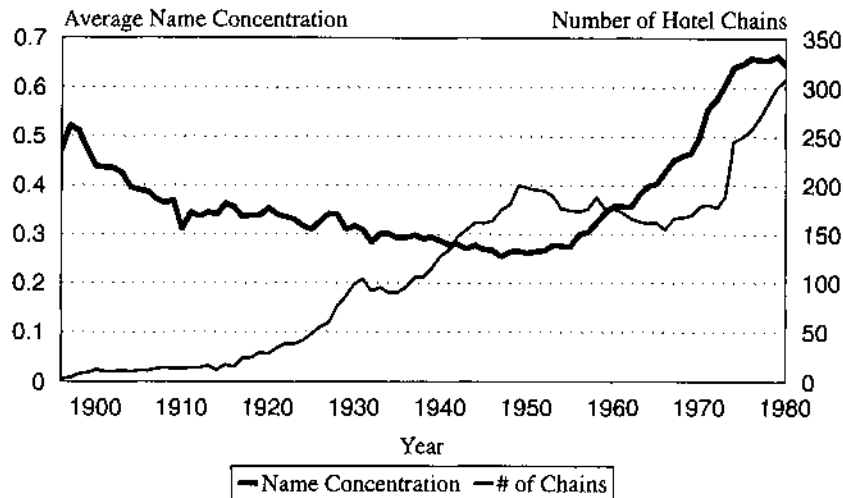


Figure 1. Hotel chain naming strategy, 1896–1980

strategy was (on the second y axis the number of hotel chains in the U.S.A. is indicated). A chain's naming strategy is operationalized using *Name Concentration*, which is the percentage of its units that share the most common name in the chain. If all units in the chain had the same name, *Name Concentration* is 1.0; if all units in the chain have different names, *Name Concentration* is $1/\#$ units. The population average of *Name Concentration* starts at about 0.50 around 1900. At this point in history, there were very few chains, and the dominant chain, the Fred Harvey System, followed a strategy of naming its units the same. The average declines quickly over the first 15 years of the population, largely because the number of chains increases. Average *Name Concentration* remains low until around 1950. After 1950 average *Name Concentration* begins to increase.

Although the prominence of the common-names strategy has been slowly increasing, this is not conclusive evidence that it is more effective than the idiosyncratic-names strategy. It is possible that chains that use the common-names strategy have other characteristics that make them successful. It is even possible that the common-names strategy is less effective and that chains' increasing use of it represents a strategic error. Therefore it is necessary to test the relative effectiveness of the two naming strategies. I will conduct this test by analyzing the effect of naming strategy on the failure rate of hotel chains. Differential failure rates as a function of naming

strategy is one of the processes that could account for the trend shown in Figure 1 (other influences on this trend are considered later in the paper). Failure is a negative outcome for a hotel chain, and a naming strategy that reduces the risk of failure can be considered effective.

DATA

The data represent the population of hotel chains in the U.S.A. from 1896 to 1980. There were only three hotel chains in 1896, so there is no left-censoring problem. Chains are defined as any organization operating three or more hotels or motels. This cutoff for the size of a chain was made largely because that is the definition the industry uses. The data include the complete life histories of 989 chains. After much reading of historical accounts and hospitality industry journals, I have not found evidence of a single chain that is not in the data set, so I'm confident that the coverage of the data is very good.

Archival sources were used to collect the data. The primary source was the *Directory of Hotel and Motel Systems*, which has been published by the AHMA since 1931. That directory claims to list all hotel chains. There has never been a fee for inclusion in the directory. The secondary data source (and the primary source for 1896–1930) was the *Hotel Redbook*. This directory lists individual hotels. The extent of its coverage has varied over the century of its publication, being

comprehensive up to the 1930s (it was standard equipment on railway cars) and growing increasingly more selective since then. For the period 1896–1930 I identified chains by reading all of the advertisements in the *Redbook*, and scanning the listed owners of the hotels. After 1930 I used the *Redbook* to confirm listings and de-listings in the *Directory of Hotel and Motel Systems*.¹

ANALYSIS

The unit of analysis here is the hotel chain. My goal is to determine the risk of a hotel chain failing in any given year, as affected by naming strategy, and a set of control variables. The definition of organizational failure is a challenge, since organizations often persist as legal entities after they have ceased operation. I avoid that problem since my definition of a chain is any organization that *operates* three or more hotels or motels. So a chain fails when it ceases to operate at least three units. An implication of this is that an organization can stop being a chain, even if it doesn't completely stop operations if it drops to operating one or two hotels. Occasionally (21 times) a chain that fell below three units returned later with three or more units. These events were treated as deaths and subsequent new entrances. In preliminary analysis (not reported) I examined the failure rate of such 'reborn' chains and found that it was no different from the failure rate of chains founded in other ways. It is also possible for chains to leave the population by merging or being absorbed by other chains. However, mergers and absorptions were rare in the history of this population (there were 31 as opposed to 620 failures) so I treat them as right censored (Hannan and Freeman, 1988).

I modeled chain failure using $r(t)$, the instantaneous rate of failing. This hazard rate of failure is defined as the limiting probability of a failure

between t and $t + \Delta t$, given that the chain was operating at t , calculated over Δt :

$$r(t) = \lim_{\Delta t \rightarrow 0} Pr \frac{(\text{failure } t, t + \Delta t | \text{operating at } t)}{\Delta t} \quad (1)$$

Parametric estimates of the hazard rate require assumptions about the effect of time (in these models, age) on failure (Tuma and Hannan, 1984). There is disagreement about appropriate parameterizations of age dependence in organizational mortality (Barron, West, and Hannan, 1994) so here I use a piecewise exponential model, which allows the rate of failure to vary in an unconstrained way over preselected ranges of age (Tuma and Hannan, 1984; Barron *et al.*, 1994). In these models, the age range is divided at k points (a_1, a_2, \dots, a_k), which with $a_{k+1} = \infty$, creates k age periods: $I_l = \{t | a_l \leq t < a_{l+1}\}$, $l = 1, \dots, k$. Constants (baseline mortality rates) are estimated for each age period. So, the piecewise exponential model I estimate is of the form:

$$r(t) = e^{\omega(\text{Name Concentration})} e^{\beta x} e^{\alpha_l}, \text{ if } t \in I_l \quad (2)$$

where ω is the coefficient for *Name Concentration*, x represents the vector of other variables, β the associated vector of coefficients and α_l is a constant coefficient associated with the l th age period. The life histories of each chain were broken into one-year spells so time-varying covariates could be incorporated. The reported results are maximum-likelihood estimates obtained using the statistical package TDA (Rohwer, 1993).

CHAIN-LEVEL VARIABLES

Name Concentration

This is the variable of primary interest. It is the percentage of the chain's hotels that share a name which associates them with the chain. A single shared word in hotels' names, such as 'Sheraton' in 'Sheraton Brock' and 'Sheraton Foxhead,' is sufficient to associate the hotels with the chain. Words that were extremely common in names, such as 'Hotel,' were ignored for purposes of calculating *Name Concentration*, because such words do not cause hotels that share them to be associated with each other by customers.

¹To avoid any bias from switching the primary data source in the 1931 data year, I worked backwards to check if chains listed in the 1931 *Directory of Hotel Systems* were identifiable in pre-1931 *Redbooks*. Also, for chains listed in the 1930 *Redbook*, but not in the 1931 *Directory of Hotel Systems*, I followed them forward in post-1930 *Redbooks* to be sure that their disappearance was not attributable to failings of the new data source. These procedures identified very few omissions from the data sources, and allowed me to correct any omissions that were found.

Age

Organizational age as a determinant of failure has been extensively studied. The initially accepted position was that there is a 'liability of newness', and organizations become more robust as they age (Freeman, Carroll, and Hannan, 1983). However, there have been recent findings that contradict the liability of newness (Barnett, 1990; Baum and Mezias, 1992; Carroll and Swaminathan, 1992; Barron *et al.*, 1994). These new findings are in studies where size is modeled in addition to age, which suggests that the earlier findings in support of the liability of newness were due to the omission of organizational size as a covariate (Barron *et al.*, 1994). Since size is included here, I predict failure will increase with age.

Size

Organizational size usually decreases failure. It may represent slack resources and economies of scale. Since economies of scale were a strong motivation in the development of hotel chains, I expect size to decrease chain failure. Freeman *et al.* (1983) argue that the effect of size decreases with growth so I use the natural log of the number of hotels and motels.

Compactness: Regions and City Concentration

Since a source of economies of scale for chains was centralization of purchasing and reservations, chains that are more compact are expected to have lower failure. Two variables test that. *Regions* is the number of census regions in which the chain operates, and it should be positively related to failure. *City Concentration* is the percentage of the chain's units that are in the single city in which the chain is best represented, and it is expected to be negatively related to failure.

Motel

This is a dichotomous variable, coded 1 if the chain is made up predominantly of motels (as opposed to hotels). I have no prediction for its effect on failure.

Franchisor

This is a dichotomous variable, coded 1 if the chain is a franchisor. I have no prediction for its effect on failure.

Hotels Franchised

This is the number of hotels or motels within the chain franchised from someone else. Various predictions could be made for this variable, but I suspect that a greater number of franchise units represent a greater dependence on other organizations (the franchisors), and will increase failure.

Chain Heterogeneity

This variable is included to control for effects of operational standardization. The units of chains can differ on many dimensions that are relevant to consumers. Standardizing on these dimensions may result in cost savings for chains. Such standardization may also be valued by customers because it reduces uncertainty. On the other hand, local adaptation comes at a cost of operational standardization, so it is possible that less standardized chains will be more successful because they better satisfy local conditions.

Unfortunately, it is difficult to find historic information about individual hotels in even one city, and since hotel chains span the whole U.S.A., it is impossible to develop comprehensive information on the relevant dimensions of the units that were part of hotel chains from 1896 to 1980. However, one feature of these units that is available for years from 1956 to 1980 is their size. The *Directory of Hotel and Motel Systems* began providing the size of each unit of each chain starting in 1956. Size is an important feature of hotels, and on many dimensions similarity of unit sizes is a prerequisite for operational standardization. Size reflects the architecture of a hotel, its location (1200-room hotels are very likely to be in the downtown of a large city), the scope of services that are offered (there are minimum efficient scales for services such as room service, or a hotel barber), the ambiance of the hotel, and even its price (Baum and Mezias, 1992: 604 found a correlation of 0.270 between the $\ln(\text{size})$ and $\ln(\text{price})$ of Manhattan hotels from 1898 to 1990).

Chain Heterogeneity is the standard deviation

of the sizes of the chain's units. Chains that are more heterogeneous have less operational standardization, so if operational standardization is a benefit to chains, this variable will have a positive effect on the failure rate. If, on the other hand, local adaptation on the operational dimensions associated with unit size is beneficial, the failure rate will decrease as *Chain Heterogeneity* increases.

Average Unit-Size

Available for observations from 1956 to 1980, this variable is the average size in rooms of the chain's units. This is included to control for the possibility that findings for the *Chain Heterogeneity* variable are the result of chains with larger units having greater heterogeneity (the correlation between *Chain Heterogeneity* and *Average Unit-Size* is 0.81).

POPULATION-LEVEL VARIABLES

These variables vary by year, but not for individual chains within a year. For example, all chains in 1928 will have the same value for *Density*.

Density and Density²

Density in any year is the number of hotel chains in existence at the beginning of that year. There is substantial evidence of a nonmonotonic effect of density on failure rates. *Density* typically has a negative effect on failure while *Density*² has a positive effect. The nonmonotonic effect is explained by attributing two things to density. *Density* is argued to increase the legitimacy of an organizational form (which is good for the form) but also to increase the competition within the form (which is bad for the form), (Hannan and Carroll, 1992).

Density at Founding

Carroll and Hannan (1989) suggest that density also has a delayed effect on failure rates. They argue that high density at the time of an organization's founding produces a permanent increase in the rate of failure because high density at founding implies intense competition at that time. Organizations founded into environments of

intense competition face resource scarcity, which may imprint them with disadvantages that persist into maturity. Strategically, organizations founded into environments of intense competition may be forced into less promising niches. *Density at Founding* is therefore predicted to be positively related to the failure rate.

Independent Units

This is the total number of independent (nonchain) hotels and motels in the U.S.A. at the beginning of the year. Since independent hotels and chains are competing populations, I expect chain failure to be positively related to the number of independent hotels.

Total Chain Units

This is the total number of hotels or motels within all chains at the beginning of the year. Chain units represent a resource for chains, and are expected to be negatively related to failure.

Occupancy Rate

This is the percentage of available hotel rooms occupied during the year. The industry-wide occupancy rate is a general measure of industry prosperity and therefore summarizes all of the macroeconomic variables that might influence chain founding and failure. Failure is expected to be negatively related to the occupancy rate.

Total Franchise Units

This is the total number of hotels or motels franchised at the beginning of the year. Although I argue above that franchising hurts the survival chances of individual chains, the general level of franchising probably increases capital in the industry and is expected to negatively relate to failure.

Table 1 gives basic statistics and a correlation matrix for the variables. Two reasonable expectations for the conditions which lead chains to name their units the same are supported by the correlation matrix. First, there is a negative correlation (-0.24) between *City Concentration* and *Name Concentration*. The commitment advantage from developing repeated interactions across geographic space would not be helpful to a chain

concentrated in a single city. Second, there is a negative correlation (-0.19) between *Chain Heterogeneity* and *Name Concentration*. This is consistent with the idea that chains with high operational standardization give common names to their units to promote recognition, and reinforces the importance of including the *Chain Heterogeneity* measure as a control.

RESULTS

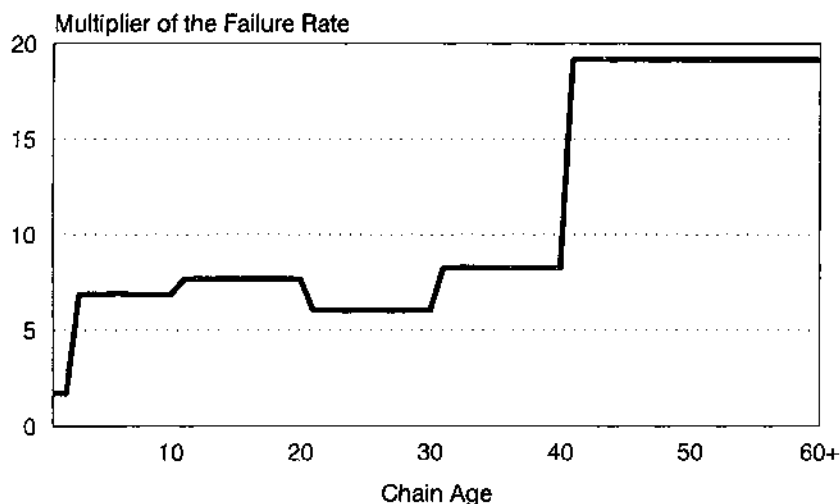
Table 2 provides the results of the hazard model. Model 1 includes all the variables except *Chain*

Heterogeneity and *Average Unit-Size*. Model 1 is a significant improvement over the baseline exponential model (not shown), which posits a constant rate of failure ($\lambda^2_{16 \text{ d.f.}} = 491.90$, $p < 0.01$). Figure 2 shows estimated constants for the seven age periods. The figure shows that, while the failure rate generally increases with age, it is relatively flat for a long period between ages 2 and 40, and even drops for the ages between 20 and 30. This unexpected pattern of age dependence illustrates the appropriateness of the piecewise exponential model—conventional parameterizations of age dependence would be inadequate to model the failure rate of this popu-

Table 2. Failure model and basic statistics, hotel chains, 1896–1980: Coefficients represent effects on log-hazard

Variable	Model					
	(1)		(2)		(3)	
	1896–1980		1956–80		1956–80	
	β	S.E.	β	S.E.	β	S.E.
<i>Chain-level variables</i>						
Name Concentration	-0.444*	(0.20)	-0.518*	(0.24)	-0.547*	(0.24)
Log (Size)	-1.98**	(0.14)	-1.85**	(0.17)	-1.84**	(0.17)
City Concentration	-0.603**	(0.16)	-1.24**	(0.25)	-1.24**	(0.26)
Regions	0.155**	(0.05)	0.133*	(0.07)	0.145*	(0.07)
Motel	-0.161	(0.17)	-0.267	(0.18)	-0.318	(0.18)
Franchisor	1.272 ⁺	(0.75)	0.962	(0.77)	0.935	(0.77)
Hotels Franchised	0.042 ⁺	(0.03)	0.035 ⁺	(0.03)	0.035 ⁺	(0.03)
Chain Heterogeneity	–	–	-0.002	(0.00)	-0.004**	(0.00)
Chain Heterogeneity ² /1000	–	–	–	–	0.004*	(0.00)
Average Unit-Size	–	–	0.000	(0.00)	0.00	(0.00)
<i>Age (in years)</i>						
0–2	0.535	(0.66)	-9.74*	(4.3)	-9.46*	(4.3)
2–5	1.924**	(0.65)	-8.25 ⁺	(4.3)	-7.97 ⁺	(4.3)
5–10	1.931**	(0.65)	-8.25 ⁺	(4.3)	-7.97 ⁺	(4.3)
10–20	2.033**	(0.66)	-8.28 ⁺	(4.3)	-8.00 ⁺	(4.3)
20–30	1.794**	(0.68)	-8.46*	(4.3)	-8.22 ⁺	(4.3)
30–40	2.108**	(0.71)	-8.35 ⁺	(4.3)	-8.11 ⁺	(4.3)
>40	2.953**	(0.74)	-7.86 ⁺	(4.3)	-7.64 ⁺	(4.3)
<i>Population-level variables</i>						
Density	-0.009*	(0.00)	0.064**	(0.02)	0.063**	(0.02)
Density ² /1000	0.031*	(0.02)	-0.077 ⁺	(0.04)	-0.076 ⁺	(0.04)
Density at Founding	0.007**	(0.00)	0.003	(0.00)	0.002	(0.00)
Independent Units/1000	-0.014**	(0.00)	0.016	(0.01)	0.016	(0.01)
Total Chain Units	0.000	(0.00)	0.000	(0.00)	0.000	(0.00)
Occupancy	-0.014*	(0.01)	-0.022	(0.02)	-0.022	(0.02)
Aggregate Franchise Units	-0.001 ⁺	(0.00)	-0.005**	(0.00)	-0.005**	(0.00)
Log-likelihood	-2073.11		-1028.01		-1025.58	
Spells	9606		4918		4918	
Failures	620		309		309	

Test of significance (one-tailed where predictions were made): * <0.10 , ** <0.05 , *** <0.01



Using coefficients of Model 1

Figure 2. Age-specific baseline failure rates

lation. Barron *et al.* (1994) also find a pattern of age dependence which is 'flat in the middle' of the age distribution in their analysis of failure rates of New York City credit unions. However, the subsequent increase in mortality at age 40 in their models (from 1.3 to 2.2 times the failure rate) is less pronounced than the increase found here (from 8.2 to 19.2 times the failure rate). The age dependence of chain failure is not the focus of this paper, but I speculate that the observed pattern results from the increasing obsolescence of chains founded in the first wave of growth of the population, prior to the depression. These chains would be imprinted with conditions of the environment at the time of their founding (Stinchcombe, 1965). It is not unlikely that chains founded prior to the depression had units in major cities, perhaps even located close to the train station. The rise of motel chains (beginning in the mid- to late 1950s) and perhaps the growing importance of franchising (starting around 1960) may cause pre-1930 chains to become antiquated.

In Model 1, *Name Concentration* decreases the failure rate of hotel chains (-0.44 , $p < 0.05$) as predicted by the commitment argument. Chains that use the commitment strategy have lower failure rates than chains that use the local-identification strategy. As Equation 2 indicated, the hazard model is multiplicative, so the magnitude of the effect of *Name Concentration* on failure depends on the other variables. The best way to

see the effect of *Name Concentration* is to consider a multiplier of the rate determined by the other variables. The multiplier of the rate for *Name Concentration* is $e^{(-0.44 \cdot \text{Name concentration})}$. This indicates that a chain that names all its hotels the same (*Name Concentration* = 1) would have a failure rate about 0.64 times that of a chain that named all its hotels differently (*Name Concentration* approaching 0).

Among the other chain-level variables, *Size* decreases the failure rate as predicted. The compactness variables—*Regions* and *City Concentration*, also work as predicted. Chains that are concentrated within one city have lower failure rates, and chains that are spread out among many regions have higher failure rates. *Hotels Franchised* from other organizations raised the failure rate as predicted. Being a *Franchisor* raised the failure rate, while being a *Motel* chain did not significantly affect the failure rate.

Among the population-level variables, the expected nonmonotonic effect of *Density* is found. *Density* has a negative coefficient (-0.0086 , $p < 0.05$) and *Density*² has a positive coefficient (0.0314 , $p < 0.05$). Further, *Density at Founding* has the predicted positive effect on the failure rate. The theory of density dependence is supported by this analysis.

The number of *Independent Units* lowered the failure rate, which is surprising since *Independent Units* seem to represent a source of competition for hotel chains. *Total Chain Units* was not sig-

nificant. The *Occupancy Rate* had the predicted effect of lowering failure. Finally, the failure rate fell with the *Aggregate Franchise Units*. Interestingly, the spread of franchising lowers the failure rate for all chains, but chains that actually franchise from others have higher failure rates.

Model 2 includes the *Chain Heterogeneity* and *Average Unit-Size* variables. As noted, these variables are available starting in 1956, so the number of spells drops from 9606 to 4918. Since Model 2 has severe left-censoring (it eliminates observations from the first 60 years of the population) little attention should be given to the coefficients for age, and the population-level variables. The purpose of Model 2 is to test whether the effect of *Name Concentration* persists when operational standardization is controlled for, and it does ($-0.51, p < 0.05$). The *Chain Heterogeneity* variable, while not significant with a two-tailed test, has a negative coefficient ($-0.0015, p \approx 0.12$).

To explore the relevance of *Chain Heterogeneity*, Model 3 was estimated with the square of *Chain Heterogeneity*. Model 3 is a significant improvement over Model 2 ($\lambda^2_{1 \text{ d.f.}} = 5.04, p < 0.05$). *Chain Heterogeneity* now has a negative coefficient ($-0.0037, p < 0.01$) and *Chain Heterogeneity*²/1000 has a positive coefficient ($0.0036, p < 0.05$). As a chain becomes more heterogeneous, its risk of failure at first decreases, as predicted by the local-adaptation argument, and then increases, as predicted by the operational standardization argument.

IMPLICATIONS FOR THE EVOLUTION OF NAMING STRATEGIES

The results of the failure model support the commitment argument. They show that chains that named more of their units the same had a survival advantage. This supports the idea that the commitment strategy became more prominent via selection. Because chains that name more of their units the same survive longer, the commitment strategy over time becomes more prevalent in the population.

However, differential failure rates of the organizations that hold particular strategies are not the only way strategies become more or less prevalent. Selection may also cause differential growth rates of organizations. The commitment

argument leads to the prediction that chains with higher *Name Concentrations* would have faster rates of growth. I have analyzed the growth rate of hotel chains elsewhere, and *Name Concentration* does have the predicted effect of increasing growth (Ingram, 1996). Strategic differences in new hotel chains also affect the evolution of naming strategies. Figure 3 shows the average (of entrants over 10-year intervals) *Name Concentration* of new hotel chains at the time of their founding. New chains over the last 20 years of the observed history of the population enter with higher *Name Concentrations* than entrants before 1960, indicating the commitment strategy became more popular among new entrants.

Finally, existing chains may change naming strategy. Figure 4 provides a breakdown of the changes in *Name Concentration*. *Name Concentration* can change in two ways. First, a chain can change the names of its units. This happened 294 times in the population, with 157 of the changes increasing *Name Concentration*, and 137 of the changes decreasing *Name Concentration*. There are obvious costs to changing the name of a hotel, but it is not uncommon. For instance, data developed from phone books, city directories, and tourism directories show that there have been 732 hotels at Niagara Falls (combining Canada and the U.S.A.) since 1894, and name changes of ongoing hotels have occurred 374 times. The second and far more common (more than 90% of changes) way *Name Concentration* can change is by adding or dropping units. Since *Name Concentration* is the percentage of a chain's hotels sharing a dominant name, it is likely to change every time the chain adds or drops hotels. If a chain has a *Name Concentration* of 0.80 and adds a unit with the dominant name *Name Concentration* increases. If it adds a unit without the dominant name *Name Concentration* decreases. Many things influence which hotels will be added or dropped, so it is highly probable that most *Name Concentration* changes due to adding or dropping units occurred with little or no consideration of naming strategy.

The combination of differential failure and growth rates, the strategies of entering organizations, and strategic change of existing organizations together account for the evolution towards naming strategies that provide credible commitment. As Figure 1 indicates, that evolution can be slow. Although common unit names confer a

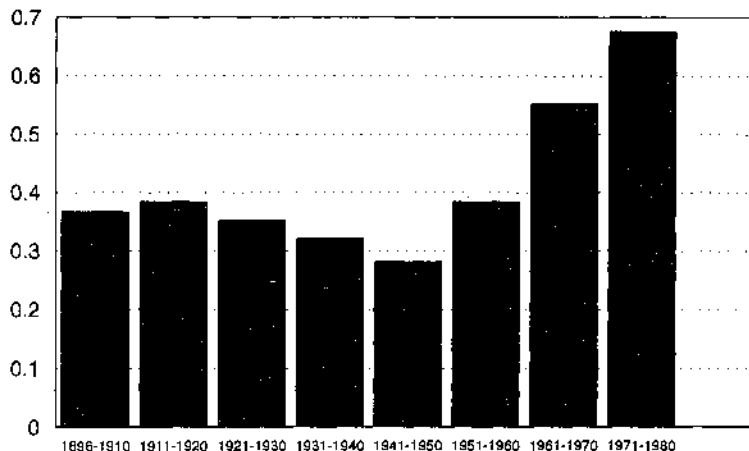


Figure 3. Average Name Concentration of new hotel chains

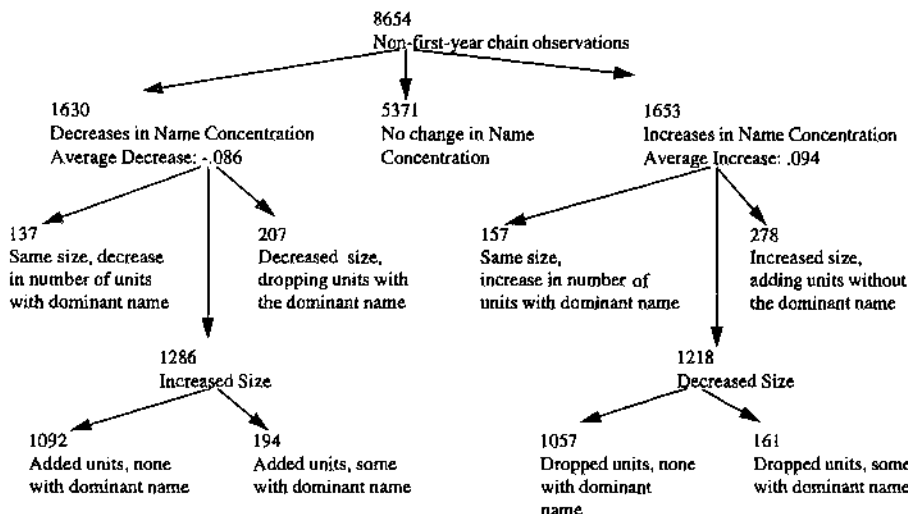


Figure 4. Within-chain changes of naming strategy

strong selection advantage, by 1980 the average *Name Concentration* was still less than 70%. This reinforces the danger of an assumption that evolutionary processes converge quickly on a unique equilibrium, where more efficient organizational forms dominate less efficient ones. Carroll and Harrison (1994) present experimental simulations that show that competitively superior organizational populations do not always come to dominate inferior populations, and when they do it can take a long time.

Two reasons for the slowness of evolution towards common unit names seem likely. First, chain managers may not realize that common names will enhance the survival chances of their organizations. As the hazard models show, selec-

tion is affected by many factors other than naming strategy. Chains can and have persisted despite not giving their units common names. The multiple influences on selection may also make it difficult for managers to judge the selection implications of any one element of strategy or structure. Managers with the mistaken belief that local adaptation is the effective strategy for unit names will have no trouble recalling examples of successful chains that gave their units different names. Second, even if all managers believed in the advantage of common names, the difficulty of organizational change may prevent them from changing naming strategies. As the description of *Name Concentration* changes indicates, there are constraints, such as

opportunities and pressures to add or drop units, that make it difficult to control the naming strategy. Further, the process of change on any dimension can put the organization at risk of failure (Hannan and Freeman, 1984; Barnett and Carroll, 1995).

DISCUSSION

On the dimension of unit names, chains are less likely to fail if they are consistent across markets than if they adapt to local conditions. This is explained by the value of common names as a mechanism of commitment against malfeasance or otherwise disappointing customers. If chains that give their units common names disappoint customers, they could lose substantial business in the future. So, they can attract customers who realize that the chain will lose more than it gains by failing to satisfy the customer. The organizational form of chains with units named the same makes it possible for the organization to put up future business as a 'hostage.'

However, the benefit of consistent unit names does not generalize to a benefit of consistency on all dimensions. On nonname dimensions, operationalized by the size of units, local adaptation does appear to be effective. Up to a point, the risk of failure decreases as the heterogeneity of the chain increases. This is interpreted as a benefit of adaptation to local conditions, but the assumption that chain units vary on size as a response to local conditions should be tested. Further, the nonmonotonic influence of heterogeneity should be explored. If some heterogeneity is good, why is a lot bad? It may be that there are operational complexities associated with heterogeneity which eventually overwhelm the advantages of local adaptation. Perhaps economies of scale in purchasing are negatively related to chain heterogeneity. Other conceivable problems of very heterogeneous chains include training managers and establishing clear career paths for employees. Studies such as this one would be complemented by studying the impact of heterogeneity at the level of the local market. For example, for individual hotels, are the benefits of being part of a chain undermined by costs of being an atypical member of the chain?

Returning to commitment, commitment devices that are inherent in an organizational form are

valuable because they are cheaper than alternative commitment devices that rely on third-party enforcement, such as contracts. The finding here demonstrates the effectiveness of one type of organizational form that solves a commitment problem. Further, it encourages the examination of other organizational forms for their commitment-generating properties. For example, the fact that they have more at risk from disappointing customers may partially account for the success of large organizations. The 'hostage' effect from linking the fates of several organizations might be one reason that conglomerates exist. The small existing literature relating organizational form to commitment comes mainly from game theory. Greif (1993) argues that a coalition enabled eleventh-century traders to overcome a commitment problem inherent in employing overseas agents. Hadfield (1991) shows that the delegation of pricing authority in franchising can overcome a commitment problem necessary to deter entry. While Greif offers some compelling historical evidence, Hadfield's paper is all game theory. If the commitment explanation for organizational form is to develop, it is important to complement formal models with empirical tests.

An obvious organizational form to analyze in terms of commitment is other types of chains. Chains are increasing in importance in countless industries. Indeed, the growth of multiunit organizations documented in the *U.S. Census of Business* over this century suggests that chains have come to dominate, or are becoming increasingly important in almost all service industries. The popular attribution for this growth is to the economies of scale available to chains (Lebhar, 1959), and the results in the failure analysis regarding size and compactness support that. However, another characteristic of the chain form—the capacity to generate commitment—was also found to affect the evolution of chains in the hospitality industry. In almost all of the industries where chains thrive, commitment could be important. By creating interdependency between units, chains raise the stakes for their performance. The failure of one component can have repercussions for many. Just as Schelling's kidnap victim can say 'You can trust me because if I expose you, you will expose my horrible secret', the component of a chain employing the commitment strategy can say 'You can trust us, because if we disappoint you we will lose so much.'

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