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Discussions have drawn attention to the relationship between strategy and structure for much of the last quarter century. Yet, no firm basis has emerged to settle the issue of causal direction or to affirm the relationship's effects on organizational performance. By adding a new dimension to the strategy-structure model, this article attempts to conceptually link long-term performance with (a) the presence of subunits having distinctive competence in strategic planning and (b) the coordination of these differentiated subunits into a discernable microstructure embedded within the overall organization. This new dimension is explored and developed by use of a case of the Pacific Coast seaport industry.

Published research on strategy and structure has shifted increasingly toward quantitative hypothesis testing. Yet, instead of the expected cumulation of knowledge into a consistent whole, the results have been mostly contradictory. Some like Chandler (1962) and Rumelt (1974) have argued structure follows strategy. Others have found evidence that the opposite relationship holds (Bobbitt & Ford, 1980; Bower, 1970; Hedberg, Nystrom, & Starbuck, 1976). More recently, still others have surmised the relationship must be reciprocal (Bourgeois & Astley, 1979; Fredrickson, 1986).

Even though research is a matter of alternative analytical frames, one is tempted to conclude from these inconsistent results that a deeper confusion or oversight exists in the underlying concepts. On the assumption that well-grounded theory is incomplete, this article is an inquiry into the feasibility of redefining structure into two variables, one that determines strategy and the other that is indirectly determined by strategy. It is the first variable of structure that represents something new conceptually and thus is our focus here.

Redefining Structure

In managing long-run performance, how strategic planning gets structured internally and integrated into an organization makes a difference. Moreover, one would expect the planning function's structure to follow different exigencies than

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the organization's structure as a whole. The strategy and structure literature, however, does not generally make such a distinction in analytical level pertaining to structure. In the relationship, structure is conventionally defined as a single variable: the "dominant structure of the whole organization" (Fredrickson, 1986: 281). Referring to the overall division of functional tasks and their integration into an organizational whole, the research has been speaking of a *macro*-structure containing all organizational activities.

Because most of an organization's resources and managerial energies are channeled into the tasks of production, distribution, and marketing, this definition refers to that structure governed not by strategy per se, but by the exigencies of operations management (Burns & Stalker, 1961; Lawrence & Lorsch, 1967; Perrow, 1970; Woodward, 1965). Although this definition of structure allows Chandler and others to see an indirect causal link driven by strategy, is such a meaning appropriate when explaining *how* organizations proactively create and implement strategy? Is structure a monolithic construct, as Fredrickson's assessment suggests, or should it be viewed as more than one variable? These questions are pivotal when it comes to analyzing why some organizations are more innovative and proactive toward the future.

In response, this article identifies a set of independent variables, collectively called a *micro*-structure, and argues that it is a more logical determinant of organizational strategy than the overall macro-structure. We define micro-structure to mean a set of coordinated subunits assigned the critical tasks of designing strategy for the whole organization and creating appropriate implementation policies and changes in operational structure.

This construct is consistent with basic concepts in organization theory. A strategic micro-structure contains a "dominant coalition" of managerial professionals (Thompson, 1967); it constitutes the organization's "distinctive competence" and "creative institutional leadership" (Selznick, 1957) for making strategic choices and planning organizational direction (Child, 1972; Miles, 1982), and it provides the means for implementing strategy by the design of "navigational" policies (Bourgeois & Astley, 1979). Suited especially for transitional environments (Emery & Trist, 1965; Hrebiniak & Joyce, 1985), the micro-structure is integrated around matrix management (Cleland & King, 1968; Knight, 1976) to reduce conformity to a status quo and encourage innovative strategy (Miles & Snow, 1978). Use of matrix integration is also seen as a method that avoids overly rationalized strategic management processes that might lead to lower change-motivated performance (Fredrickson & Mitchell, 1984).

This definition introduces the need to associate performance not only with the whole organization, but also with the design of structural subunits embedded in the organization that deals with transitional change. The underlying logic is simple:

1. Proactive behavior toward an unknown transitional future depends on informed speculation. One would expect such speculation to be less spurious if people with competencies in analyzing and constructing future scenarios are employed in conducive environments and proper decisional capacities.
2. Random-walk speculation is further reduced when these competencies are

coordinated through a colleagial but systematic process of introspection and reality testing.

In short, we are speaking of more than just the presence of a planning function. The focus is on the inclusion of situation-specific competencies *and* the proper integration of these competencies into a coordinated strategic management activity. Organizations will be more successful in adapting to transitional opportunities and constraints if they employ trained strategists in positions of authority and if those strategists talk to each other through a multi-lateral arrangement. Feasibility of the micro-structure dimension is examined through the following case of Pacific Coast port authorities.

Seaports and the Container Revolution

Research Setting and Design

Seaports are run by complex professional organizations intended to be autonomous public enterprises that operate much like a private corporation. Prior to the early 1960s, those on the Pacific Coast existed as phlegmatic bureaucracies with near monopoly control over general-cargo harbor facilities serving their respective local economies. This non-competitive and parochial environment ended with a turbulent transition (1965-1980) involving revolutionary maritime technologies. The so-called "container revolution" introduced direct coastwide competition and enlarged the transshipment market on the Pacific far beyond local urban economies. The critical factors of transition included the following (Boschken, 1988):

1. Deployment of new maritime technologies, offering superior transportation efficiencies relative to older break-bulk methods.
2. Emergence of a global economy that affected domestic flows by more than doubling the size of U.S. foreign trade relative to GNP.
3. A massive shift in foreign trade from the Atlantic to Pacific Rim countries.
4. Adoption of overland continental rail as an economically superior route over the Panama Canal in shipping Pacific Rim trade eastward.
5. Passage of numerous environmental laws and regulations that constrained options, decision-making autonomy, and techniques for harbor development.

The confluence of these factors made for great change and conflict in strategic decision making. Yet, unlike the experience of Atlantic and Gulf coast ports, factors such as labor unrest or growth in international oil transportation were minimal on the Pacific during the period.

With few exceptions, the opportunities and constraints of this transition were equally present for the large established harbors. Those studied here include Long Beach and Los Angeles in San Pedro Harbor, Oakland and San Francisco in the Bay Area, and Tacoma and Seattle in Puget Sound. Three selection criteria are used to enhance comparability. First, to assure similar exposure to the industry transition, only ports situated geographically to transship containers as part of the emerging transPacific/transcontinental transport system were included. Ports in Alaska and Hawaii were eliminated for this reason. Second, to assure coastwide comparability by accounting for the effects of unique intraregional circum-

stances, the case includes only seaports that have neighboring ports of equivalent size. Ports of Portland and San Diego were excluded for this reason. Finally, numerous ports were excluded because their small administrative size made them insignificant to a study of complex professional organizations.

This is a retrospective study involving the collection of data as historical artifacts. Acquired in the same manner from all subject ports, materials included port records, memos and reports; reports and studies done by others; and extensive post hoc interviews taped with port officials. The interview instrument consisted of 10 area questions to maintain comparability of subject matter, but encouraged interactive discussion to allow spontaneous, introspective responses. Quotes from those interviews are used to supplement the empirical data and impart depth and substance to the analysis.

Variation in Performance

For the purpose of making comparisons, organizational performance is defined in terms of transitional change: it refers to long-term economic results that reflect the industry's priority on growth. This *change-motivated* performance also corresponds to two public mandates: (a) to be fiscally independent agencies that stimulate regional economic development, and (b) to design strategies for harbor expansion that do not squeeze out private development or other public land-based programs. Performance consistent with the mandates is reflected in four indicators based on the transitional period between 1965 and 1979. They include (a) end-of-period market share of container tonnage, (b) land use efficiency in 1979 cargo tons per acre, (c) 15-year revenue growth, and (d) 15-year financial liquidity rank. End-of-period market share is used instead of percent change because all ports started in 1965 with a zero base in containers. Liquidity rank is based on a port's proximity to the industry mean, the least variance from it being the most optimal for a growth industry participant (Boschken, 1988).

By applying any of these physical, financial, or market measures, one sees that the ports did not share equally in the fruits of the container revolution. This is shown in Table 1, which arranges the ports according to a composite rank ordering comprised of the four economic measures. For purposes of comparing performance against the strategic organizational characteristics defined above, Table 1 divides the six ports into two clusters of higher and lower performing organizations.

The superior rank ordering of Oakland, Seattle, and Long Beach (cluster 1) was based on consistently high values for all economic measures with two exceptions. Tacoma had the second highest revenue growth rater, but this is explained by its relatively small initial size (Oakland's growth is also disproportionately high due to its small initial size). Long Beach was fifth in optimal liquidity for growth and the indicator remains an anomoly.

Tacoma, Los Angeles, and San Francisco (cluster 2) slipped in industry position during the transition. With the exception of Tacoma's relatively high land use efficiency (due to its handling of high-weight logs) and revenue growth, this cluster as a class performed less well in response to the opportunities provided by the container revolution. Tacoma ranked fourth and Los Angeles fifth in the com-

Table 1
Administrative Performance During the Container Revolution
Pacific Coast Seaport Industry, 1965-1979

Seaport Of:	Coastwide Rank	Regional Rank	Economic Measures: Market Share	Land Use Efficiency	Revenue Growth	Liquidity Rank
Cluster 1:						
Oakland	1	1	29.1%	13,680	131.8%	2
Seattle	2	1	20.4	22,265	52.6	1
Long Beach	3	1	23.2	14,690	33.4	5
Cluster 2:						
Tacoma	4	2	5.8	11,687	59.4	3
Los Angeles	5	2	18.8	5,292	30.4	6
San Francisco	6	2	2.6	7,846	4.6	4

Sources: Port Authority Annual Reports and Financial Statements; Army Corps of Engineers, *Waterborne Commerce* (1980); Maritime Administration, *Expenditure Survey* (1974, 1980)

posite ordering. San Francisco ranked last. In all cases, each of the three ranked second to its regional counterpart.

With this variance in change-motivated performance, what can be detected in the circumstances of each port that might explain this? In light of the container revolution, were there factors that enhanced or detracted from a "restructuration" process? Answers to these questions abound. Some argue that the ports competing in this transition did not have equal size and resources. True, but the top performer during the period was the smallest of the group at the beginning of transition (if anything, size and resources were inversely related to performance). Others suggest that geographical location, physical circumstances, or transportation connections explain the differences. The evidence, however, does not point in these directions either (Boschken, 1988).

What we can say is that the ports experienced differences in management processes related to creating strategy and positioning resources according to the transitional opportunities. Some of these are reported elsewhere (Boschken, 1988) and include managerial perceptions, leadership, and autonomy. Those distinctions of theoretical interest to the inquiry on strategy and structure are found in the existence of strategic subunits, resources committed to strategic competence, and unique subunit intergration. The exploratory analysis below divides the six ports into clusters according to their central tendencies for each of these three organizational factors composing micro-structure characteristics.

Strategic Subunits

One factor that differentiated the ports was the presence or absence of subunits designed to deal with strategic analysis and planning. Behind the superior performance of cluster 1 were efforts to discover significant opportunities, redefine strategic domains, and alter the course of technological innovation. Each of cluster 1 ports met the emerging events with significant new investment and reorganized as crucibles of change that the others would later imitate. As belated followers, Tacoma, Los Angeles, and San Francisco made assumptions that avoided such investments in change.

Early awareness of fundamental industry changes by cluster 1 ports is explained in part by the design and inclusion of organizational subunits having authority to strategize about change at the dawn of containerization. These subunits provided a special conducive place in the organization for speculation about the future and housed those charged with defining new visions of organizational domain. In contrast to part-time activities adjunct to operations, the dedication of full-time specialized subunits would seem to increase the odds of correctly assessing strategic opportunities. As Table 2 notes, two out of the three superior ports had such strategic subunits in place prior to 1965, whereas two out of the three lower performers had no organized planning subunit during the period.

The cluster of seaports found to be superior by the economic measures in Table 1 had three similar organizational subunits that included (a) departments of planning and environmental management, (b) departments of systems management, and (c) departments of facilities design. Each of these components was pertinent to a piece of the seaport industry transition. Economic planning and environmental management housed analytical processes that shared a common focus on *external* socio-economic, political, physical, and technological considerations of development. They had two critical tasks. First, in what has been called "domain definition" (Bourgeois & Astley, 1979), they were charged with anticipating

Table 2
Strategic Subunits: Planning, Systems Management, and Facilities Design
Pacific Coast Seaports, 1965-1979[a]

	Planning and Environment				
Seaport of:	Planning	Market Research	Environmental Management	Systems Management	Facilities Design
Cluster 1:					
Oakland	economic planning and research department (pre-1965)	section within planning and research (pre-1965)	section within engineering department (1965)	section within engineering department (1965)	section within engineering department (1965)
Seattle	integrated planning department (pre-1965)	section within planning (pre-1965)	section within planning (1972)	section within engineering (1970)	section within engineering (pre-1965)
Long Beach	integrated planning department (1972)	section within planning (1972)	section within planning (1972)	ad hoc section within engineering (1972)	section within engineering (pre-1965)
Cluster 2:					
Los Angeles	economic planning section within marketing	section within marketing (1972)	separate department (1972)	separate department (1972)	section within engineering (pre-1965)
Tacoma	None	None	permit activity within sales (1978)	None[b]	None[c]
San Francisco	None	None	None	None	None[c]

Sources: Port authority records; executive interviews.
[a]Dates refer to year in which subunit was established. [b]No subunit; activity handled by CEO and Deputy Director. [c]No subunit; personnel in undifferentiated engineering department had design responsibility as part of public works activity, but were not strategically oriented.

product-market opportunities; second, they acted as boundary spanners in dealing with contraints of environmental regulation and the concerns of other stakeholders.

By contrast, the systems management subunit provided a program *linkage* between the critical factors indentified in the first subunit and questions of engineering feasibility. This involved another two tasks, one of defining product-process aspects of organizational domain obviated by containerization, and one of creating "domain navigation" (Bourgeois & Astley, 1979) systems for managing strategy implementation. The third subunit made decisions on facilities design and construction to achieve technical-core efficiency. Given the high technical nature of harbor transshipment, these two systems and design components were perhaps more critical to strategic management than in industries with low technical requirements for development.

Evidence of each port's specific administrative adoptions further indicate the significance of these strategic subunits to transitional change. The port of Oakland developed in the 1960s a department of Economic Research and Management Planning to seek new opportunities in maritime shipping. Complementing this was a large activity in urban planning, transportation planning, and environmental management, all of which evolved in the engineering department. Due in part to the creation of the Bay Conservation and Development Commission (BCDC) in 1965, Engineering was redesigned to interface with the regulatory agency on all facets of the BCDC Bay Plan's port development element. With the shift away from operations and maintenance, the engineering function acquired its direction from a new systems management section. Consisting of technical planning, project management, and capital budgeting, the subunit was called an "engineering controllership" (C. Roberts, personal communication, December 1, 1980). This arrangement was deemed necessary to maintain liquidity during transitional flux. Because the focus on port development in the Bay Area was influenced by BCDC, a technically oriented external agency, the port's strategic subunits evolved with a technical slant rather than a marketing orientation.

At the port of Seattle, development of strategic subunits was similar to that at Oakland. In reaching "a simple pragmatic conclusion that ... you want solid organization to deal with these problems" (R.D. Ford, personal communication, February 3, 1981), Seattle saw planning as a research unit to show "where the port should go and how we should prepare ourselves for the late 1960s and 70s" (C. Muller, personal communication, February 3, 1981). The subunit was created prior to 1965 to accomplish two tasks. The first involved "a pre-engineering effort which defines and develops basic project criteria for design. [The second was to] provide an administrative service — monitoring design and construction phases" (V. Ljungren, personal communication, February 3, 1981). Like Oakland, this systems management unit also handled capital budgeting. However, where Oakland emphasized systems management, Seattle made planning the lead subunit.

At the Port of Long Beach, strategic subunits were not formed until the early 1970s, lagging events at Oakland and Seattle. Initiated by the SOHIO Oil Pipeline Project, the planning department developed fully integrated specializations

in planning and environmental management. "The lines that distinguish environmental management from basic economic planning are grey ... Long Beach pools a lot of 'planning' people into one. It is like a special projects group" (L. Hill, personal communication, December 18, 1980). Systems management was carried out on an ad hoc basis according to individual project characteristics and requirements. Although "not a discrete unit in the organization" (L. Hill, personal communication, March 8, 1985), this component was called Project Management and Planning.

By contrast, cluster 2 ports had incomplete or fragmented strategic subunits. Tacoma's executive management was dominated by maintenance engineering, sales, public relations, and financial accounting. Little internal strategic planning was present until very late in the period, the port having operated on a plan done by consultants prior to both containerization and environmentalism. Planning was contracted out until 1978, and after that consisted only of one person who handled rudimentary environmental-permit procedures. Located in the sales and public relations division, this late adoption served primarily a passive role away from executive management: "Internally, I'm a listener. That's how most of the people here react to this office. Externally, I'm a pusher" (G. Kucinski, personal communication, February 2, 1981). Engineering lacked a strategic frame in that it had no subunit to maintain a capital budgeting system, provide technical planning, or manage the design process.

Like Tacoma, Los Angeles maintained planning as a subsection within the marketing department that concentrated primarily on trade and pricing analysis and near-term economic forecasting. For most of the period, little effort was directed at long-range planning except some preliminary work on getting permits for a main-channel dredge and land-fill project. Environmental management was an entity separate from planning, but instead of maintaining an analytical and collaborative mode, its director viewed his role in legalistic terms: "I am the negotiator when dealing with regulatory agencies" (C. Hurst, personal communication, December 15, 1980). Los Angeles had a systems management component, but its activities concentrated mostly on small projects rather than domain navigation.

The port of San Francisco contained no strategic subunits. Large scale decisions were made by city officials outside the organization, usually the mayor. Personnel were connected only to small maintenance projects, and until 1979, all planning was done outside the port as an adjunct of the city's planning department. No environmental management, systems management, or facilities design existed within the port. "Anything that has a construction value of more than one million dollars we do not handle in-house" (V. Kiisk, personal communication, December 8, 1980). "Our force is just big enough to monitor the consultants' work" (A. Taormina, personal communication, December 8, 1980). All boundary-spanning activities concerning clients or intergovernmental relations were handled jointly by the CEO and mayor.

Strategic Competence

The second attribute distinguishing two clusters is strategic competence. It is defined as the number of managerial personnel allocated to the strategic manage-

ment area. Although simple numbers never provide a complete picture of competence (i.e., quality of that competence can only be inferential), they do indicate levels of awareness, mindset, and commitment to the activity. Table 3 reports shifts in this allocation over the transitional period (1970 is used to represent the early part of the period because no comparable figures were available for the earlier years). It also shows in the right column the percentage change in the number of personnel in the strategic subunits during the period.

Ports in the first cluster tended to have a higher percentage of total organizational personnel employed in strategic planning than those in the other cluster and included expertise focused on redesigning strategy and handling associated conflicts. Even though employment size is an imperfect measure of competence, it does indicate the relative level of commitment in assigning expertise to the activity. Indirectly, it also reflects professional strength in strategic planning.

For the years 1970 and 1979, Seattle ranked first and third respectively. It also employed more people in strategic subunits than most of the others, particularly in planning and environmental management, as a significant redistribution occurred toward master planning and away from facilities design. Facilitating an openness toward learning, personnel policies for strategic management favored young aggressive professionals, who fill "vacuums like a shot" (R.D. Ford, personal communication, February 3, 1981). Other strategic strengths were present as well. One of the CEOs had spent much of his early career involved in state legistative processes and environmental law, giving him distinctive competence in intergovernmental relations. The chief engineer had come in 1969 from a large multinational engineering firm. He was responsible for establishing the systems management subunit in 1970.

The port of Long Beach ranked second and first, respectively. Its primary variance from others in cluster 1 was in systems management, where it maintained an informal unit staffed by rotating people into temporary positions. Oakland ranked third and second. In addition to technical competence in planning and systems management, the port acquired a chief engineer who formerly had been dis-

Table 3
Shifts in Strategic Competence: Employment
Pacific Coast Seaports, 1970-1979

	Employment in Strategic Subunits				
	% of Total Employment				Employment
Seaport of:	1970	Rank	1979	Rank	Growth (%)
Cluster 1:					
Seattle	42[a]	(1)	18[a]	(3)	(53.5)
Long Beach	38	(2)	25[b]	(1)	6.7
Oakland	24[a]	(3)	23[a]	(2)	186.1
Cluster 2:					
Los Angeles	19	(4)	16	(4)	14.6
San Francisco	13	(5)	11	(5)	(64.0)
Tacoma	7	(6)	5	(6)	(14.3)

Sources: Port authority records; executive interviews.

[a]Does not include aviation planning staff. [b]Long Beach maintained an activity but not a discrete subunit for systems engineering and staffed it on an as-needed basis according to projected requirements.

trict engineer for the Army Corps of Engineers (lead agency for federal environmental reviews) and executive director of BCDC (regional lead agency for state environmental reviews in San Francisco Bay). His personal experience with these agencies made him an ideal boundary spanner for interorganizational relations.

Ports in cluster 2 differed substantially in distinctive competence from those in the first cluster. Los Angeles ranked fourth for both years, and though having competencies relevant to the industry's turbulent transition, its information-processing system for the strategic subunits was badly splintered. The ports of San Francisco and Tacoma had no organized strategic competence, except minimally in facilities design. This expertise was used for small projects, any large work going to consultants. They ranked fifth and sixth, respectively.

Integration Mechanisms

The third observable attribute distinguishing two clusters was integration. With transition in the 1960s, a port CEO's major problem became one of separating and balancing two different patterns of integration below the office. The first involved heirarchical line authority needed in standardized transshipment operations to coordinate routine tasks. Depending how important operations remained for a port, a scalar chain might continue to make up the dominant pattern of overall organizational integration. The second pattern of integration was found within what has been defined as a strategic micro-structure: That is, a separately coordinated set of subunits focused on interdependent strategic tasks.

Comparing integration characteristics, Table 4 shows distinctions between ports in the CEO's perceived role, the overall pattern of integration, and coordination characteristics among the strategic subunits. In cluster 1, integration characteristics consisted of a strategic-organizer role for the CEO, and a matrix format coordinating the strategic subunits. With multi-lateral work flow relationships among the subunits, matrix coordination occurred by mutual adjustment and facilitative project managers. Most communications were informal and verbal.

Each port's specific techniques indicate the significance of matrix integration to strategic planning tasks. At Oakland, the great majority of critical tasks involved strategic development. With over 80% of its cargo transshipped through leased-out facilities requiring minimal port authority involvement, Oakland was structured overall like an engineering and development firm. At the top, this consisted of the CEO acting as chief overseer of a strategic management executive committee. Below the executive committee was a planning structure of multi-lateral work flows coordinated by mutual adjustment. Oakland had one significant anomoly: much of its communications were formal and written "just so we don't forget what we've told each other" (C. Roberts, personal communication, December 1, 1980).

At Seattle, integration was more elaborately designed than Oakland because Seattle retained much of the operations function along with its new-found planning and development focus. The CEO position shifted over the period "from being just the top supervisor to more of a broad kind of policy management role" (R.D. Ford, personal communication, February 3, 1981). This occurred with the evolution of a dual coordination scheme distinguishing strategic management

Table 4
Integration Mechanisms: Overall Organization and Among Strategic Subunits
Pacific Coast Seaports, 1965-1979

	Overall Integration Pattern		Integration Pattern Among Strategic Subunits			
Seaport of:	CEO Role	Coordination Format	Work Flow Relationships	Coordination Method	Project Manager Role	Communications Format
Cluster 1:						
Oakland	strategic management	matrix integration	multi-lateral	mutual adjustment and plan	facilitator and "umpire"	formal/written
Seattle	strategic management	dual integration	multi-lateral	mutual adjustment and plan	facilitator	informal/verbal
Long Beach	strategic management	dual integration	multi-lateral	mutual adjustment	facilitator	informal/verbal
Cluster 2:						
Los Angeles	chief operations supervisor	uniform heirarchy	vertical	heirarchical command	unit commander	formal/written
Tacoma	chief operations supervisor	uniform heirarchy	---------- Internal Strategic Planning by CEO/Deputy ----------			
San Francisco	chief operations supervisor	uniform heirarchy	---------- No Internal Strategic Planning ----------			

Sources: Port authority records; executive interviews

from operations. "We really don't have a very decentralized form of operations management, but when we're talking at the development stage, you simply cannot staff up with all those skills in one place under one nice clean chain of command" (R.D. Ford, personal communication, February 3, 1981).

Among the strategic subunits, work flow was multi-lateral, looking like "a bowl of spaghetti" (C. Muller, personal communication, February 3, 1981). Much of matrix coordination revolved around group or project leaders, and their ability to facilitate and mesh together different views and expertise. As strategic planning moved through the sequence, matrix leadership shifted to different project managers. The planning department took the initial lead, selecting team leaders for the strategy/formation phase. When the process moved into "project-specific planning, EIS efforts, and pre-design, engineering and planning ... [were] co-managers" (C. Muller, personal communication, February 3, 1981). As the matrix shifted into "specific facilities identification ... [engineering would] take the lead" (V. Ljungren, personal communication, February 3, 1981).

At Long Beach, integration involved a separation of roles within the CEO's office between the chief executive and an assistant: "The corporate strategy falls under my wing and the day-to-day problems fall under his" (J. McJunkin, personal communication, December 29, 1980). For integration below the CEO's office, methods varied between operations, where coordination was "very structured and rigid," and the strategic subunits, where coordination was like that in "a family" (L. Hill, personal communication, December 18, 1980). Among the strategic subunits, work flow and interactions were multi-lateral "where we deal with a lot of problems horizontally" (L. Hill, personal communication, December 8, 1980). Authority was defined mutually: "Quite often two division heads have to sit down and define who should be the lead group" (C. Connors, personal communication, December 16, 1980). At variance with Oakland and Seattle, Long Beach did not augment mutual adjustment with broad use of project coordinators. Although engineering used them for facilities systems management and design, the head of planning served as *the* coordinator there. Consistent with multi-lateral coordination, communications among the strategic subunits were typically verbal and informal.

In contrast, cluster 2 ports used hierarchical integration techniques throughout. CEOs tried to maintain a unitary span of control over the entire organization, and did not distinguish a matrix format for the strategic subunits. This left little room for dual coordination schemes to co-exist. At Tacoma, the CEO organized a command structure around "a one-man gang" (R.D. Smith, personal communication, February 2, 1981). The CEO said mutual adjustment "is not in my nature," contending instead that "perfectly clear separation of responsibilities among subordinates" was achievable (E. Perry, personal communication, December 15, 1980). Organization-wide integration involved "a lot of layering" (G. Kucinski, personal communication, February 2, 1981) and caused a lack of informal cohesion where "some folks are so protective of their turf" (R.D. Smith, personal communication, February 2, 1981). What little communications occurred beyond formal commands and routine reporting were largely written.

At Los Angeles, the port's several CEOs saw their role primarily as the chief

operations supervisor. Hierarchy was accepted by strategic managers according to traditional line and staff relationships. "We are asked opinions analogous to the executive director going to the port lawyer and asking for a readout on the defensibility of a contract ... The [CEO] is the direct user of our information" (C. Hurst, personal communication, December 15, 1980). With these separate vertical relationships, strategic subunits seldom found common horizontal links in formulation and implementation, acting instead as "free electrons" (L. Hill, personal communication, December 18, 1980) in the process. Contributing further to coordination problems, the port made a practice of using part-time project managers, who "weren't relieved of other duties" (E. Gorman, personal communication, December 15, 1980).

At San Francisco, there was no strategic management structure. By the end of the transitional period, one port executive vaguely knew what was needed but was unable to formulate essential coordination mechanisms necessary for multi-lateral work flows to exist effectively: "I don't have it worked out. I would not make up a system where I end up running all the departments. There may have to be some sort of formalized network with either regular meetings or a communication channel" (R. Stone, personal communication, December 8, 1980).

Discussion

The construct of a micro-structure is not an entirely novel idea except in its application to the study of organizational strategy. Others employ the idea in reference to designing pieces of a strategy, but not in the process of designing and implementing a *whole* strategy. To understand the distinction, we are defining *strategy* "as a pattern in a stream of decisions" (Horvath & McMillan, 1979: 92; Mintzburg, 1978) constructed from a holistic analysis of an organization's strengths, weaknesses, opportunities, and threats (SWOT analysis). It is not a single decision representing the whole, and it is not the fragmentation of functionally specialized decisions.

In contrast, those studies using a micro-structure are concerned with *fragments* of a whole strategy. In one instance, Fahey (1981) examined a micro-structure process for "strategic energy management," but the area described is a specific functional activity prescribed by policies or "second-order strategies" of "domain navigation" (Bourgeois & Astley, 1979). Moreover, energy utilization and conservation programs are but one decision area in a stream of strategic decisions. We are not informed about the other parts needed to derive critical tasks and their interdependencies from the organization's whole strategy.

In another instance, Burgelman (1983) examined micro-structures as "new venture divisions", but again, the meaning of strategy lacked a holistic content or pattern. Divisions were specifically set up as strategic business units (SBUs) autonomous from the overall pattern of strategic decision making. Although "internal corporate venturing" offers valuable insights into underlying causes, its focus is less on an organized capacity for designing overall strategy, and more on capturing the enterpreneurial energies typically found in product-driven small startups. Burgelman speaks of micro-structures set up for seeding autonomous

ideas and products, not the integration of processes that create and navigate complex organizational domains.

Hence, the contribution of this study is found in its use of a micro-structure to explain the design and implementation of a whole organizational strategy that led to performance leadership in an industry. Although other administrative factors were important in affecting performance (and are examined in Boschken, 1988), the port authority comparisons show some clear qualitative differences in how each "structured-up" to discern and handle strategic opportunities in the container revolution. As displayed in Table 5, those differences can be summarized according to the two clusters of port performance.

In the cluster of higher performers, coverage of strategic planning tasks was made more complete by the early creation of several specialized subunits unique to the transitional environment. The lower performers either had incomplete coverage or had not designed any subunits during the transitional period. Correspondingly, the higher performing cluster made significantly larger commitments than the lower performers in developing distinctive competence in strategic management. Moreover, the higher performing cluster integrated the subunits into a discernible strategic micro-structure embedded in the larger organization; the lower cluster integrated what units they had by hierachy.

What this qualitative analysis tells us is that the conventional arguments and quantitative analyses of the strategy-structure relationship may be conceptually flawed or incompletely operationalized. By distinguishing between two structural variables, we gain some perspective on how the micro-structure might be incorporated into a revised model of strategy and structure. Chandler's seminal work (1962) focused on how a change in strategy indirectly forced structural reorganization. His meaning of structure is consistent with this article's definition of macro-structure and that of the literature generally. Chandler's interest was in explaining how changes in organizational strategy created new *operational* exigencies around which management eventually restructured the whole organization. Except to inform us that certain senior executives changed strategy (sometimes unknowingly) in response to transitional settings, he was not as interested in the process of strategy formation.

Table 5
Summary: Performance and Micro-Structure Components
Pacific Coast Seaports, 1965-1979

	Micro-Structure Factors		
	Differentiated Subunits	Strategic Competence	Integration
Cluster 1: Highest Performers	complete coverage of specializations	higher commitment	matrix
Cluster 2: Lowest Performers	incomplete or absent coverage	lower commitment	hierarchy

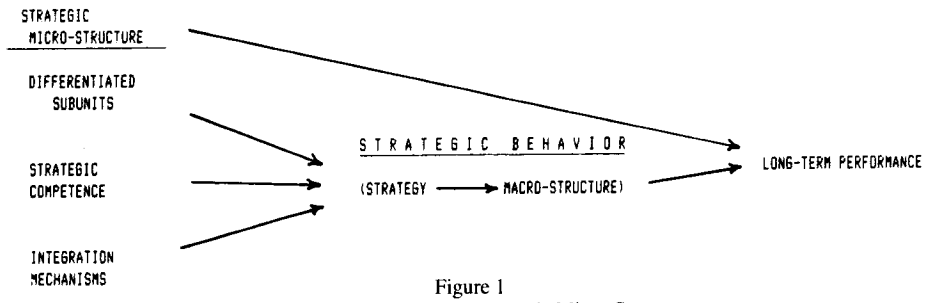

Figure 1
The Causal Relevance of a Strategic Micro-Structure
Theoretical Generalizations

However, the characteristics of a micro-structure found in superior performing ports are not in contradiction to Chandler's conclusions. Instead, they add a useful dimension of strategic decision making that he chose not to explore. Furthermore, the micro-structure poses a rival explanation (or alternatively, a clarification) to the school of thought that argues strategy follows structure. The operational macro-structure may well condition strategic choice options, but it does not contain the variables that structurally determine strategy. Operational structure is more relevant to strategy from the standpoint of representing part of the organization's resources, commonly identified in a strategic SWOT analysis.

In light of this, a revised model is proposed in Figure 1. For change-motivated performance, it depicts the micro-structure as providing a means to determine strategy; in turn, strategy determines the design of an operations macro-structure. Past literature on strategy and structure has been limited primarily to examination of that part of the model identified under "strategic behavior." We do not find in the literature, however, sufficient awareness of the factor most consistently associated with successful strategy in the port study — a strategic micro-structure. As an initial probe into a complex area, this inquiry is only suggestive. But, it is the inconclusive results of prior research that raise the need for further investigation along these lines.

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