Designing high-leverage strategies and tactics

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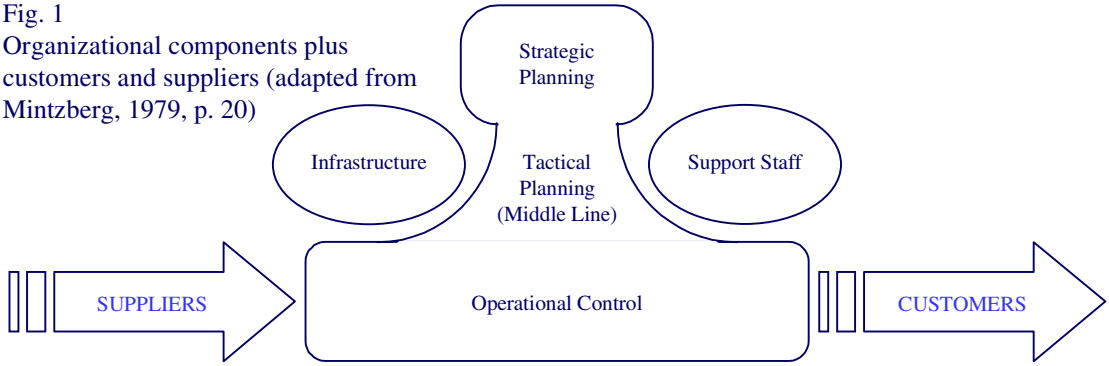
Shingo's breakthrough improves the way strategy researchers and managers talk about and design high-leverage strategies and tactics. Seeing production as a net of processes and operations negates the dysfunctional effects of Anthony's paradigm and leads to a framework for strategic management (SM) as a well-specified net of strategies and tactics that deliver direct, dynamic and structural leverage. Anchored in system dynamics (SD), systemic leverage (SL) analysis and synthesis align multiple, system goal aiming tactics that mix pure action with communication. The insight gained from SM's net view and SL leave for modern management insuperable anything but a tradeoffs-free synthesis of direct, dynamic and structural leverage.

Keywords: competition, co-operation, leverage, operation, process, production, strategy, system dynamics, tactics

A few general principles contend with the tightly-knit community of strategy researchers and practitioners who work by intuition and folklore, borrowing ideas from military strategy, politics, economics, marketing, sociology and psychology (Hirsch et al., 1990). Anthony (1965) tried to reduce this intellectual chaos with a framework that achieved *paradigm* status (Hax & Candea, 1984; Wiseman, 1985). It decomposed managerial decision making into three parts: strategic planning, tactical planning and operational control (Fig. 1). Resembling Boulding's (1956) hierarchy of complexity, these organizational components also form a hierarchy along several dimensions: time horizon, management level, value judgment and decision importance.

Fig. 1
Organizational components plus customers and suppliers (adapted from Mintzberg, 1979, p. 20)



Assuming that production entails simple and restricted activities, Anthony tried to minimize top managers' intervention in production and to transfer decision-making authority from staff to line managers. His colleagues and disciples were already using his paradigm when it appeared in 1965. Soon, his view permeated management systems and, by oversimplifying their complexity, it isolated production from SM (Skinner, 1969). This segregation has blocked operational research from penetrating strategic management despite its success at logistics support (Mintzberg & Shakun, 1978). Now, both the SM-production interdependence (Chaffee, 1985; Hayes & Pisano, 1994; Marucheck et al., 1990) and deterioration owed to maximizing sub-system performance (Hitch, 1953; Zeleny, 1994a) call for a conceptual re-integration of management systems to help managers design high-leverage strategies and tactics.

Leverage has long been used, but its application to management systems is new. Using the term loosely creates confusion. To end it, Ritchie-Dunham (1998) links systemic leverage (SL) analysis to the resource-based view of the firm (Foss, 1997) and resource dynamics (Warren, 1977). SL analysis provides a coherent process and tools for leveraging system resources efficiently, effectively and sustainably. It supplies at once the structure and language for understanding and applying leverage, which strategy makers need in order to solve dynamically complex problems.

To defeat the dysfunctional effects of Anthony's paradigm, this essay first enacts Shingo's framework that depicts production as a net of processes and operations (Shingo & Robinson, 1990). Apart from practical implications for production, Shingo's breakthrough leads to a framework for strategic management as a concatenated net of strategies and tactics. Second, to facilitate high-leverage strategy designs through the alignment of multiple, system goal aimed tactics, the essay complements Singo's extension to SM with SL analysis, anchored in Forrester's SD (1958 & 1961).

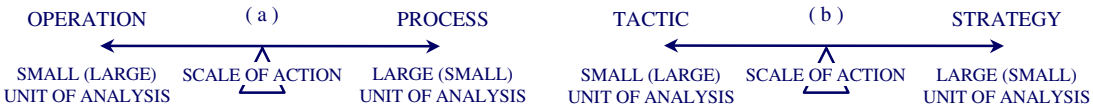
Extending Shingo's work to SM requires juxtaposing the conventional view of production and SM (thesis) and their net view (antithesis) toward a tradeoffs-free synthesis of management systems–a trademark of modern management (Ackoff, 1981; Anderson et al., 1989; Forrester, 1958; Hayes & Pisano, 1994; Pine et al., 1993; Zeleny, 1994b). SM's net view is a dynamic view of strategy (Porter, 1991) that can at once bridge the indomitable gap between strategy and production, and help managers craft high-leverage strategies and tactics.

Dysfunctional Effects

① *Production*. Despite "the risk of reinventing the wheel" (Swamidass, 1989, p. 264) and extant semantic differences, production researchers strive to advance the production strategy field to its potential urging colleagues to leverage literature into a practical theory (Anderson et al., 1989; Haas, 1987; Ronen & Rozen, 1992). Yet, semantic differences repel managers who seek quick benefits from simple checklists. Soon they find themselves reacting to corporate and business strategies, with marketing taking a boundary-spanner role between production and a firm's competitors and customers. Production strategy fails when its design is bypassed. Those paying no attention to design see it as merely *perfunctory* or *self-fulfilling* (Marucheck et al., 1990).

Calling design perfunctory or self-fulfilling is itself dysfunctional. Yet, Anthony's second oversimplification effect is even more so. It lurks in the practice of seeing production processes and operations as overlapping phenomena, lying on a single dimension (Fig. 2a). Sharing this view, production text writers say that the primary difference between the two lies in the scale of action: depending on context or one's view, process is the large (small) unit of analysis and operation is the small (large) one.

Fig. 2 Unidimensional view of (a) production and (b) strategic management



This linear image implies that production performance improves if operations–the small unit of analysis–improve. Some production (or operational) researchers hold the more obscure notion that, if operations improve, processes–the large units of analysis–also improve. This reflects Anthony's (1965) assumption of simple and restricted activities in production. Though compelling, it blocks theory building and keeps production strategy an underdeveloped field, inextricably bound by its tautological definition: "a strategy for production–a part of business strategy or strongly integrated with the business and corporate strategies" (Anderson et al., 1989, p. 137).

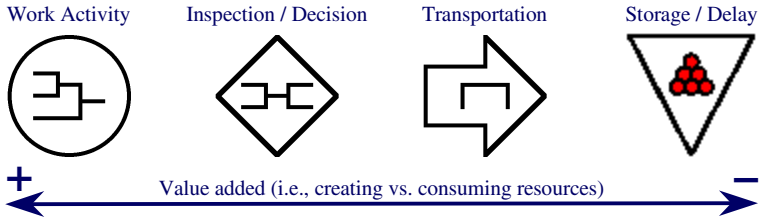
② *Strategic Management.* Anthony's view infects both SM and organization theory. Among the *five* parts of Fig. 1, for example, a flaring middle line connects strategic planning to the operational core. Showing a single line of top-down authority, these parts comprise nothing more than cheap linguistic makeup, artfully extracted from Anthony's work–cheap *language games* (Donaldson, 1992). This is also clear in Quinn's rendition of strategies versus tactics where he states that the difference between the two "lies in the scale of action or the perspective of the leader" (1991, pp. 5-6). Perfectly isomorphic to Fig. 2a, Fig. 2b matches Quinn's view: both he and Fig. 2b see strategy as the large (small) unit of analysis in strategic management and tactic as the small (large) one.

Anthony's paradigm accounts for all the attention and ink devoted to pinning SM down, narrowing it, as in Porter's (1985) *generic strategy* dogma. Must we give elbowroom to the *creator*, *proselytizer*, *idealist*, *bricoleur*, and *diviner visionaries* of Westley & Mintzberg (1989, p. 23), the *five*-cell typology that emerged from the clinical study of *five* leaders? Again limited to the *five* toes of the human foot, Mintzberg's *Five Ps for Strategy* (1991, p. 12) is another example of dysfunctional theorizing which, according to Samuelson (1990), cretinizes SM. Turning inductive theorizing into an epistemology of *typing*, along with emphasis on epiphenomena, both in the name of linking theory to practice, project strategic management as a pseudo-skill, a credential that business students waste time and money on (Samuelson, 1990). This *linking* is precisely what production researchers and managers–in their genuine quest for knowledge–have been looking for, but in the wrong direction.

Shingo's Breakthrough

Terms like *distinctive competence*, *mission*, *strategy* and *task* have become commonplace in production research and practice. Even the word *task* is a definite amount of work to Webster, but to Skinner (1969), a notion akin to production strategy itself. Evidently, Skinner wedged the semantic-differences battle in the wrong direction. According to Taylor (1919), Webster wins this one: production includes activity tasks or bundles leading from raw material to goods or services. If production's task is to deliver a specific good or service, then a process can make it so via two or more among four operations: work activity (or machining), inspection (or decision), transportation and storage (or delay). Figure 3 shows the activity bundles that production operations contain, also called *therbligs* (from Gilbreth spelled backward).

Fig. 3 Production operations

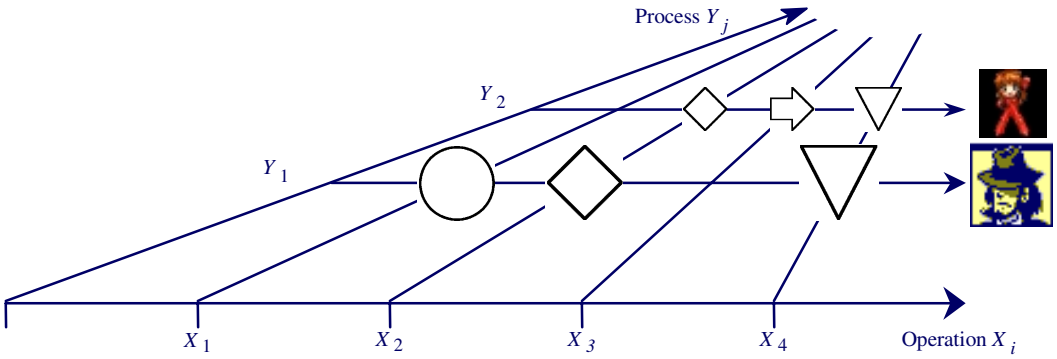


Unfortunately, therbligs' directly observable motion captures the attention of production researchers, managers, and journalists–particularly those not yet sensitized to Fig. 2's pitfalls. Some may even conclude that production consists exclusively of operations. Production entails, however, two distinct activity streams: on the x axis of Fig. 4, operations (X_i) depict the activity of workers and machines (and customers in services); on the y axis, processes (Y_j) link operations from raw material to finished goods and services (Shingo & Robinson, 1990, pp. 23-31).

The intersecting X_is and Y_js of Fig. 4 show production as an operations and processes net. To Shingo this is clear, but most production researchers, managers and journalists call for operations improvements as the means to improving production;

only a few emphasize process improvements. Far from well understood is the idea that process improvements can greatly improve production performance, and to a much higher level than secondary operational improvements can.

Fig. 4 Customer–driven production: an operation and process net (i.e., concatenated network)



In production, superior performance demands process improvements; operations play a supplementary role. A conveyor improves, for example, a transportation operation, not transportation. Similarly, an automated warehouse (a multimillion-dollar investment) improves an inventory operation, not inventory. Improving a process that incorporates transportation and inventory eliminates the need for conveyors and automated warehouses altogether.

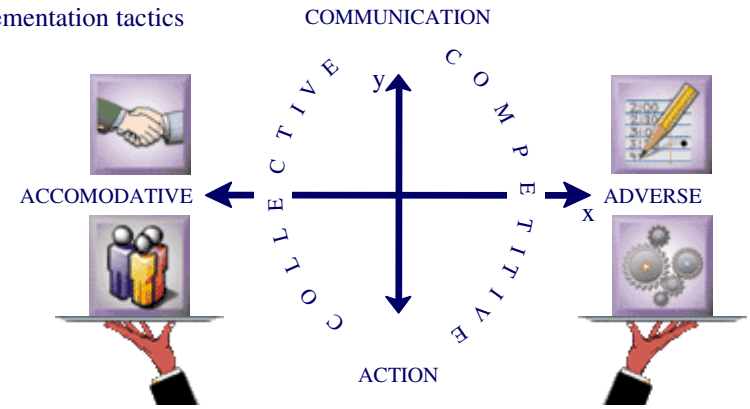
To improve production performance, researchers and managers must emphasize process improvements before operational ones. Drawing a clear distinction between operations and processes is a fundamental step toward breaking free from the segregation effects of Anthony's paradigm. Redesigning (or reengineering) production pro??cesses (Hammer & Champy, 1994; Johansson et al., 1994) to enable a tradeoffs-free corporate-, business- or functional-level strategy requires creativity (Hayes & Pisano, 199; Zeleny, 1994b), a prerequisite to innovation (Evans, 1991). The enabling stems from decision alternatives that put a firm's strategic planning team on the spot. Having to decide which benefit to promote first among high-quality products and services, high efficiency, high flexibility and supersonic speed of delivery leads to a good market position no matter what the strategy level (Georgantzas, 1995).

Strategic Management: A Net View

SM has also advanced despite semantic differences, but its terminology is as confusing as that of production; its content (and process) as ill-defined too. The conventional SM view (Fig. 2b) discounts the difference between strategy and tactics. Naturally, visible tactics capture the attention of strategy researchers, managers and students not yet sensitized to this difference. Some may even conclude that strategic management consists exclusively of collective (Bresser & Harl, 1986) or competitive (Porter, 1985) tactics. SM involves, however, two activity streams: the design and implementation of strategies, and the design and implementation of tactics.

Strategies aim at superordinate goals, i.e., sustainable profits, which require high-leverage tactics (Beckhard & Harris; Lele, 1991; Radford, 1980; Steward, 1999). Each tactic can be collective or competitive, action or communication. The x-axis of Fig. 5 shows tactics' behavioral nature, ranging (left-to-right) from accommodative to collective to neutral to competitive to adverse. The y-axis shows their physical nature, ranging (top-to-bottom) from communication to action–or structural move, if it changes the structure of a situation. Individuals, groups and organizations design goal-seeking strategies by combining two or more among the four tactics of Fig. 5.

Fig. 5 Implementation tactics

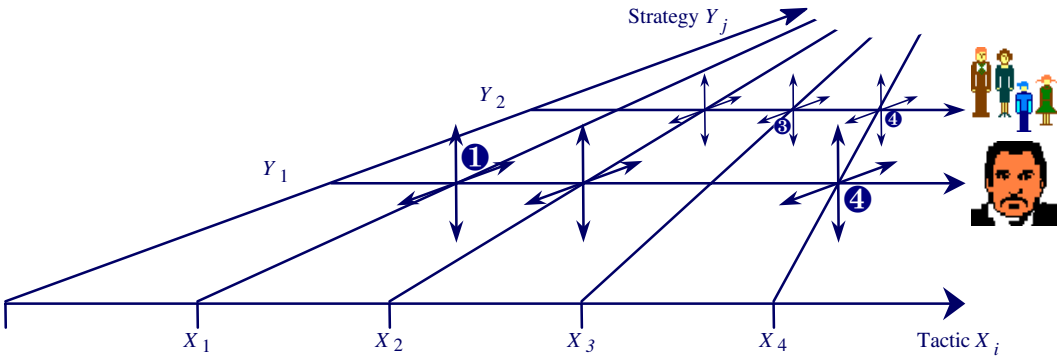


Effective strategies combine collective and competitive tactics that mix action with communication. Action costs more to reverse than communication but repeated communication reversal leads to lost credibility. In the late 1970s, for example, the Israelis could have reversed their accommodative tactic of evacuating the Sinai Desert by force and at a high cost. The subsequent adverse communiqué that they would have had reoccupied the territory unless Egypt reciprocated might not involve a significant cost if reversed. That two-tactic (#3 & #1) strategy ended an ugly war.

In today's new realities, any firm, industry, country or world region that subscribes exclusively either to competition or to collectivism performs contrary to its objectives (Drucker, 1989). Emphasis on competitive tactics alone leads to adversity, which defies the benefits of competition. Similarly, a collectivism bias leads to accommodative protectionism, which deprives firms and industries from the critical mass of production output and sales they collectively need to survive.

The intersecting X_is and Y_js of Fig. 6 show SM as a net of goal-seeking strategies implemented through the alignment of collective and competitive tactics. The need for high-leverage strategies aimed at achieving superordinate goals, i.e., customer satisfaction and transnational reciprocity, becomes clear to the transnational economy participants as firms learn to design their future (Ackoff, 1981; Keen, 1991). To improve performance, managers must stress the improvement of strategies over tactics (Nutt, 1989). Drawing a clear distinction between strategies and tactics as two different streams of activity is a fundamental step toward breaking free from the segregation effects of Anthony's paradigm. And breaking free is required for high-leverage strategies and tactics that can really move, i.e., leverage, a system.

Fig. 6 Strategic management: a tactics and strategies net



Systemic Leverage

Egressing from the resource-based view of the firm (Foss, 1997) and resource dynamics (Warren, 1977), Ritchie-Dunham (1998) presents his SL analysis process for

controlling system resources efficiently, effectively and sustainably. To overcome the dysfunctional effects of ambiguous definitions, he links SL to Forrester's structure hierarchies (1968). Namely, SL's direct, dynamic and structural components correspond to: (1) actions that people take, (2) goals that drive actions and (3) goals that interrelate in a system, respectively (Table 1).

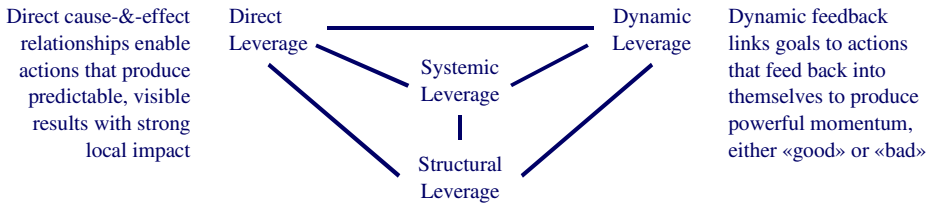
Table 1 Systemic leverage components

Component leverage	Structure hierarchy	System dynamics language	Space distance	Time distance	High leverage source
Direct	Actions that people take	Direct cause-&-effect relationships	Short	Short	Relationship multiplier: «How we do what we do»
Dynamic	Goals drive actions	Loops make effects feed back to actions	Short	Long	Design feedback loops with explicit goals: «Work with, not against goals»
Structural	Alignment of multiple system goals	Nested/interlinked information feedback loops	Long	Long	Align multiple nested or intelinked goals both laterally and vertically: «Synergize»

Much like a firm's knowledge of its business, cost competitiveness and partnering capability (Steward, 1999), the ability to leverage resources constitutes a core competency that helps firms meet strategic imperatives, i.e., becoming customer driven and improving work and service delivery. Although SL exists in all firms, most managers do not take advantage of it because high strategic leverage comes from carefully balancing all three components. Understanding each component requires problem-framing insight combined with strategy articulation skills. AT&T, Federal Express and United Airlines are well aware of what SL takes (Lele, 1991).

SL's component interdependence (Fig. 7) requires working separately on each component. Depending on a firm's strategic situation, the initial component analysis and ensuing synthesis determine what's feasible and what's not (Steward, 1999). Analyzing a firm's leverage in a given industry allows building high SL into its strategy and gaining a competitive edge by anticipating or changing the rules of the game–even the game itself (Lele, 1991; Scott-Morgan, 1994).

Fig.7 Systemic leverage component interdependence



Strategy design begins by identifying variables pertinent to a strategic situation along with causal interrelationships. Changes in these variables have profound effects on performance. Some variables belong to a firm's external environment, i.e., competition intensity, government regulation and currency rates. Changes in these variables determine performance over time, depending on how well managers understand the causal linkages underlying the strategic situation (Georgantzas & Acar, 1995).

Other variables are within a firm's control, a consequence of prevailing policies and managerial decisions. Pulling on or pushing these *internal levers* requires tactics that affect performance through a dynamic chain reaction–a sequence of events. It also helps to distinguish between market and non-market variables, particularly when strategy entails aspects of political economy and administrative legislation (Baron, 1993, especially Ch. 7). To achieve a high-leverage change in strategy, the results of

designing and implementing direct, dynamic and structural leverage tactics must be anticipated, considered along with changes in a firm's environment and with respect to the firm's matching resource capabilities, stakeholder concerns and goal networks.

Specifically, at any given time (t), a firm's systemic leverage (SL_t) is a function of three leverage component multipliers:

$$SL_t = f(\lambda_{dir}, \lambda_{dyn}, \lambda_{stt}), \quad (1)$$

where: λ_{dir} = direct leverage multiplier, (1.1)

λ_{dyn} = dynamic leverage multiplier, (1.2)

and λ_{stt} = structural leverage multiplier. (1.3)

Looking for strategic leverage–quite possibly systems thinking' *bottom line*–entails working separately on each component and multiplier in Eq. 1. The question that SL analysis poses is: "Over the long term, where should we concentrate our firm's resources so as to maximize returns?" Typically, low SL_t results from symptomatic intervention. High strategic leverage results from SL analysis, which helps managers see through complexity and enables them to design the high leverage tactics required for significant and sustainable performance improvements in strategy and production.

① *Direct Leverage Analysis* entails direct cause-&-effect relationships with low dynamic complexity, i.e., a cause is close in space and time to its effect. Close space and time proximity implies that action leads to within-sight results observable very soon or even instantly. Given a particular action X, its result Y is obtained through a direct leverage multiplier λ_{dir}, so that:

$$Y = \lambda_{dir} \times X. \quad (2)$$

Derived by Ritchie-Dunham (1998), Eq. 2 shows how the effect of X on Y depends on the direct leverage multiplier λ_{dir}. Managers often resort to direct leverage mechanisms because they do not have enough time nor the right tools to probe, test and validate intuition about high-leverage, i.e., dynamic and structural, mechanisms that yield stronger results with less effort. Depending on the situation at hand, X takes the form of either a resource or a pure action or communication (Fig. 5).

In a service environment, for example, service delivery Y depends on the number of service workers X and their service productivity λ_{dir}. In order to increase its service delivery rate, management can either increase X at the same (low) λ_{dir} or directly leverage service workers by increasing λ_{dir}. A manager exerts direct leverage when (s)he talks to workers trying to motivate them in order to work smarter. In this instance, communication X affects worker motivation Y. λ_{dir} determines how message X is communicated or how what is said is said. Saying, *Your work is okay so far, but you must work harder!* may or may not yield additional effort. Saying instead, *I am very excited about your work so far, and hope to see you continue to improve as well as you have been* might prove more inspiring. That is the meaning of λ_{dir} or *How we do what we do* (Table 1).

Words are free. It is just as easy for managers to praise workers instead of being derogatory, choosing high over low direct leverage. Surely is, in the short term, more efficient to change system behavior through changes in policy rather than in physical flows. The freedom to choose comes, however, with the responsibility to exercise caution: applying high direct leverage in certain places within a system can cause havoc. Pressure to sell harder, for example, can accelerate a firm's growth beyond its carrying capacity. Inappropriate resource allocation strains a firm's capability elsewhere in its system.

In addition to a direct lever's *location* within a system, one must also pay attention to its potential *systemic effect*, i.e., the amount of change in system-wide behavior

caused by a single change at a single leverage point. Using direct leverage is most appropriate for local, short-term changes in resources that do not materially affect other system parts. Although Meadows (1997) would object, small local changes can leave system-wide resources intact. It is equally crucial, however, to find and to understand how to use a few direct levers that affect material system resources.

② *Dynamic Leverage Analysis* requires understanding implicit system goals or goal sets. This SL component entails cause-&-effect relationship chains that feed information back to causes, thereby creating dynamic complexity, i.e., a cause is close in space to and not too far in time from its effect. Although time delays make one wait (Sterman, 1989), changes are within sight. It does take time, for example, for a painkiller to relieve a headache. Actions now cause within-sight results observable soon but not instantly. After n time periods, action X_n yields result Y_n, obtained through the dynamic leverage multiplier λ_{dyn}:

$$Y_n = \lambda_{dyn} \times X_n, \tag{3}$$

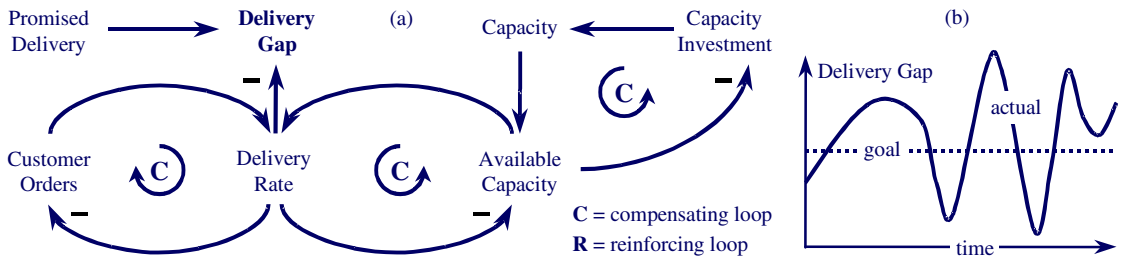
$$\text{where: } \lambda_{dyn} = \left| \frac{\text{Actual Gain}}{\text{Desired Gain - Actual Gain}} \right|. \tag{3.1}$$

Equation 3 shows how well an information feedback loop attains its desired goal. The term "gain" in Eq. 3.1 tells the change in a performance variable (i.e., Y_n) over the n-period information feedback loop cycle. The information feedback loop is the unit of measure in dynamic leverage analysis. In fact, all information feedback loops are goal-seeking structures (Forrester, 1968c, p. 14). A *negative* or *compensating* (C) feedback loop tries to reach a homeostatic plateau, negating perturbations away from it. A *positive* or *reinforcing* (R) feedback loop seeks an implicit growth goal, thereby compounding perturbations away from its current state. Even supra-exponential growth systems are simply attempting to reach an implicit goal.

Once implicit system goals are understood, dynamic leverage enables designing and implementing tactics efficiently. Both the initial and the subsequent maintenance effort required for implementation are minimal once managers see the momentum-gaining (accelerating) or momentum-dissipating (decelerating) behavior of information feedback loops.

High dynamic leverage hides, however, deep inside cause-&-effect relationship chains with feedback loops and behind multiple implicit goals. An industrial service firm tries, for example, to close its delivery gap (Fig. 8) with on-time delivery at a minimum cost. Yet, the delivery gap fluctuates wildly (Fig. 8b), draining resources. In this case, high dynamic leverage hides in the capacity feedback loop. Once this is seen, management can either secure resources for sufficient service capacity or change the cost minimization goal or, alternatively, align promised delivery with available service capacity. To unleash a firm's hidden potential, its management must make system goals explicit, understand them, and design structures, policies and incentives around these goals: *Work with, not against goals* (Table 1).

Fig. 8 (a) Cause-&-effect chain example that creates (b) complex system behavior through time



③ *Structural Leverage Analysis* and *Synthesis* examine how well multiple actors align their goals with organizational resources. The *analysis* entails examining multiple, interrelated feedback loops in the entire strategic situation or system–composed of the sub-systems previously examined for dynamic leverage. With the implicit sub-system goals or goal sets understood, the *synthesis* aims at integrating and aligning the sub-system goals with the overarching goal of the entire system. Creating such a *shared vision* requires that the explicit and implicit sub-system goals or goal sets work together to achieve the overall system goal (Porter, 1991).

One must identify both the *actual* and the *stated* system goals and sub-goals in order to align sub-system goals (Argyris, 1993). Actual feedback sub-system goals form higher-level goals that allow inferring the actual overall system goal. Comparing the bottom-up *actual goal* synthesis with the top-down *stated* approach helps in measuring: (1) *goal alignment*–Do system sub-goals work synergistically or antagonistically? (2) *goal domination*–What differences between actual and stated system goals determine which unwritten rules of the game dominate (Scott-Morgan, 1994)?

Equation 4 shows how the result Y_n, which stated system goals accomplish after n time periods, depends both on the actual goals underlying action X_n and on the structural leverage multiplier λ_{stt}:

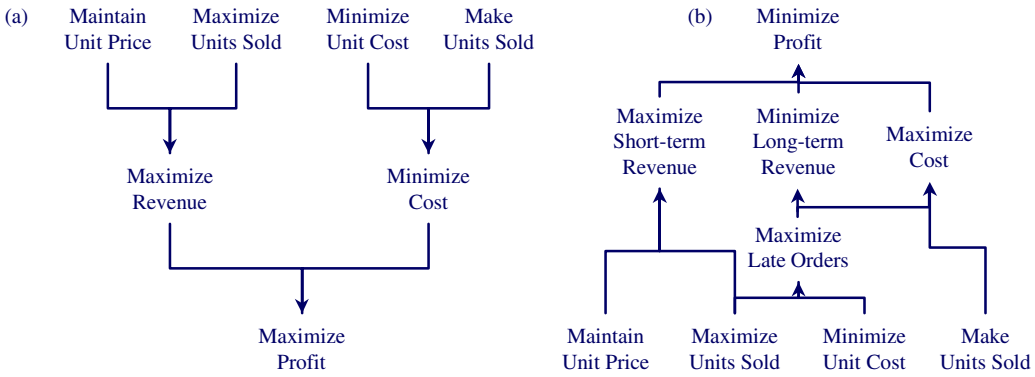
$$Y_n = \lambda_{stt} \times X_n, \tag{4}$$

$$\text{where:} \quad \lambda_{stt} = \left| \frac{G_{stated,\,n}}{G_{actual,\,n} - G_{stated,\,n}} \right|. \tag{4.1}$$

Equation 4.1 measures the relative goal alignment that the structural leverage multiplier λ_{stt} contributes, i.e., how well the system as a whole attains its global goal. Its formulation assumes that subsystem goal alignment minimizes the effort lost by misaligned actions X_n that attempt to achieve the entire system's goal (Ackoff, 1971).

The stated goal network of the industrial service firm example showed that two sub-system actor goals composed its stated profit maximization goal: sales and production. The sales goal was to maximize revenue; the production goal to minimize cost. Together, the two sub-systems' stated goals were supposed to maximize the firm's profit (Fig. 9a). Yet, the firm's actual sub-system goals interrelate, converting the firm's actual global goal to maximizing short-term revenue and minimizing long-term profit (Fig. 9b), a shocking difference from the firm's stated goal net.

Fig. 9 System goals: (a) stated (top-down approach) and (b) actual (bottom-up approach)



Conflicting interests cause unintended consequences. Since high structural leverage hides in the interrelated goal alignment of sales and production, the industrial service firm's management might explore ways to align the two sub-system goals so that they do not purposely hurt shared resources. It pays to *synergize* (Table 1). If

sales were responsible for net revenue, for example, that might promote a more accurate delivery promise (Fig. 8a). In this case, the global goal was high sustainable profit, initial profitability was low and it worsened through time. The firm's strategy–defined by its global stated goal and sub-goals–provided very low structural leverage.

Conclusion

To negate the dysfunctional effects of Anthony's paradigm on management systems, Shingo's framework enacted an antithesis both to the traditional view of the relationship between processes and operations and to its isomorphic counterpart between strategies and tactics. Shingo's view not only unearths and negates the dysfunctional effects of Anthony's paradigm, but also looks at SM as a well-specified net of strategies and tactics (Fig. 6). Paralleling the new net view of strategic management, and anchored in Forrester's system dynamics (1958 & 1961), the essay shows how SL analysis facilitates high-leverage strategy designs through the alignment of multiple-goal tactics that mix pure action with communication.

Blending the net view of SM (Georgantzas, 1995) with SL (Ritchie-Dunham, 1998) is in perfect syzygy with the plural rationality of individuals, groups and organizations (Singer, 1991, 1992, 1994). Singer contrasts monothematic conventional universes of traditional rationality with the multiverse-directed view of modern plural rationality. In counterpoint, Morecroft's (1985) SD model of a sales organization traces the dysfunctional interactions among sales objectives, overtime and sales force motivation to the intended (stated) singular rationality that permeated thinking and action at that firm.

Because their superordinate goal is neither to compete nor to collaborate but to develop new capabilities of creating unique ways to serve their current and future customers (Moore, 1991), firms can benefit from the multiverse-directed view of SM as a net of strategies and tactics. They can even break free from the traditional tradeoff tyranny of the mass-production era. Evidently, adherents to tradeoffs-free management like Bell Atlantic, Daimler-Benz, Hallmark and Motorola "can have it all" (Pine et al., 1993, p. 111).

SM's net view delineates the tension between competition and cooperation that becomes a "fundamental condition" along an industry's life cycle: depending on production capabilities, firms need both strong competitors and powerful allies to market products and services (Moore, 1991, p. 138). Extending Shingo's view to SM allows focusing managerial attention on efficient strategy designs in order to eliminate tactics that unnecessarily increase adversity or protectionism. The attention-shifting capability of SM's net view toward a dynamic view of strategy (Porter, 1991) can help to narrow, to bridge even, the indomitable gap between strategy and production dynamics–where "economic paradigms and theories are rich" (Anderson et al., 1989, p. 138).

Production dynamics contributed to the genesis of systemic leverage analysis. SL analysis and synthesis bring system thinking tools to strategic planning in order to help managers capture, understand, analyze, design, and communicate the complexity inherent to the dynamic systems in which we all live and work. The phased nature of SL analysis can help a management team derive most wanted benefits as it explores the strategy design process for direct, dynamic and structural leverage. Namely, SL analysis helps a design team's:

1) insight or understanding about the strategic situation or system under consideration,
2) ability to communicate this understanding or insight, and
3) ability to leverage or move the system.

Firms that adopt SM's net view along with SL analysis design sustainable, dynamic business systems. Consequently, they highly leverage the utilization and accu-

mulation of organizational resources that provide real competitive advantage, i.e., long-term inimitable assets (Lippman & Rumelt, 1982).

Although the capabilities-development and tradeoffs-free management ideas originated in the context of production strategy (Hayes & Pisano, 1994; Pine et al., 1993; Zeleny, 1994b), the plurally rational view of strategic management as a net of strategies and tactics can recast these ideas with direct implications for strategy making. SM's net view gives, for example, a new meaning to Mintzberg's (1991) *deliberate*, *emergent*, *realized*, and *unrealized* modes of business conduct.

Together, a well-understood strategic situation or system, with SL-based interactive design and implementation of collective and competitive tactics toward explicit global goals, and the ability to communicate for a shared understanding, ought to enable a deliberate strategy to become realized over time. Conversely, an emergent strategy would have to depend exclusively on broadly conceived purposes, with inadequate information and misunderstood perceptions of both the structure and the leverage hiding behind the strategic situation under consideration.

Even with interactive SL design and implementation of tactics, a small likelihood exists that firms hoping for an emergent strategy will survive long enough to see it realized. Likewise, as the world economy moves closer to a highly interconnected state of transnational reciprocity and firms learn to design high-leverage strategy and tactics, a large likelihood exists for the emergent-strategy mode to become the unrealized one. The world's new economic, political and social realities make the deliberate mode of SM the preferred one.

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