From Business Strategy to Corporate Strategy Dynamics – wielding System Dynamics to attack strategy for the multi-business firm.

Paper to the System Dynamics Society Conference

Quebec, July 1998

Dr Kim Warren: London Business School, Sussex Place, LONDON NW1 4SA, U.K.

tel +44 171 262 5050 **fax** +44 171 724 7875 **e-mail** kwarren@lbs.ac.uk

Abstract

Although firm diversification is more likely to be successful if 'related' to prior activities, the dynamics of how this related diversification unfolds is poorly understood. This paper builds on established Strategic Management definitions of resources and competences, and provides a standard method for formulating these issues in diagnosing and designing business strategy. It extends the framework to provide a formal method for representing inter-business resource- and competence-based synergy. Competitive advantage can be built in several markets simultaneously, and new businesses established quickly, by transfer or sharing previously accumulated strategic resources between business units. Where resource-transfer is not feasible, competitive advantage can still be built by leveraging competences that have arisen from learning about resource-building elsewhere.

The framework's application is illustrated by modelling the history of the retail consumer services activities of Whitbread PLC, formerly a major brewing firm. Following robust growth of one restaurant chain to 1985, resources were shared and transferred into several related businesses. Where resource-transfer was not feasible, competences were leveraged through sharing of support functions. The model will illustrate not only the leverage of this transfer and sharing, but also its limits.

The Firm as a Dynamic Resource-System

The contribution of firm resources to competitive advantage.

Most managers understand the importance of building and conserving the resources of their business[1,2]. These resources may be 'hard' or *tangible* items, including cash, plant, customers, products or staff, or soft, *intangible* factors, such as product quality, staff morale, or service standards. Furthermore, managers know that resources are interdependent - consistent product quality can be used to build reputation with customers, and a strong client-base may help attract the best recruits. 'Ranking' resources by importance is thus pointless - if *any* key resource is in bad shape, the whole business is endangered.

Strategic management writers have recognised the management challenge of trying to build and maintain the *level* or *stock* of each resource.[3] Resources are built by boosting the *flow* of new resource into the stock - winning customers adds to a customer-base, promoting products and services increases market-awareness, training raises the average skill level of staff. Often, though, management struggles to prevent resources being lost - customers are lost to rivals, resignations reduce employee numbers and skills, increased expectations reduce the customer-base, and technological improvements reduce the value of current staff skills.

Managers usually want more resources, so wish to raise the inflow to the stock and minimise the outflow. These imperatives are directly captured by the 'stock-and-flow' framework at the heart of the system dynamics method[4]. The time-path of the resource reflects the history of accumulations and depletions it has experienced, as shown for a customer base in Figure 1. (*Note that the units of in-and out-flow are **always** the units of the resource 'per time-period' and that the time-slope of the resource is the net of in- and out-flows).*

---

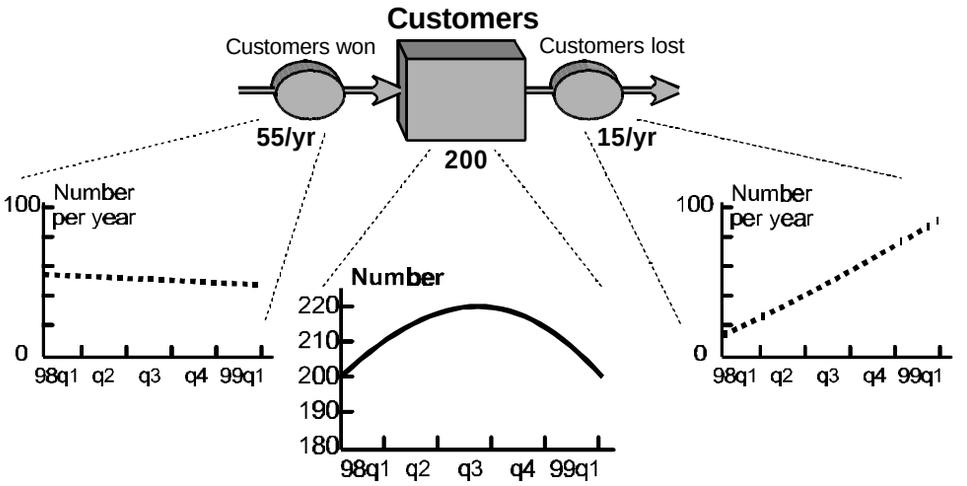
[1] A managerial discussion of these ideas can be found in many Strategy texts; see for example Grant RM (1995) *Contemporary Strategy Analysis.* 2nd Edn (Chapter 5), Cambridge MA: Blackwell.

[2] Deeper discussion of these concepts can be found in the literature on strategic resources, for example, Wernerfelt B (1984) 'A Resource-Based View of the Firm', *Strategic Management Journal*, **5**, 171-180, Barney JB (1991). 'Firm Resources and Sustained Competitive Advantage'. *Journal of Management* **17**: 99-120, Mahoney J and Pandian JR (1992) 'The Resource-Based View within the Conversation of Strategic Management'. *Strategic Management Journal* **13**: 363-80, and Peterlaf MA (1993) 'The Cornerstones of Competitive Advantage: a Resource-Based View'. *Strategic Management Journal* **14**: 179-192.

[3] Dierickx, I. and Cool, K, 'Asset stock accumulation and sustainability of competitive advantage', Management Science, 35, 1989 , pp.1504-1511

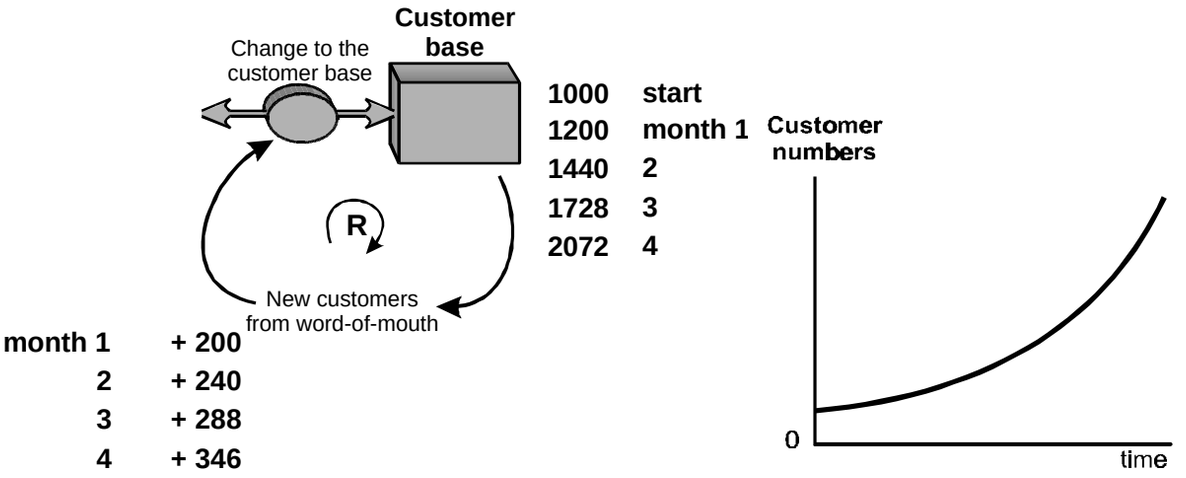
[4] Forrester JW (1961) *Industrial Dynamics*. Productivity Press: Cambridge MA

Figure 1: Building, and losing, the customer-base resource.



Managers also appreciate that, whilst linear rates of change in key resources are common, feedback effects can create escalating growth, trigger spirals of decline, and impose limits to growth. For the customer-base example, the power of reinforcing feedback can be measured by putting numbers on the customer-base and estimating how many new customers might be gained each month. This is illustrated in Figure 2, where the ‘R’ in the middle of the structure indicates ‘reinforcing’ feedback.

Figure 2: Quantifying self-reinforcing growth for a customer-base resource[5].



Limits-to-growth can also arise from feedback, holding back the firm's ability to grow its resources. Figure 3 illustrates this process for a firm whose service capacity can only cope with a certain number of customers. The 'B' at the heart of the structure indicates 'balancing' feedback that generates characteristic 'goal-seeking' behaviour, tending to correct any deviation of the system from its initial state.

---

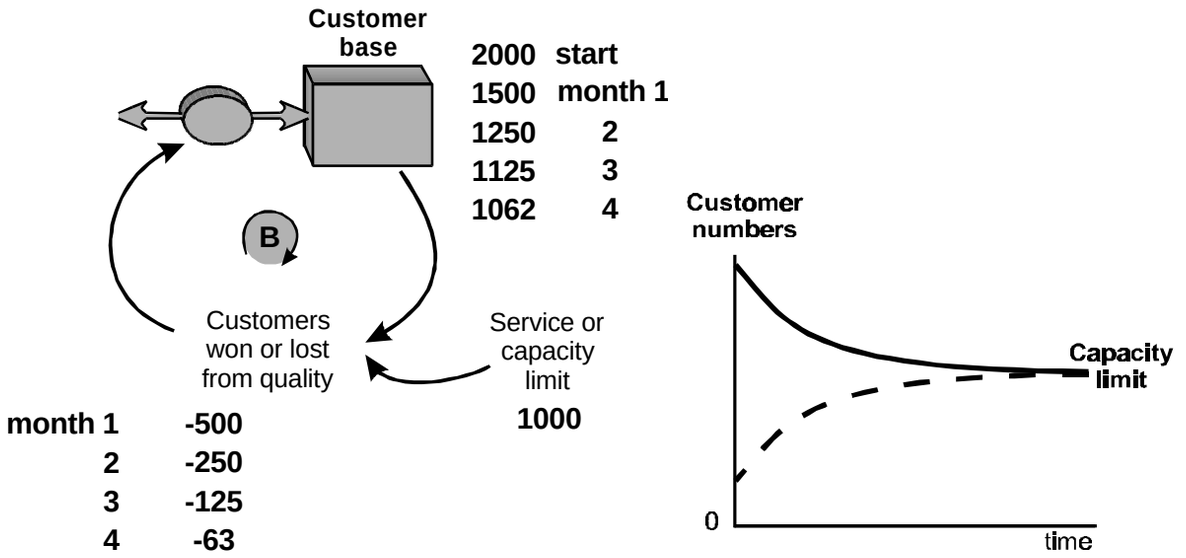
[5] The curved arrows in these diagrams have a simple but specific meaning - that a change in one item directly and immediately results in a change to the next. In Figure 1.4, then 'a change in the customer base may cause a change in the number of new customers from word of mouth'. They can be thought of as 'information links', just like references between cells in a spread-sheet:

New customers from word of mouth today
= (some function of) **today's customer-base**

This is quite different from the thick flow-arrows, which can be thought of as the actual flow of material into or out of the 'tank'. In other words:

Customer-base (this month) **= Customer-base** (last month)
+ Change to the customer base (during the month)

Figure 3: Quantifying the balancing feedback constraining a customer-base.



These structures produce well-known patterns of dynamic behaviour, from the rapid penetration of new products into emerging markets to the diminishing returns achievable as firms push growth beyond their ability to service demand. In different contexts, and applied to different resources, they can capture similar dynamic patterns in many other parts of the business system. Furthermore, Peter Senge's 'The Fifth Discipline'[6] showed how, in combination, they can capture the characteristic 'archetypes' of strategy dynamics, such as 'limits to growth', 'escalation' (e.g. price wars), 'eroding goals' (e.g. deteriorating delivery performance), and 'success to the successful' (e.g. Coke's dominance of the cola sector). Whilst these insights strike a familiar chord with managers, the time-path of strategy can only be diagnosed, anticipated and influenced with confidence by measuring and formulating resource-levels and feedback effects with real data.

The Dynamic Resource-System View

Having captured the dynamics of a single strategic resource, it becomes possible to represent the mechanisms and scale of *interdependence* between resources. Without this step, the resource-based view cannot adequately explain how, or how quickly, firms who are resource-rich lose their lead, nor how firms who are poor (or even apparently bankrupt) of resources manage to assemble them quickly and powerfully to overwhelm previously dominant rivals.

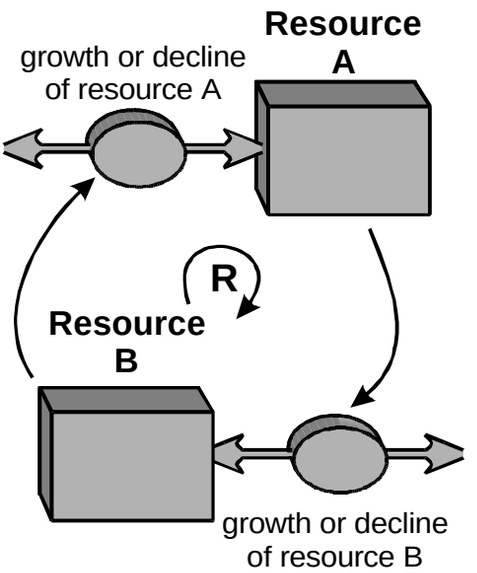
---

[6] Senge, P, 'The Fifth Discipline', 1990, New York: Doubleday.

This integration can be accomplished by recognising that managers use resources *already* held to develop others they need. Marketing staff build a strong customer base from the existence of a credible product, sales people win sales if manufacturing has cost-effective production capacity, staff can be hired if the firm has a good reputation in the recruitment market, and so on[7]. Figure 4 shows the simple case of this interdependence - the firm has just two resources, the growth-rate of A depending on the level of B, and *vice versa*. (In some cases, growth of resource B may depend on *depleting* resource A - the most common example being cash).

On their own, relationships captured by applying Figure 4 to real cases can explain self-reinforcing growth or decline. However, each resource in the system may also run up against balancing mechanisms that limit growth or lead to other dynamic behaviours.

Figure 4: Interdependence between resources



The principles outlined thus far can be formalised arithmetically with the following pair of equations, where (1) captures the rate of change of resource *i* at time *T* as some function of the current level of all resources in the system (including resource *i* itself), and (2) captures the current level of resource *i* as the integral (accumulation) of all changes to resource *i* since time *0*, plus its initial level.

$$r_i(T) = \frac{dR_i(T)}{dt} = f\left[R_1(T),..,R_n(T)\right] \qquad (1)$$

$$R_i(T) = \int_0^T r_i(t)dt + R_i(0) \qquad (2)$$

[7] This even applies to fundamentally new business start-ups, where the entrepreneur may appear to start with nothing, but nevertheless possesses some vital intangible resources, such as credibility with investors.

Intangible resources

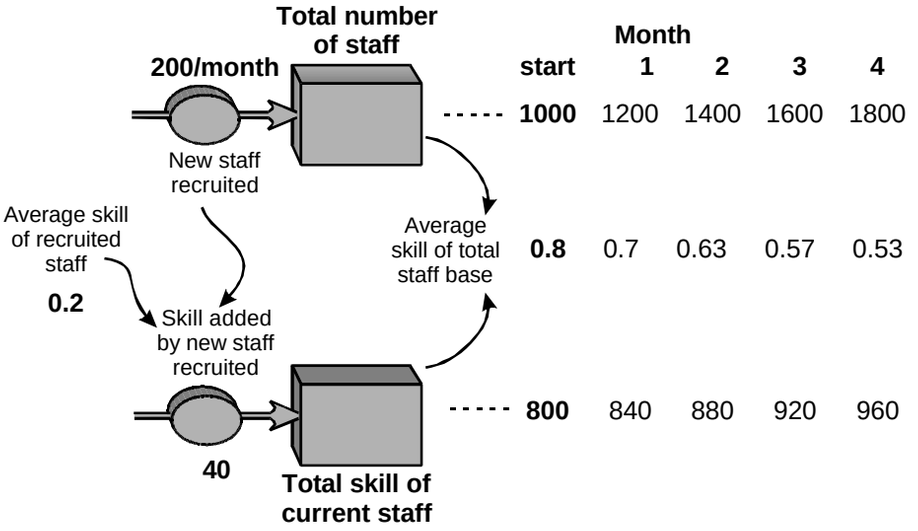
To be useful in real circumstances, stock-and-flow and feedback frameworks must capture intangible resources as well as the harder factors. Intangibles are crucial to competitive performance, yet managing them successfully is often challenging. It may be possible quite quickly to raise cash from investors, to buy or build production facilities, or to hire staff. It is more difficult, and takes time, to build and sustain the morale of a workforce, the support of investors, a reputation in the market-place, or a cost-efficiency advantage over rivals - and these things can rarely be bought[8]. Not only are intangibles hard to build, they can be easily destroyed (e.g. by a high-profile failure), may often become apparent only when their role as 'hygiene' factors is triggered (e.g. reputations for safety or environmentally responsibility), and may have powerful and immediate effects on critical tangible resources (e.g. catastrophic loss of customers when a reputation for quality or safety is destroyed).

Simple resource-level changes may arise directly from management effort (e.g. staff skills increase due to training inputs). However, three principal mechanisms may tie changes in intangibles closely to the dynamics of other items.

First, many tangible resources have a corresponding intangible *quality* (plant capacity *vs* plant cost level, customer-base *vs* average customer account size, staff number *vs* staff skill level). In such cases, the intangible quality may be at least as important as the tangible quantity of the resource. Moreover, changes in the tangible resource may only be achievable in tandem with changes to this associated intangible, as shown in Figure 6, where average skill level of staff is diluted by recruiting less skilled people.

[8] Hiroyuki Itami, 'Mobilising invisible assets', 1987, Cambridge MA: Harvard University Press

Figure 6: Representing the 'co-flow' of a tangible resource with a corresponding intangible quality, e.g. staff.



Second, certain tangible resources go through a 'life-cycle', at each stage of which some intangible quality they possess will differ. Products in a firm's portfolio may differ considerably as they move from the research stage into early commercialisation, then rapid market penetration to maturity, and finally into obsolescence.

Third, many intangible resources have a corresponding 'indirect' element, a perception or attitude of key players in the system that determines how they respond (perceived delivery performance *vs* measured delivery lead-time, customer-perceived quality *vs* measured quality, staff satisfaction *vs* the objective rating of their rewards).

Capability (competence), goals and policy

The remaining elements necessary to capture the build-up of the firm's strategic resource-system is the notion of 'capability' (or 'competence', which will be taken to have identical meaning), together with the choice of appropriate goals and policies to control the system.

Although there is some inconsistency between alternative meanings applied to the terms 'competence' and 'capability', a relevant definition for present purposes is *' … a firm's capacity to deploy resources, usually in combination, using organisational processes … that are firm-specific'*[9]. To this we must add the phrase *'… in order to accumulate further*

[9] Amit, R and Schoemaker, P, 'Strategic assets and organisational rent', Strategic Management Journal, **14**(1), pp.33-46.

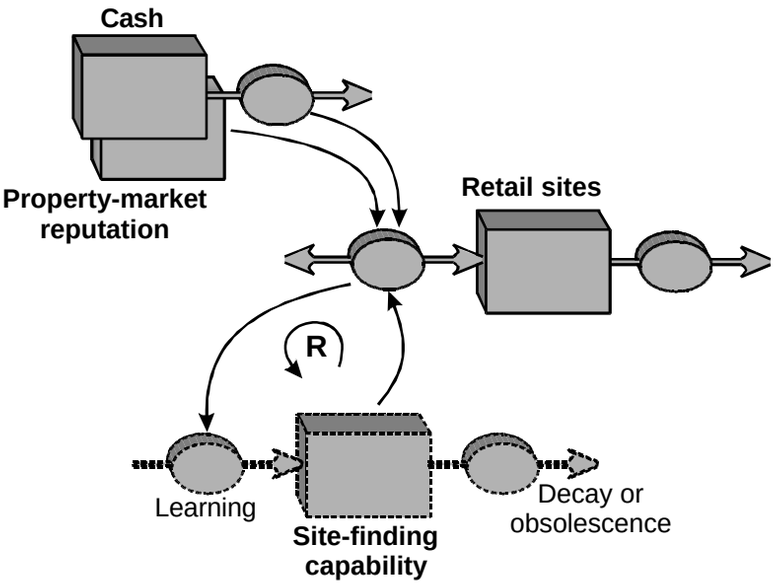
resources', since without this addition, there is no mechanism for the firm to change in size, or indeed any specific purpose indicated for which the capability is being deployed.

Some further clarity is needed in order to integrate 'capability' properly into the rest of the firm's resource-system. Three other observations are helpful. First, key to the building of competitive advantage is the *rate* at which key resources are accumulated. Second, any resource can only be accumulated by utilising *other* resources already existing in the firm's system. Third, since firms are rarely so fortunate as to have unlimited availability of those other resources, 'capability' must be a *relative* measure, as compared with what rivals may be able to achieve with the same inputs.

These observations imply that a specific capability will be associated with a specific resource, leading to the definition that ***a firm's relative capability*** **(or competence)** ***in any single resource-building activity is the rate at which it is able to build that resource, for any given availability of the other resources needed for that task***.

This definition enables 'capability' to be operationalised and connected it to the firm's resource-system. For any resource in the system, it is possible to identify the other resources needed to enable its accumulation, and reflect the firm's relative skill in building that resource with a factor that specifies the firm's capability. Furthermore, it is also possible to reflect the learning - or capability-building that follows from the firm's accumulated experience at managing the resource. This principle is illustrated in Figure 7 for the case of site-acquisition by a multiple-retail operation.

Figure 7: Representing capability-building in acquisition of retail sites.



The mathematics of the resource-system can be extended to incorporate capability-building with the following equations, in which (3) captures the building of capability *i* at a rate that reflects the current rate of change in its corresponding resource *i*, and (4) captures the current level of capability *i* as the integral of all changes to capability *i* since time *0*, plus its initial level. Equation (5) adapts equation (1) above to indicate that the rate of accumulation of resource *i* depends on its corresponding capability as well as the present state of any or all ofthe system's resources.

$$c_i(t) = \frac{dC_i(t)}{dt} = f\left[r_i(t)\right] \qquad (3)$$

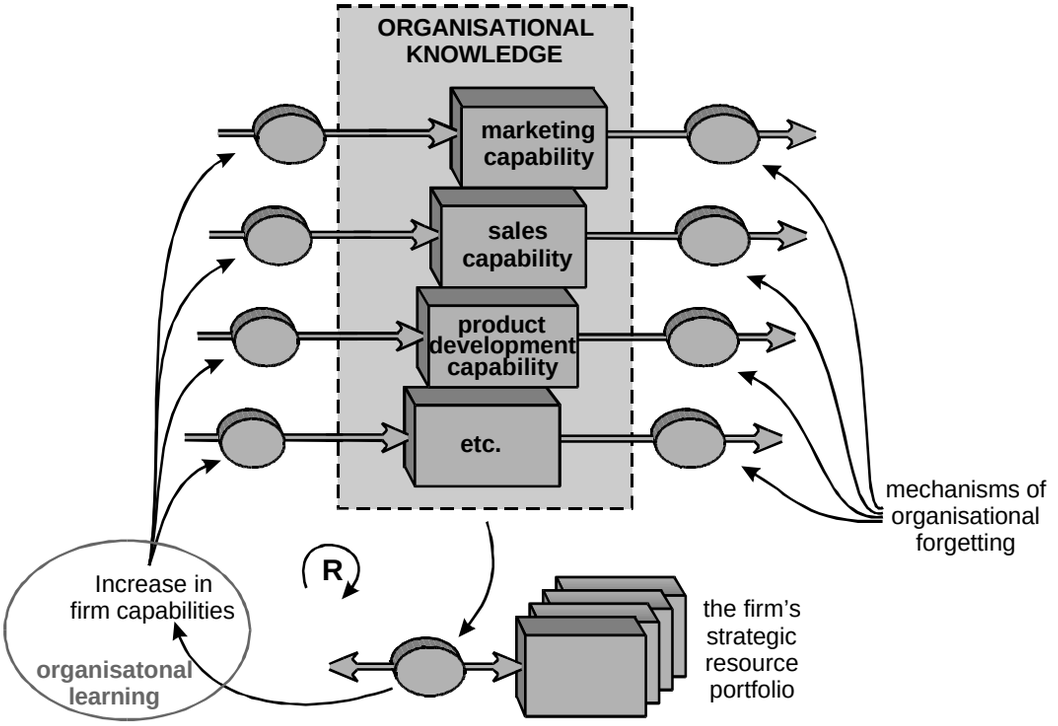
$$C_i(t) = \int_0^t c_i(s)ds + C_i(0) \qquad (4)$$

$$r_i(t) = f\left[R_1(t),..,R_n(t),C_i(t)\right] \qquad (5)$$

We can now extend capability-building to the resource-system as a whole. Recognising that the resource-system's power will reflect the contribution of all these individual competences, we can represent organisational knowledge as a composite of all those individual capabilities (Figure 8). This is not so much a measure of *things* that the organisation knows, readily captured in the firm's information-systems, so much as *how-to* do key things well a more

intractable concept. Note, incidentally, the importance once more of managing the out-flow - 'organisational forgetting' - as well as the inflow from learning.

Figure 8: Organisational knowledge and learning as the aggregation of specific capabilities.



Two further aspects of managerial influence on the firm's resource-system need to be reflected. Firms generally have established, but evolving, *goals* in regard to key resources and performance indicators, and *policies* by which deviations from those goals are reflected in changes to resource-building processes and resource-allocation. Though beyond the scope of this paper, representing such goals and policies is a well-established component of the system dynamics method[10].

Rivalry

The framework described thus far is sufficient for a rigorous, dynamic analysis of resource-building, the resource-system, and the capabilities, goals and policies that combine to create a single firm's competitive strength. However, to complete the task of capturing competitive

strategy dynamics requires accurate and comprehensive portrayal of the dynamics of rivalry. This consists of three key forms of customer-facing rivalry - the battle to exploit a *potential* customer-base, the tug-of-war between rivals over *existing* customers, and the fight for *sales* to existing customers, especially those shared with rivals. In addition, rivalry extends to the battle for access to *non-customer resources*, such as scarce supplies, powerful technologies, or key staff.

From this point, the framework can be extended to represent rivalry between several rivals, and indeed to encompass rivalry between *strategic groups* of firms, where such groups are defined in terms of their possession of similar resource-sets and their pursuit of similar policy sets (Porter, 1981[1]). Furthermore, the resulting enriched framework is capable of diagnosing the scale and speed of change in substantial features of industry structure.

The Dynamic Resource-System View of Corporate Strategy

The history of thinking on corporate diversification has evolved through a number of themes since the 1960s[11]. At that time, it was believed that General Management skills were sufficient to enable the successful building and competitive performance of conglomerates consisting of business units engaged in a wide range of related and unrelated activities. However, the often disappointing performance of such firms and their difficulties in making resource-allocation decisions led to pressure for a more rational means of deciding on the appropriate mix of activities. Thus the 1970s saw the emergence of various 'portfolio planning' techniques, the most widely known and used being the Boston Consulting Group's Growth-Share Matrix. This method sought to group corporations' component businesses into four broad categories, ranked by the growth rate of the market in which each operated, and by the relative market-share advantage of the firm in each market. This method made no attempt to take account of any relationships between businesses in the firm, treating the headquarters (HQ) as an 'expert investor', allocating funds, setting profitability targets and acquiring/disposing of subsidiaries to improve the 'quality' of the portfolio.

---

[10] See for example work by Morecroft JDW, including (1983) System Dynamics; Portraying Bounded Rationality. *Omega* **11** (2) 131-142 and (1985), The Feedback View of Business Policy and Strategy. *System Dynamics Review*. 4-18 and (1988) System Dynamics and Microworlds for Policy-Makers. *European Journal of Operational Research* **35**. 301-320.

[11] Goold, M, and Luchs, K, (1993), 'Why diversify? Four decades of management thinking', *Academy of Management Executive,* **8**(3), August.

By the 1980s, widely diversified corporations were still failing to live up to performance expectations, and, worse, seemed to be consistently under-performing more focused rivals. Assessment of business-unit value often discovered that the corporation was worth far less to shareholders than the sum of the component businesses. Thus arose the era of the corporate raider, extracting value from ill-conceived portfolio firms by acquiring them at their (low) public share price, and raising a high fraction (sometimes >100%) of the purchase price by disposing of all but a few attractive businesses. Fear of the same fate drove many corporations to 'refocus' during the late 1980s and early 1990s, disposing of the very diversified acquisitions that they had acquired in the previous decade. This widespread trend was rationalised in terms of seeking 'synergy' between business units, reverting to the firm's 'core competence'[12] and building a related set of businesses on a common 'dominant logic'[13] of management culture, style and controls.

Motives and criteria for diversification

The pressure to diversify arises from a number of related sources. First, management is generally under pressure, whether externally or internally motivated, to seek growth. If their current business is in a sector where growth prospects are limited, diversification into growing industries may seem to provide the opportunity they seek.

Secondly, managers in 'unattractive' industries, where good financial performance (however defined) has proved hard to achieve, have a strong motive to move their firms into 'attractive' industries where performance may be expected to be easier. From an early assumption that growth largely determined industry attractiveness, firms have increasingly used techniques of industry analysis (Porter, 1981 and 1985; op.cit.) to identify attractive sectors to enter. Thus firms in competitive, mature or declining markets, such as tobacco or defence, might seek greener pastures by investing in less competitive and growing markets.

Unfortunately for both of these motives, if diversification is pursued through acquisition, the price firms must pay to enter such new markets fully reflects the attractive earnings prospects they are buying into. Moreover, the performance of the better acquisition candidates generally

---

[12] Prahalad CK and Hamel G (1990). 'The core competence of the organisation'. *Harvard Business Review* **Mar/Apr**: 75-84

reflects in large measure the skill of their management. Not only may it be difficult to add to such skill, but the very purchase itself may make the acquired business vulnerable to loss of those skilled managers.

The third motive for diversification is to spread the firm's risk. If the firm is vulnerable, for example, to severe cycles in its core business, it may seek business opportunities in counter-cyclical, or less cyclical sectors. Unfortunately, due to cycles in the economy generally, counter-cyclical opportunities may not be numerous. In addition, better understanding of the role of stock-markets has made clear that shareholders are quite capable of diversifying risk themselves, and with more flexibility and less cost than are the firms in which they invest.

Out of these motives, therefore, one over-riding purpose remains, namely to achieve growth in earnings over and above that which the firm might obtain if it did not diversify. This may be feasible if a diversification meets three criteria (Porter, 1985; op. cit.)

- The industry or sector to be entered must be structurally attractive or capable of being made so.
- The cost of entry must not exceed the potential future earnings.
- The new unit must either gain competitive advantage from being part of the corporation, or else enhance the competitive advantage of other businesses in the group.

Competitive advantage from diversification

Competitive advantage is conventionally taken to arise from one of several sources.

First, the firm might be able to exercise additional market power. The principal mechanisms involved include subsidising costly predatory pricing in one sector from the earnings of other businesses in the group, reciprocal and preferential buying agreements between members of the corporation, and 'mutual forbearance' (when one diversified firm avoids attacking another for fear of retaliation). However, there is little evidence that these plausible mechanisms are common.

---

[13] Prahalad C.K. and Bettis R.A. 'The dominant logic; a new linkage between diversity and performance' *Strategic Management Journal,* 7, 485-501, 1986

Secondly, there may be economies from internalising transactions that are otherwise costly or risky. So a firm with a new technology relevant to industries outside its current range of activities may enter those industries to exploit the earning-power of such technologies, rather than risk under-pricing it through licensing or sale. Large firms may also benefit from internalising capital transfers between business units, rather than incur the external cost of utilising external capital markets. A firm may further benefit from using skilled employees in new activities, rather than risk losing them to others. There may also be benefits from information-sharing between amongst business units and between those businesses and HQ.

Finally, it has been established that a range of benefits arises from economies of scope in resources that may be common to several business units. These economies arise from the opportunity to leverage resources and capabilities across several markets. The fixed costs of tangible resources, such as production or distribution capacity, may be reduced if the same capacity serves more than one business unit. Intangible resources too, such as reputation and brand names, whose maintenance is costly, may be leveraged across several businesses. In this case, no physical transfer or effort may be needed to achieve the sharing. Functional capabilities may be transferable or shareable, though in this case some physical reallocation of staff (or at least their time) may be necessary.

This concept is conventionally assessed in economic terms, by evaluating the firm's value chain and considering the cost-sharing that may be possible between two or more businesses[14]. In essence, advantage arises if a business can enjoy the cost advantages of a large enterprise without itself being large.

Illustrating firm diversification using the Dynamic Resource-System

Whilst the rationale for, and feasibility of diversification have increasingly identified the crucial role of sharing and transference of resources and capabilities[15], the field needs a rigorous means to capture the dynamics of the process. Such a method is important because the diversification process is capable of a wide range of dynamic consequences. It may be possible to create a virtuous reinforcing process, whereby each extension of the firm's activities

---

[14] Porter, M.E., 1987, 'From competitive advantage to corporate strategy', Harvard Business Review,, p.46.

[15] Markides, C.C. and Williamson, P. J. (1994): "Related Diversification, core competencies and corporate performance," Strategic Management Journal, **15**, Special Issue, pp. 149-165.

initiates another round of resource- and capability-building. Limits to growth may set in as balancing forces constrain the firm's ability to extend its activities into new fields. More seriously, such exogenous limits may, alone or with the over-extension of the firm's reach, switch a once-powerfully growing system into reverse, leading to the firm's collapse. Understanding exactly how such dynamics unfold, on what scale and over what time-period, is a crucial issue for Strategic Management scholars and practitioners.

The DRSV is a powerful tool for such purposes, since it captures the strategic resources and capabilities of a firm's business units, together with their dynamic interactions. It is also capable of capturing the sharing and transference of these elements to new business units and estimating their subsequent growth-path. This application may be illustrated with a case example.

Whitbread PLC was, until 1980, a traditional, vertically integrated brewing firm, producing and distributing a wide range of drinks, both to its 7,000 owned pubs and to independent pub retailers. This production and supply emphasis resulted in beer accounting for the majority of the company's reported earnings. By 1995, the company's make-up was very different. Unprofitable non-beer activities were sold and considerable investments were made in retail-service operations that now account for £2bn of annual revenue and over £200m p.a. of earnings. These retail operations developed from a set of modest business ventures in 1980 into a portfolio of retail brands that dominate their respective sectors in pubs, restaurants, cafés, coffee-bars, drinks-stores, pizzas, American diners, hotels and country clubs (Table 1).

Table 1 - Whitbread retail operations, 1995.

		Sites
Thresher	specialist drinks stores	1650
Beefeater	full-service restaurants	280
Pizza Hut	full-service restaurants and take-away	280
Travel Inn	budget hotels	66
TGI Fridays	American-style diners - UK	16
The Keg	Full-service restaurants (Canada/US)	100
Churrasco and Maredo	Steak-houses (Germany)	60
Brewers' Fayre	Pubs and part-service family restaurants (+ other retail concepts).	220

The catalyst for this development was the growth of the Beefeater restaurant chain through the 1980s, which first overtook, then acquired a previously dominant rival and survived

challenges from other would-be competitors. This initial commitment of funds and management effort stimulated the creation of resources and capabilities that were vital to the later extension of the business portfolio.

Whilst the firm's growth appears impressive in retrospect, it started with very little of the resources and capabilities that might be expected to be important in retail consumer services (see Table 2). Although it possessed a very large number of retail sites, the majority of these were inappropriate for the new services offered. The firm had no significant food supply system or food supplier-base, few managers with relevant experience, and little capability in product-development, site-finding, site-development or consumer-marketing.

Table 2: Resources and capabilities required in consumer-services retailing.

	Resources	Capabilities
Tangible	Retail sites	Site-finding
		Development and maintenance
	Products	Product development
	Customer base	Consumer marketing
	Branch staff	Training
	Food distribution system	Logistics management
	Experienced managers	Recruitment and development
	Supplier-base	Supplier development
Intangible	Customer reputation	
	Retail site quality	Site-finding
	Buying power	Supplier management
	Staff commitment	
	Corporate commitment	

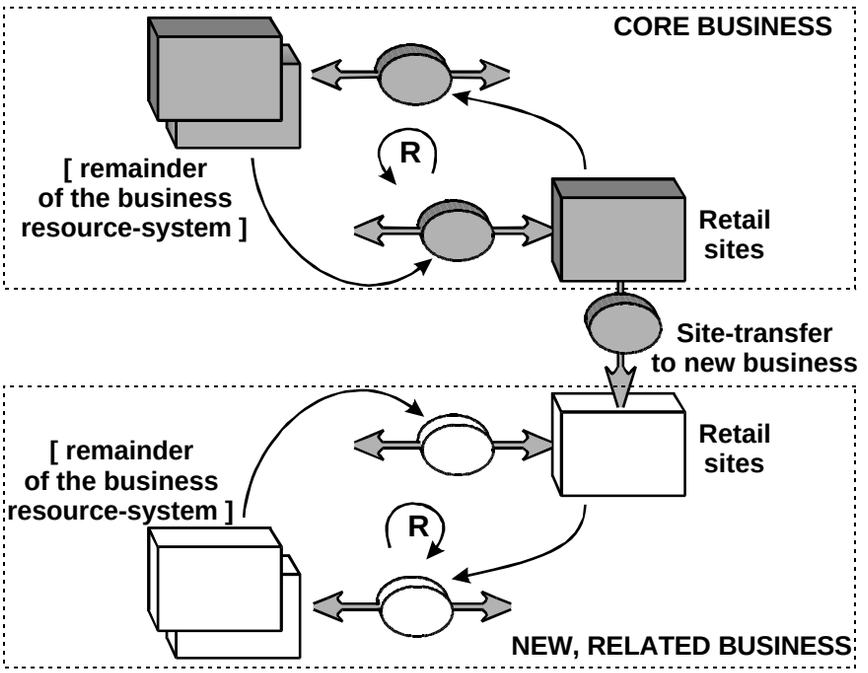
Mechanisms of resource- and capability- leverage between businesses.

In the years of rapid development to 1985, the Beefeater restaurant business was built through a process of self-reinforcing growth amongst the resources and capabilities in the system, as described earlier in this paper.[16] By this time, the business possessed all of the resources and capabilities in Table 2, and in sufficient quantity that other retail service operations could be started. This seeding of new businesses arose through a mix of transfer and sharing of these strategic assets, common mechanisms for which can be illustrated in the case of retail sites.

[16] The growth of the Beefeater Restaurant business is captured in a case-series and microworld simulation – Warren, K.D. and Langley, P.A., 1996, 'The Beefeater Restaurants Microworld', Princes Risborough: SMSim Ltd. Available from Phrontis Ltd: http://www.phrontis.com.

'Transfer' of a resource or capability implies that it is removed from one business and given to another, as illustrated for site transfer in Figure 7.

Figure 7: Representing resource-transfer.

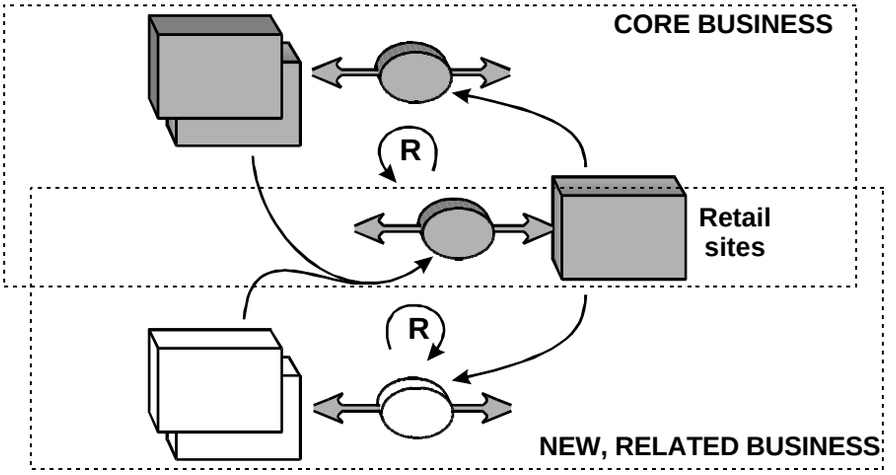


The core business is sacrificing resource under such circumstances, but this loss may have compensations. The related intangible resource of 'site quality' mitigates this sacrifice to an extent that can be positively beneficial to the core business. During the rapid growth of a business, it is likely that non-ideal resources may be acquired – in this case, sites that, though profitable, are not ideal for the core Beefeater business (see Figure 6, above). Such non-ideal resources hold back the performance of the system, and their disposal frees up cash that can be used to acquire better quality sites and up-grade the overall portfolio. Those same sites may, however, be well-suited to the needs of the new, related business that is being built.

Similar principles of resource-transfer apply to other resources, notably skilled branch managers, whose expertise accumulates with experience in the core business. Such individuals make a substantial contribution to the profitability of each branch, and their transfer to an emerging business can provide an early financial performance advantage that a stand-alone business would find difficult to match.

In contrast to resource-transfer, resource-sharing implies that a single resource is at one and the same time part of two or more business systems (Figure .

Figure 7: Representing resource-sharing.



Here, a single site is used by both the established core business and an emerging operation. Many of the Beefeater restaurant sites were located on busy roads at the periphery of towns, making them ideal for the low-budget hotel accommodation offered by Travel Inn. This chain was able to grow more rapidly and more successfully than would otherwise have been possible. Morever, resource-sharing operated in reverse, since users of the accommodation (Travel Inns' 'customer-base resource') were also available to Beefeater. Though this process started through retro-actively adding new business operations to established sites, it soon became possible to pro-actively seek multi-operation sites, further enhancing the firm's influence and reputation in the real-estate market.

Similar resource-sharing opportunities arose in the case of the firm's supplier-base, food distribution system, research facilities, site-development capacity and other resources.

The last major mechanism for inter-business synergy arose from capability-sharing and mutual learning. This can only operate in conjunction with resource-sharing, and implies simply that the capability to accumulate a resource (here, retail sites, see Figure 7) is accelerated and built to higher levels through the experience obtained by serving additional businesses. So long as the site-finding team was restricted to acquiring sites of one particular style for just one business, its capability remained limited. As additional businesses too required sites to be found and acquired, further learning became possible, and the firm's capability extended in breadth and depth. Subsequent growth for all the businesses in the firm was thus enhanced, both in scale and quality.

Conclusion and future developments.

This paper has described how the time-path of firm strategy can be operationalised by the 'stock and flow' and feedback framework of the system dynamics method. It has built on this framework to show how resource- and capability-based diversification can be operationalised and made dynamic.

Whilst the positive advantages of resource-system synergy discussed are persuasive, they are not free of cost or risk. The costs of such synergistic mechanisms are already well-established in the Economics and Strategic Management literatures. They include the managerial effort of co-ordination, the need for compromising the ideal requirements of different business units, the lack of flexibility imposed on individual businesses by having to rely on shared resources and capabilities, and the blurring of responsibility for business unit performance (Porter, 1987, op.cit.) There are also risks to system-performance. Too rapid, or over-extended resource-transfer can slow or halt the growth mechanisms in the core business that provided the original resource-pool for other operations to exploit. If this results in serious inadequacy in a specific resource, it can throw the business's entire system into imbalance, so that once-promising business growth is thrown into reverse and the business may decline.

These costs and risks put a heavy burden on the corporate control and co-ordination mechanisms needed to keep the multi-business system healthy. There remains a need to examine how these mechanisms operate in conjunction with the dynamic resource-systems of the multi-business firm.