# THE VIRTUES AND LIMITATIONS OF DYNAMIC CAPABILITIES

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## ABSTRACT

Dynamic capabilities have been identified as a key determinant of competitive advantage. This paper explores the foundations of dynamic capabilities, and the limits to their effectiveness, first theoretically and then through the case of Danaher, the most successful US conglomerate for over three decades. Limitations of dynamic capabilities include that they (a) can be substitutable and (b) embody strategic choices themselves. The Danaher case, an exemplar of dynamic capabilities, illustrates how dynamic capabilities require long-term commitments in order to be effective, involve a set of choices that are closely tied to others made by the firm, and embody tradeoffs that imply that investments in any particular dynamic capability may be inconsistent with acquiring new ones.

## THE VIRTUES AND LIMITATIONS OF DYNAMIC CAPABILITIES

### INTRODUCTION

**Strategic Management has made the explanation of differential firm performance central to both its research agenda and the normative prescriptions it proposes. In 1994 Rumelt et al identified, "why are firms different?" as one of the four canonical questions confronting the field in order to account for "the existence of sustained heterogeneity within an industry" (Rumelt et al 1994). And, today, syllabi from the top twenty MBA programs reveal that nearly all state their objective to be some version of "how can a firm earn long-run profits?" (Alcacer et al 2020).**

**Strategy has developed several theoretical framings to answer this question - from Porter's original work derived from industrial organization (Porter 1982), to the resource based view of the firm (RBV) (Wernerfelt 1984), and value based (Brandenburger and Stuart 1996) and behavioral (Gavetti 2012) approaches to the theory of competitive advantage (Leiblein and Reuer 2020).**

**To this list, dynamic capabilities, as introduced by Teece et al in 1997 (Teece et al 1997), have been identified by many as a preferred skill for firms to build if they seek to possess a durable competitive advantage – the strategy field's term for sustained superior intra-industry financial performance. The concept draws its theoretical basis from three classic traditions within the strategy field – the resource based view of the firm (Wernerfelt 1984) with its focus on hard to adjust stocks, rather than flows, as the basis of a sustainable advantage; Schumpeter and the Austrian school with its emphasis on "creative destruction" and the importance of "entrepreneurs" continually disrupting any equilibrium, particularly in the presence of uncertainty (Schumpeter 1942, Nelson and Winter 1982); and organizational learning and operations management for its study of organizational routines, and internal decision making processes (Cyert and March 1963, Hayes et al 1988).**

**Relating the various frameworks, a dynamic capability qualifies as a source of sustained heterogeneous firm performance because it arises from embedded organizational routines that accumulate in a path dependent process - a "stock-based" explanation of durable advantage (Barney, 1991). Because such a dynamic capability allows a firm to continually reposition itself in product market space, it also satisfies "flow-based" explanations of current competitive advantage by ensuring that the firm always maintains a wider gap between willingness to pay and supplier opportunity cost than competitors (Brandenburger and Stuart, 1996) in a business which provides above average returns to incumbents (Porter, 2008). Indeed, dynamic capabilities seem to give rise to the enviable ability to "always have a competitive advantage in an attractive industry" and so continually deliver superior financial performance regardless of external circumstances.**

**Before reaching this conclusion, however, we must clarify the theoretical concept of dynamic capabilities and interrogate the existence of the phenomenon in the real world. This paper seeks to achieve these tasks. We do so, first, unpacking the concept of dynamic capabilities and scrutinizing the types and levels of capability described in the literature against with the tests of value creation posed by the prior strategy traditions. Then, we examine the theory in the context of a particularly relevant and important case – that of Danaher, the most successful US conglomerate of the last thirty**

**years, which has crafted a business system (the Danaher Business System (DBS)) for continuous improvement that appears to demonstrate many of the appealing characteristics of a dynamic capability.**

**This paper's central conclusion is that while dynamic capabilities (of all types and levels) can be valuable, they are unlikely to serve as the ultimate source of sustainable competitive advantage. And while developing such capabilities may be desirable, there are important limitations to their effectiveness.**

**Specifically, the paper will argue there are theoretical limits to the value of dynamic capabilities. Even if a particular capability, such as Danaher's DBS, is not directly imitable because it involves organizational ambiguity, it can be (to varying degrees) substituted by slightly different capabilities adopted by other firms, each arising from their own unique and inimitable path dependent processes. And, because dynamic capabilities arise from choices about internal activities that do not draw from competitive factor markets, there are no limits to the number of competitors that can develop their own versions of the capability.**

**The more capable the firm is in identifying new markets, resources and combinations, the more it comes into competition with other firms with their own version of such capabilities. Ironically, as the dynamic capability opens additional opportunities to a firm (one of the main attractions of such capabilities), the set of competitors to whom it must be superior also expands[1] . As a result, it isn't just necessary for a firm to possess a dynamic capability, the capability must be better than that of every possible competitor. For the dynamic capability to be truly rare and valuable, it must be an extraordinary capability that ultimately only one firm anywhere can possess!**

**Secondly, and more pragmatically, making the commitments necessary to pursue any dynamic capability involves making choices that are subject to the same tradeoffs as any traditional product market strategy (Porter, 1996). All activities and every aspect of organization design – structure, processes, metrics, incentives etc. – have to be aligned if the firm is to effectively implement the dynamic capability. Since every choice constrains what the firm can and cannot do, pursuing a dynamic capability cannot produce an organization capable of doing everything at the same time.**

**The obvious such tradeoff is the classic exploration/exploitation dichotomy (March 1991, Ghemawat and Ricart, 1993, O'Reilly and Tushman, 2004) which we will interpret more generally as the conflict between higher and lower level capabilities. Putting together a new combination of activities to exploit a desirable but novel position, which is the appeal of Teece, Pisano and Shuen's original version of dynamic capabilities (Teece et al 1997, hereafter referred to as TPS), involves, not just adjustment or repositioning costs (Menon and Yao, 2017, Argyres et al 2019), but also a tradeoff with building the lower level capabilities necessary to deliver the static efficiency (or lower level capabilities) required to effectively execute any product market position (Teece et al 2016). Thus while dynamic capabilities are valuable, they have the same inherent limitations as any traditional**

[1] T**hink how Alphabet competes with Apple, Microsoft, Amazon and Facebook in many parts of the online ecosystem.**

**strategy in being unable to achieve all types of competitive advantage at the same time (Birkinshaw et al 2016, Pisano 2017).**

**The Danaher example clearly illustrates these constraints on the value of dynamic capabilities (Anand and Collis, 2008). While Danaher has been successful for a long time, has continuously altered its business portfolio, and has upgraded its process improvement toolbox – all important manifestations of a dynamic capability - it is limited in how far it can move from the core DBS philosophy. Ironically, if Danaher were to attempt to demonstrate a higher level dynamic capability by moving to some other management system, it would undermine the very reason that DBS has worked so effectively – namely the persistent and repeated practice of the system for over thirty years. It is the accumulated expertise in operating DBS that allows Danaher to outperform competitors seeking to develop their own versions of DBS. A switch to a new management system would incur resistance from managers, lose critical experience, and face the same struggles as any other firm in trying to deploy the new system.**

## CONCEPTS

**The first section lays out a conceptual framework to explain the role dynamic capabilities play in competitive advantage. It proceeds by identifying the conditions that make dynamic capabilities valuable by establishing their relationship to resource-based and market positioning theories; and then describes different types, and levels of the phenomenon. It concludes by demonstrating the theoretical limitations to the various notions of dynamic capabilities, and in particular the tradeoffs that are present when pursuing strategies built around dynamic capabilities of the type advocated by Teece et al (Teece, Pisano and Shuen 1997, Teece 2013).**

### A) CAPABILITIES AS RESOURCES

**The resource based view of the firm observes that stocks are at the core of sustainable competitive advantage. Durable intra-industry differences in performance arise because firms are heterogeneous bundles of resource stocks that are difficult to acquire and take time to alter i.e., rents accrue to factors in inelastic supply (Barney 1991, Barney and Clark 2007, Dierickx and Cool 1989, Peteraf 1993, Wernerfelt 1984).**

**Three types of resources are relevant to distinguish: tangible assets, such as a real estate location or a physical network of optical cables; intangible assets that represent an accumulated stock of knowledge, such as patents and technological knowhow, or the customer awareness of, and experience with a brand; and organizational capabilities which represent the efficiency with which an entity converts inputs into outputs – the firm-specific production function (Collis and Montgomery 2005), or what Teece calls "the capacity to utilize resources to perform a task or an activity" (Teece 2014). Like any stock, these organizational capabilities are accumulated over time, in this case through the experiences of the people in the organization, their routines, and path dependent interactions (Barney 1986).**

**Importantly, the RBV identifies the conditions that make any resource, including a dynamic capability, a source of abnormal profitability. We follow perhaps the most accepted set of criteria - Barney's VRIN (valuable, rare, inimitable and non-substitutable[2]) - and note that, in order to be a source of sustainable competitive advantage, dynamic capabilities must also pass those tests. Being "valuable" implies that the capability creates something for which consumers have a willingness to pay. "Rare" acknowledges that the product of the capability has to be competitively superior[3] – one might have a desirable mall location, but a competitor with a corner street location that generates more foot traffic will have a larger competitive advantage. "Inimitability" tests the ease of direct replication of the capability by a competitor, and "non-substitutability" tests its vulnerability to replacement by a different capability or by a resource that satisfies the same consumer demand at lower cost or with a higher willingness to pay.**

## B) DYNAMIC CAPABILITIES AND COMPETITIVE ADVANTAGE

**To understand how dynamic capabilities affect current performance we revert to the framework which describes competitive advantage at a point in time – Porter's positioning analysis. This complements the resource perspective by demonstrating how a preferred stock of resources generates a current flow of profits from the performance of a unique combination of activities that drives a wider wedge between customer willingness to pay and supplier opportunity cost than competitors. The two perspectives are duals of one another since stock levels determine the flows required or generated in each period, and flows (including depreciation in stocks) determine the level of next period stocks – the metaphor of the (stock) level of water in a bath and the flows coming in at the taps and going out through the drain (Collis and Montgomery 2005).**

**Firms make a strategic choice about where to position themselves in a market by adopting a unique combination of activities that delivers a distinctive value proposition to customers (Collis and Rukstad 2008, van den Steen 2012) and opens a wider wedge between customer willingness to pay and supplier opportunity cost than competitors (Brandenburger and Stuart 1996). Importantly, as Porter has identified, what makes the choice of activities strategic is that each involves a tradeoff. These are different from other choices that might improve willingness to pay and reduce cost, such as using LED lighting in a car, which represent efficiencies that shift the production frontier outwards (Exhibit 1) (Porter 1996). In contrast, offering a larger engine in a car might increase willingness to pay for certain segments of the market, but involves a tradeoff with higher cost.**

**Having chosen a competitive position, the first challenge for an organization is to deliver this in the most efficient way currently possible. Static efficiency (what Porter calls operational effectiveness) represents the ability to reach the current productivity frontier in the location representing the strategic choice. In a static world, organizational capabilities represent how close the**

[2] Although even Barney has two versions of these conditions – the other being VRIO, with O organization (Barney and Clark 2007). Other similar categorisations exist eg Collis and Montgomery 1995.

[3] Barney argues that provided the market structure supports oligopolistic rents, several firms with similar resource stocks can be profitable (Barney and Clark 2007). However, even in this situation, one firm will still possess the competitive advantage over all others.

**firm is able to operate to the productivity frontier (the traditional notion of X-inefficiency, Liebenstein 1966; see Bloom et al 2010 for modern evidence on this phenomenon). Given a certain combination of inputs, how effective is the organization in transforming those into the desired outputs? These organizational capabilities can be thought of as the outcome of a firm's static routines – where to locate the machine on the shop floor, what forms to fill in to order a part – and result from the specific processes employed by the firm and the unique history and idiosyncratic personal experiences of its employees.**

**In order to introduce dynamics into this competitive positioning framework, we identify a first type of dynamic capability as simply the ability to move the production frontier outwards Such a "first-order" dynamic capability is the ability to move out the frontier along a chosen vector by improving the efficiency with which the existing set of assets and capabilities are deployed i.e., the practice of continuous improvement. In this regard, there is probably little requirement for adding new resources, combining new activities, or much other change required to the current way of operating or the business model. This dynamic capability can be thought of as changing static routines. As illustrative examples, the location of the machine on the shop floor is altered to make transferring parts to the next step in the process easier; or, a "cc" is added to the order form so that another part of the organization is automatically made aware of the request; or, a new employee is hired to replace someone else who did not show up for work regularly; or, after unfavorable experiences in foreign markets, an M&A rule is established that the firm will not pursue overseas targets, and so on.**

**A higher order dynamic capability would represent the development and application of a routine to ensure efficiency improvements were continuously pursued. Such a process might be value stream mapping, or six sigma methods which can be applied to any activity. Or it could be a performance management system that motivates employees, perhaps by replacing the lowest 10% of personnel each year (the familiar forced ranking system of General Electric under Jack Welch). Each of these capabilities can be thought of as ensuring the firm is "doings things right" as it implements its chosen strategic positioning and continuously improves how it does so.**

**An earlier paper (Collis 1994) essentially used this representation to argue that there was no ultimate source of competitive advantage from dynamic capabilities. As the rate of change of improvement would be a second order capability, the ability to increase that rate of change a third order capability and so on, capabilities of the "learning to learn to learn" variety would allow a firm to supersede those with lower level capabilities which were unable to increase the value gap at the same rate (Collis 1994, Winter 2003, Arend 2015).**

### C) THE ROLE OF TEECE, PISANO AND SHUEN DYNAMIC CAPABILITIES

**It is helpful to distinguish another type of dynamic capability – TPS - as described in Teece, Pisano, and Shuen which better represents the original Teece et al notion. Rather than capturing higher moments of movement along a given vector, this represents the ability to move to a new location on the production frontier as external circumstances change (Eisenhardt and Martin 2000,**

**Teece et al 1997). In one of his most recent restatements of the notion, Teece asserts that dynamic capabilities "enable the firm to integrate, build and reconfigure internal and external resources to address and shape rapidly changing business environments" (Teece 2013 p 4.)**

**The important distinction is that TPS dynamic capabilities produce a shift to a new strategic position and so require a reconfiguration of activity choices rather than just an improvement in the way a specific activity is performed. As a result, the firm is no longer tied to the prior market position, but can identify and exploit a new source of competitive advantage by acquiring or building a new combination of resources, perhaps even developing a novel business model based on different resources (Collis 2019a and b). This is reminiscent of the Schumpeterian ability to recombine, reconfigure and create new assets to realize an entrepreneurial opportunity, and in turn distinguishes "doing the right thing" from merely doing the same thing in better ways. In the current entrepreneurial vernacular, it is the ability to "pivot" to a new business model that is critical to the TPS dynamic capability (Reis 2011, Teece 2018). Notice that while it is easy to see how a small startup is able to effect this switch since it has yet to commit to any business model, it is harder to envisage the changes required in a larger enterprise that has been pursuing a business model for years and has built its entire organization structure, systems, processes and culture around that approach.**

**The first order TPS dynamic capability would be a one-time ability to either alter the industry in which existing capabilities were applied, or to accumulate additional resources that allowed the firm to reposition itself on the production frontier. The former would be exploiting the fungibility of a capability by extending the scope of the firm into a new, more attractive segment or industry (Penrose 1959), as, for example, illustrated by GE when it exited the rapidly commoditizing consumer electronics business in return for acquiring the much more profitable medical electronics business from Thomson (Collis 1989). The latter would be the capability to add a single new skill, such as when Babcock and Wilcox developed project management skills to move from being simply a manufacturer of boilers to become an engineering services firm (Wells and Danskin 2014), or to develop a new technology, such as LG's development of OLEDs for flat screens. In this way, the firm evolves with the external landscape and upgrades its portfolio of businesses and resources[4].**

**Teece identifies three skills necessary to building a dynamic capability – sensing, seizing and transforming (Teece 2007). Of these it is the transformational skill – continuous renewal - that is most valuable and difficult to build because it requires the meta-process of "asset orchestration" (Teece 2007) to "build, deploy and reconfigure resources" (Teece 2013 p. 8). This can be interpreted as a higher order TPS dynamic capability allowing a firm to continually adjust to new opportunities (Teece 2018, claims this is the "highest order dynamic capability(ies), p.41). Perhaps this capability is embedded in a routine, such as IDEO's new product development skills that continually search out new ideas, or in a culture of strategic challenge and debate, as at Intel and IBM, which forces management to continually examine their strategic assumptions and direction. Increasing levels of this TPS dynamic capability would allow the firm to continuously change direction and regularly build new combinations of capabilities – perhaps by outsourcing activities and recombining third party**

[4] **This might also be viewed as a "strategic agility" that is key to long term success (Teece et al 2016)**

**efforts. Or the capability could improve the process of developing new positions itself, perhaps by introducing a new way of framing strategic problems - similar to how an application of the "disruption" framework led to the identification of new opportunities and threats for many firms (Christensen 1997, Grove 1999) or new business models (Baden Fuller and Morgan 2010, Casadesus-Masanell and Ricart 2011, Gassmann et al 2013, Teece 2018). In either case, and similar to the earlier discussion around the "continuous improvement" type of dynamic capability, there are clearly multiple levels of the TPS capability – each one allowing for a quicker, better, more radical reconfiguration of assets to satisfy a potentially newer, faster growing, more highly valued customer need.**

## LIMITATIONS OF TPS DYNAMIC CAPABILITIES

### A) THE VRIN TEST

**Any organizational capability (of whatever type or level) must pass the tests for a source of sustainable competitive advantage if it is to be a source of value creation. Does the TPS dynamic capability pass the VRIN tests[5]? It is clearly valuable, by definition, since it allows a firm to adjust to exogenous changes, to amend its positioning to accommodate new demands, and supports the flexibility to respond to imitation, substitution or saturation. This, indeed, is the appeal of such a capability to every practitioner (though, as we note later, it perilously verges on seeking a form of capability that "always yields a competitive advantage").**

**Is the TPS capability rare? Merely possessing a capability will not lead to a sustainable competitive advantage unless it is competitively superior to all other similar capabilities. Thus it must be true that a TPS dynamic capability is "better" than that which others, who might also be looking to pursue the same opportunity, possess. This is a more difficult test to pass than merely possessing the ability to respond flexibly to changing circumstances - since, for example, no longer is it enough to possess a capability to adapt to the digital revolution, but it's necessary that capability be better than one's competitors.**

**Indeed, as the TPS capability denotes the ability of a firm to readjust to new circumstances, other firms will inevitably seek to build those same capabilities, in which case the set of potential competitors against which the firm's capabilities have to be evaluated, expands. At the extreme, the set becomes every firm since the ultimate version of this dynamic capability would allow any firm to pursue any new business opportunity. This can be thought of as similar to the currently observed competition between digital giants, as Alphabet, Facebook, Apple, Amazon, Microsoft - each from a very different business and each with a very different past strategy and positioning - converge on similar emerging market opportunities, such as drones or driverless cars.**

[5] This section examines in more detail TPS dynamic capabilities, although any argument applied to them can also be applied to the more standard forms of dynamic capability including continuous improvement.

**Recent notions such as "the end of competitive advantage" (McGrath 2013), "hypercompetition" (D'Aveni 1994), "blue ocean strategy" (Kim and Mauborgne 2005), and "next generation competition" (Teece 2012), all refer to a similar idea of traditional industry boundaries becoming increasingly irrelevant as broader ecosystems emerge, and competitors continually readjust their boundaries and partnerships. These ideas only underscore the challenge that TPS dynamic capabilities face in serving to build sustainable advantage. If this is indeed the landscape today, the challenge becomes one of building the rare dynamic capability that is better than every other firm's!**

**Is the TPS dynamic capability inimitable? As Teece recognizes, imitability is key to any resource or capability being a source of long-term superior performance (Teece 2013 p42). A simple rule or routine (like acquiring the number one, two or three player in an industry) is eminently imitable. "Higher order" routines are, as Teece notes, probably harder to imitate and so are more desirable. Indeed, as Rumelt and others have observed, organizational capabilities are one of the more difficult resources to imitate because of their ambiguous nature (Lippman and Rumelt 1982, Barney 1986). Embedded in organizational routines that are hard to document, reliant on tacit knowledge and path dependent because they represent the complex interaction over time of people and processes, any single TPS capability might be hard to directly imitate[6]. Thus direct imitation of a dynamic capability is likely to be hard, if not impossible.**

**Finally, there is the non-substitutable test of value. While any specific dynamic capability might be inimitable because it is ambiguous, each firm can nevertheless construct its own inimitable version of a TPS capability. Samsung, for example, might never be able to exactly mimic Apple's TPS capabilities, but it can build its own idiosyncratic version of such capabilities. Substitution by relying on a similar version of the original capability is made feasible because such capabilities are not drawn from a competitive factor market, but instead are created internally by each company along their own idiosyncratic path. As a result, there may be no limit to the number of firms that can have a similar (though not exactly the same) dynamic capability, since it does not draw on an asset or resource that is in short supply, or a scarce factor that generates rents. In theory, there can therefore be an endless supply of such dynamic capabilities, all of which are (partially) substitutable for each other.**

**B) TRADEOFFS WITH OTHER CAPABILITIES**

**Building a TPS capability cannot involve a tradeoff with lower level capabilities or else the firm with the TPS dynamic capability can lose out to competitors who may be less flexible in moving to new positions but are more efficient in executing against a given position and more effective at advancing the production frontier at a faster rate. TPS dynamic capabilities cannot just reposition the firm, they have to reposition the firm and simultaneously allow it to execute better than competitors who are also pursuing that same position. As a result, even if there are first mover advantages in the new market, a later entrant (with inferior TPS dynamic capabilities because it merely copied rather**

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**[6] Without clearly identifying the source of the organizational capability, imitation can be reduced to "superstitious learning" whereby seemingly trivial or irrelevant actions are identified as critical and so copied (Skinner 1948). Here, perhaps, is where the role of individual leaders comes into play. Apple without Steve Jobs would not be as effective in developing breakthrough products.**

**than innovated towards the new position) that has superior lower level capabilities will, in time, overtake the explorer. In other words, more than just having the capability to switch positions, the firm must also be able to efficiently recombine resources in new ways and then consistently redesign all the lower level capabilities.**

**A similar challenge has been posed in the context of the ambidextrous organization as it struggles to supersede the tradeoff between exploration and exploitation (March 1991, Ghemawat and Ricart I Costa 1993, O'Reilly and Tushman 2004). While some authors are more hopeful about the ability of firms to transcend the tradeoff involved as "organizations make the explicit and implicit choices between the two" (March 1991, p.71) (and offer suggestions for how to do so (Christensen 1997, O'Reilly et al 2009)) the paucity of practical illustrations and the complexity of organizational compromises (such as contextual, temporal or structural separation as solutions (Gibson and Birkinshaw 2004, Siggelkow and Rivkin 2006)) underscores the difficulty in achieving this goal. While theoretically appealing, superseding such inherent tradeoffs is practically difficult[7].**

**A simple examination of what some of the simple investments required to be able to continually reposition and reconfigure the firm would look like yields interesting conclusions – such as for example, the obvious tradeoffs with cost efficiency when investing in dynamic TPS capabilities (see also Teece et al 2016). Options that provide flexibility are always costly. Perhaps the firm invests in assets that have value in more potential future states of the world – a boiler that can use both oil and gas fuel – to hedge its risk. Or perhaps the firm holds a reserve of cash to be able to make an acquisition when others cannot act. Or perhaps it invests more in brand building than is statically efficient so that the brand name can be stretched to cover a different positioning at a later date. Or perhaps salesmen are hired that have better skills than are currently required so that they can support a broader "solutions" sale rather than just possessing the narrow ability to sell a single point of product differentiation. Regardless of the form of these options, in every case, investing in resources or capabilities that support flexibility necessarily involves a tradeoff with current efficiency (or plausibly even dynamic capabilities of the first type that drive continuous improvement along a given vector or strategic direction). As March states, "adaptive systems exhibit too many undeveloped new ideas and too little distinctive competence" (March 1991 p.71)[8].**

**There may also be a degree of dynamic inconsistency between the organizational requirements of a TPS dynamic capability and static or lower level dynamic capabilities. Indeed, that tradeoff arises out of the very strength of organizational capabilities as hard to imitate. Vesting in**

[7] Tradeoffs resolve the "infinite regress" problem confronting dynamic capabilities of the continuous improvement type that I identified earlier (Collis 1994). When building higher order capabilities undercuts the effectiveness of lower level capabilities, firms face a choice. They must choose a strategy that is dynamically more effective, but currently less efficient, or vice versa. They cannot have their cake and eat it too.

[8] Teece et al 2016, slide past this objection by suggesting that a superior dynamic capability can shift the efficient agility/efficiency frontier outwards (Teece et al 2016). Unfortunately this simply moves the argument up a level! There is now a tradeoff between that dynamic capability and "agility and efficiency", and there will always be a higher order capability that moves the frontier out faster, at a faster rate, … and so on ad infinitum (Collis 1994).

**complex routines and personal interactions makes organizational capabilities hard to develop and so difficult to change and rebuild (Leonard-Barton 1992).**

**We all know how organizations resist "flavor of the month" initiatives, confident that "this too shall pass". If, for example, it is known that an alternative set of processes and routines will be employed in the near future when the firm has pivoted to a new position, the organizational commitment to the current processes will be lacking. Why should a division manager or an employee invest to learn or perfect the current system, when she expects yet another new one to master next year? A TPS dynamic capability which builds in the expectation that everything can change at any time, will likely inhibit development and execution of the procedures that are necessary for success in the present[9]. The time taken to bed down a new capability is another example of how repositioning or adjustment costs can inhibit flexibility (Menon and Yao 2017). If a TPS dynamic capability prevents the organization going through the iterations required to execute a new positioning, or even if that is perceived to be likely by employees, then any repositioning will be hard to effectively implement. The core point is that low level capabilities result from the consistent application of a set of routines over a period of time, whereas TPS dynamic capabilities imply zero adjustment costs or organizational frictions, and as a result understate the importance of dynamic consistency in a strategy.**

**It is important to note that the presence of underlying tradeoffs between types and levels of dynamic capabilities, leads us back to the traditional need for making choices among different strategies. Dynamic capabilities do not allow companies to effectively satisfy all potential customer needs in all possible states of the world. Teece et al, for example, note that "agility" is more valuable when the world exhibits "deep uncertainty", even if developing that capability might not be appropriate in other circumstances (Teece et al 2016). Birkinshaw et al similarly argue that the organizational requirements for building ambidexterity mean there is no "universal set of dynamic capabilities" but that the preferred structure is contingent (Birkinshaw et al 2016). And Pisano notes the need for a "strategy" to choose among investments in different dynamic capabilities (Pisano 2018).**

## THE EXAMPLE OF DANAHER CORPORATION

**Having examined the theoretical advantages and limitations of dynamic capabilities, we now illustrate these through a case example. This section draws on archival research and interviews with senior management of Danaher Corporation, both at its corporate office and in the various Danaher businesses. The description of the strategy has been published as an HBS case which we summarize**

[9] **At Pixar, Steve Jobs argued that the integration of technology and creativity that arose from mixing Phd scientists and animators trained in storytelling took at least ten years (Collis and Alcacer 2009). Creating the requisite culture was not simply a matter of hiring the two types of personnel and putting them together in a room. AG Lafley, CEO at Procter & Gamble, put it another way. When his predecessor was fired for the failed implementation of a new matrix organization structure (O2005), one of Lafley's first announcements was that he was retaining that structure. To make the structure effective, he recognized that the organization needed to go through a number of "repetitions" (Bartlett 2014) to bed down the new processes and informal routines that would make the formal lines of authority and reporting described in the structure come alive.**

**briefly here, before then examining DBS through the lens of the dynamic capabilities framework (Anand and Collis 2008).**

**The Danaher Business System – embedded in its management processes and thirty years of accumulated experience - is designed to drive continuous improvement in the performance of all important management processes from shop floor productivity to ideation, strategic planning, and financial management. DBS has proven a successful example of a dynamic capability, as illustrated through Danaher improving and maintaining the operating performance of acquired companies by about 700 basis points (Exhibit 2), thereby creating large shareholder value over a period of more than three decades[10].**

**Interestingly, the process of continuous improvement at Danaher has itself been the subject of continuous improvement, implying a second order dynamic capability. In addition, DBS has demonstrated certain of the TPS' dynamic capabilities. Specifically, it has transformed its business portfolio over the recent decade, illustrating a capability to redeploy capabilities into different, more attractive industries. It has also added new capabilities, such as around innovation and leadership, illustrating the TPS approach to acquiring and recombining additional capabilities. Finally, in 2016, Danaher split into two separate entities, providing a unique opportunity to observe, going forward, how different dynamic capabilities evolve from a common heritage (Noda and Collis 2001).**

**HISTORY OF DBS**

**Danaher Corporation has been the most successful conglomerate in the US over the last thirty years. (Exhibit 3). It has delivered more than a 20% annual return to shareholders since going public in 1984 through a strategy of acquiring and then continuously improving a set of technologically differentiated market leaders in a range of B2B businesses from dental drills to electronic test equipment and petroleum fuel dispensers. The source of its abnormal value creation has been the careful selection and pricing of acquisition candidates, and, more importantly for this paper, the relentless application of the Danaher Business System across all its businesses. The system is built around a set of (now over 60) tools that drive continuous improvement in every business process, and which are embedded across all layers of the organization, from the shop floor to HR executives and design engineers.**

**Founded as an investment company by two Rales brothers in 1980, Danaher initially made a number of acquisitions and went public in 1984, joining the S&P 500 in 1986. In 1988 the company began to move beyond a growth by acquisition strategy to focus on improving its subsidiaries' operations, and did so initially by implementing, companywide, a version of Toyota's lean production system that had already been successfully applied in one of its divisions. When George Sherman was hired as CEO from Black & Decker in 1990 he began to reorient the company's portfolio towards more attractive industries and committed to the application of what became known as the Danaher Business System. His successor, Larry Culp, hired in 1990 and appointed CEO in 2001, continued the**

[10] **A recent example was the dental business where a $600 million business in 2005 with a 5% operating margin had been turned into a $2.1 billion business with nearly 15% operating margins by 2013 (Danaher 2014a).**

**firms' acquisition program at a rate of roughly seven or eight companies a year; embedded DBS in every new subsidiary; made DBS the operating philosophy for the entire company; and led the expansion of DBS from a system focused primarily on cost efficiency to one that included innovation and revenue growth. By 2014, when Culp stepped down as CEO[11], Danaher had grown to a $20 billion company active in a broad range of sectors – including Test and Measurement, Environmental, Life Sciences and Diagnostics, Dental, and Industrial Technologies - with over 40 divisions, 66,000 employees, a market capitalization of $55 billion, and a post-tax return on equity that averaged over 13% during Culp's tenure, including the years of the Great Recession.**

**Making DBS work requires an aligned set of policies that are pursued for an extended period of time. Individually, each of the parts of DBS involve mundane processes that are deployed by most other firms. What is distinctive about DBS is how these have been assembled into an integrated whole and legitimized through years of commitment by the management team and relentless application across all parts of the firm. The DBS process starts with setting strategy for every division – defining the game each is playing and how they will win at that game. This process yields measurable objectives for the business which trigger the identification of a series of initiatives necessary to achieve breakthrough performance. Specific process improvement tools drawn from the DBS toolkit are applied to execute these initiatives.**

**Whenever an activity is deemed as critical to delivering improved performance, the appropriate tool (outlining the detailed process steps to follow) will be deployed, if necessary with the support of the small headquarters DBS office. The portfolio of tools that are part of DBS has considerably expanded over time. These now include not just the original shop floor techniques - value stream mapping, and lean manufacturing - but now cover 60 additional different processes that address all aspects of a firm's operations (Exhibit 4), including marketing and sales, innovation, product ideation, and financial management[12].**

**Strategy implementation is cascaded through the organization with identifiable metrics tracked as output measures, such as percentage of jobs filled from within the firm, rather than input measures, attached to the responsibilities allocated to all levels of employees. These metrics are monitored frequently with variances addressed during monthly policy deployment (PD) review sessions with senior executives (Exhibits 5 and 6).**

**Progress towards PD goals are color coded, red or green, and are easily visible throughout plants and outside every senior manager's office door. Red-coded measures are treated as opportunities for improvement that can be collectively addressed, and the system of DBS is anchored around "solving the problem, not blaming the person." Similarly, green measures are not automatically treated as a reason for celebration but can be dissected for improvement opportunities as sharply as red measures, since they might imply, for example, that there was limited stretch in the performance improvement target. The combination of easily observable measures, cascaded across all**

[11] Culp was appointed CEO of GE in 2018.

[12] **The scope of DBS tools is sufficiently broad and deep that Danaher's tools are often seen as equivalent to offering an MBA in "how to execute strategy"**

**layers of the company, made easily visible and transparent, and systematically interrogated to identify areas for continuous improvement, together create the "culture" of DBS. Senior managers consider the PD review sessions to be central in "building the muscle" of continuous improvement in the organization[13].**

**Executives at Danaher firmly believe in the value of DBS and the potential for working together as a team to drive continuous improvement. All executives are trained in DBS techniques, typically by other managers – a core tenet of DBS is the belief that the best way to learn is to teach- and because of the credibility they have built over time by having applied the techniques themselves. New acquisitions are required to adopt DBS. Indeed, one of the first requirements for senior managers of a company that has been acquired is to spend one week undergoing training in the DBS system and then implementing an improvement project in their company. Once comfortable with the process and some of the tools, senior executives become the primary trainers of others within the organization. Personnel in acquired companies who do not buy into DBS are encouraged to leave the firm.**

**Part of what makes the DBS system so effective is its persistent application over time across the organization - it has now been used throughout the firm for over thirty years - and the commitment of top management to its usage. This acts both as a carrot and a stick for the rest of the organization. While the use of DBS is mandated, its greatest value is in providing managers the confidence and the license to pursue ambitious performance improvement targets. Rather than being concerned that changes may not work, that the cost of the exercise will be too high, or that difficulties mat arise in applying the tool, managers recognise that change is an opportunity for continuous improvement. As a result, their remarkably durable – even passionate - belief is that if they follow and trust the system, everything will work out[14].**

## DYNAMIC CAPABILITIES AT DANAHER

**DBS represents a classic example of dynamic capabilities in the sense of representing a firm-wide resource that drives increasingly higher levels of continuous improvement over time. Its importance to Danaher is best reflected in the company's own statements. Its website notes, "DBS drives every aspect of our culture and performance. We use DBS to guide what we do, measure how well we execute, and create options for doing even better -- including improving DBS itself" (Danaher 2014b); "The DBS engine drives the company through a never-ending cycle of change and improvement: exceptional PEOPLE develop outstanding PLANS and execute them using world-class tools to construct sustainable PROCESSES, resulting in superior PERFORMANCE. Superior performance**

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[13] **Larry Culp, when asked about the one thing he considers to be most central to DBS and that he would take to another company, identified the PD review sessions as the most critical element for driving continuous improvement in performance.**

[14] **At one acquired company senior managers had been looking for a performance management system to drive strategy execution, but were unsure whether what was being pushed by consultants would work. Once owned by Danaher, DBS proved to not only be the system they had been looking for, but one that they acknowledged they would never had the courage to pursue themselves.**

**and high expectations attract exceptional people, who continue the cycle"; and, "Over time, DBS has evolved from a collection of manufacturing improvement tools into a philosophy, set of values, and series of management processes that collectively define who we are and how we do what we do." This has become a "unique and a clear differentiator for our business because they have been refined over time into an integrated set of values and processes. (Danaher 2014b)" Noteworthy are the repeated emphases on continuous improvement – a dynamic capability – and the contribution of the passage of "time" to the effectiveness of DBS.**

**DBS also embodies other attributes of TPS dynamic capabilities in action. Notable has been its role in the continual upgrading of the attractiveness of businesses in the corporate portfolio: Danaher has continually altered its business mix over time to compete in "fewer, better businesses" (Exhibit 7). In 1985, 86% of revenues came from tires and rubber goods. By 1991 78% of revenues came from tools and automotive equipment. By 2001 over half of revenues were from Environmental, Electronic Test, and Motion Control platforms, while by 2014 over a third of revenues were from Life Sciences and Diagnostics. By then, the firm was referred to as a global science and technology company rather than an industrial goods manufacturer. Along the way, several businesses including rubber goods and hand tools had been divested or spun off. Such a continuous reshuffling of the portfolio represents a TPS dynamic capability as Danaher is able to move into new high margin businesses while exiting slower growth lower margin businesses in response to evolving market conditions and opportunities. Entry into a new sector is typically initiated through the acquisition of an existing player, after which the firm then puts together a series of add-on acquisitions to build out the platform and focus on developing the resources necessary to succeed in the new sector; throughout, DBS is vigorously applied to each acquisition in order to allow Danaher to create value.**

**The evolution of the portfolio also illustrates Warren Buffet's principle that "when an industry with a reputation for difficult economics meets a manager with a reputation for excellence, it is usually the industry that keeps its reputation". Businesses that demonstrated poor or deteriorating industry structure and returns were divested, while Danaher proactively sought to build platforms in other more attractive industries. By 2010, the criteria for entering a new industry included: market size exceeding $1 billion; core growth of 5-7% pa; a fragmented industry structure with a tail of $25 - 100 million participants that could be acquired; outstanding competitors ideally absent from the industry; tangible products; and amenable to the application of DBS (Anand and Collis 2008 p.5). While these were criteria might be similar to private equity firms, Danaher was seen as a strategic buyer even when entering a new sector, because of its ability to improve operational returns through the application of DBS.**

**The success of the acquisition strategy illustrates the fungible nature of the dynamic capabilities that Danaher has built through DBS: the same system and tools can stretch across myriad different businesses and technologies, with little change in the system itself required in order to add value to new businesses. Indeed, both Danaher senior management and many outsiders believed that DBS could be applied to add value to firms in many other industries, including consumer packaged goods and high-technology. The demonstrable fungibility of the core DBS capability of continuous improvement is a powerful example of a TPS dynamic capability.**

**Finally, Danaher has continued to improve DBS itself over time. The most obvious example is the increase in number of tools available, which now extend to include innovation processes, leadership skills, and product design approaches. This represents a TPS dynamic capability too, as the process itself is improved and new skills are developed and acquired. Upgrading the portfolio of organizational capabilities allows the firm to add and recombine capabilities to meet the demands of the changing markets.**

**The discussion so far illustrates how Danaher, and its DBS system, is an exemplar of how dynamic capabilities can create extraordinary value. However, this discussion also points to important limitations of such capabilities.**

**First, dynamic capabilities, like many other types of firm-specific assets, are likely to face attempts at copying. While direct replication of the exact same DBS system may be hard, Danaher's performance has indeed led to considerable imitation by others. Some have sought to duplicate DBS (eg., Hillenbrand Industries), while others have introduced their own versions of a continuous improvement system. At United Technologies, for example, a similar system - "achieving competitive excellence" - was considered to be responsible for roughly half the value created under CEO George David (Roth 2013). Elsewhere, Illinois Tool Works has benefited from vigorous application of its own set of principles – notably the "80/20 rule" - to everything from the number of SKUs in a product line, to customer segments served, and even the corporate portfolio. Each of these systems, while different in particular ways from Danaher, represent versions of continuous improvements processes that seek to drive performance by developing dynamic capabilities (including TPS-style capabilities). As these firms, and increasingly even private equity firms, add "operational" improvements to their armoury of tools to apply to portfolio companies, the rarity of DBS begins to dissipate under the threat of substitution from similar, if not identical, dynamic capabilities.**

**Second, DBS represents a collection of activities that are closely aligned, rather than a single process or a collection of independent ones. Indeed, ultimately what makes it hard to directly imitate DBS – and the reason why it has proven to be such an effective source of value creation for so long – is the tight integration across the various parts of DBS. Compelling illustrations across all parts of DBS abound. For example, a division's ability to create an effective strategy setting process first requires having a common language through the DBS toolkit; the visibility around, and credibility of, the color-coded measures employed in PD reviews requires trust in the shared goal of "solving the problem"; related, the credibility of the commitment not to "blame the person" requires a deep-rooted belief in the initial quality of hiring; the ability to effectively cascade initiatives through the organization requires that strategy setting process outcomes are clear and a commitment of senior management to take the cascaded KPI measures seriously; while the relentless application of DBS techniques over time requires a strong belief in the potential for continuous improvement[15]. In short, DBS itself represents a "strategy" – a set of choices that are tightly aligned and integrated, and that would be very hard to change if the firm chose to build a different capability.**

[15] Culp often stated that, "the day you believe that your business is mature, it will be".

**If, for example, Danaher altered its compensation policy to reward short term performance, or reduced the involvement of senior management in teaching DBS, or changed the philosophy behind PD reviews, the entire process would be affected. This tight alignment gets more deep-rooted over time with the repeated application of DBS throughout the firm. In turn, the consistent adherence to DBS for thirty years, makes more credible the unyielding commitment of senior management to the system that further ensures its adoption throughout the firm. If it was known that next year Danaher would no longer be employing DBS because some other technique or system would be utilized, it is unlikely that any newly acquired firm would bother to invest in understanding and applying a technique they might never use again. The success of effectively building any capability within an organization is therefore demonstrated to be predicated on the fact that the capability will not be changed. This requires a commitment that conflicts with the ability to continually change capabilities, and vividly illustrates the tradeoff between successfully implementing a first order dynamic capability and having a second order capability to change that first order capability. Simply put, if a dynamic capability required Danaher to discard DBS, the baby would go out with the bath water!**

**A third limitation of dynamic capabilities involves the tradeoff between different types of such capabilities. Following his career at GE, James McNerney introduced the six sigma process to 3M upon becoming CEO in 2001 (Hindo, 2007). During his tenure for four and a half years, 3M dutifully applied the methodology and trained many black belts in the process. However, when McNerney left in 2005 one of the first things that his successor did was to end the forced application of six sigma since he believed it had gone too far in privileging cost efficiency versus the innovation for which 3M was historically known.**

**The 3M example vividly illustrates the fact that ultimately firms must confront strategic choices about which dynamic capabilities to develop (Pisano 2017) - in this case the tension that exists between capabilities that favor exploration versus those that favor exploitation. Under McNerney 3M chose to focus more on efficiency and continuous improvement, and aligned the entire organization around that capability. His successor chose to pursue more of an innovation capability and had to change the entire organization to build this, thus sacrificing some (though not all) the benefits of the earlier six sigma initiatives. It is unlikely that any TPS dynamic capability can both allow the firm to reinvent itself while also retaining the original processes and routines that made it successful in the past – unless it is the miraculous capability to "always have a competitive advantage".**

**This does not imply that firms should not aspire to build dynamic capabilities, rather to recognize that they have to choose exactly what sort of dynamic capability they want to build (just as they would make strategic decisions about any resource investment) and to acknowledge that there are tradeoffs between different versions of dynamic capabilities and between higher and lower-level capabilities. Aligning the organization behind a capability necessarily involves making choices about compensation and reward systems, organization design, and so on that preclude or constrain the ability to pursue other sorts of capabilities.**

## DISCUSSION AND IMPLICATIONS

**The example of Danaher and DBS exemplifies seven important aspects of dynamic capabilities. First, dynamic capabilities do exist and are valuable. The ability to continuously improve operating margins shows how DBS can push out the production frontier in ways that acquired firms were previously unable to do, and that are better than other potential acquirers (including, in many cases, private equity firms).**

**Second, it is possible to build higher-order dynamic capabilities, defined as the ability to improve the process of process improvement. At Danaher the tool box of process improvement techniques, for example, has been being continually expanded, and its implementation continually refined, so that DBS now includes approaches to generating organic growth rather than just cutting costs. Indeed, some of the newer process tools are explicitly of the "how to improve the process of improvement" type. Such a higher-order capability can represent an even more desirable capability since it allows the application of DBS to move beyond simply a one-time jump to the productivity frontier, and instead result in the continual pushing out of that frontier.**

**Third, the application the principles of DBS to the corporate portfolio has allowed Danaher to migrate its business mix into increasingly more attractive industries while exiting those that show deteriorating industry structures. This is perhaps the best example of DBS as a TPS dynamic capability as the portfolio is adjusted to take advantage of shifting external industry circumstances. The extreme version of this phenomenon occurred in 2016 when, after its history of making increasingly large acquisitions Danaher split the company in half. Danaher became a life sciences and high tech company, while Fortive, the spinoff, included the mature industrial businesses. In some ways, perhaps, this is an even better example of TPS dynamic capability as the entire company is transformed.**

**Fourth, dynamic capabilities are built from structuring an entire organization rather than from adopting a limited and isolated number of routines; i.e., it is an embedded and path dependent organizational capability. While Danaher's success began with the application of the typical Toyota system lean production techniques on the shop floor, importantly, DBS now consists of an entire system of HR policies, strategy setting, training, monitoring and control systems that combine to ensure that the core techniques are systematically followed. These have been employed in the firm and by the same senior management for nearly thirty years. This demonstrates that the real power of dynamic capabilities requires more than just the straightforward application of a few tools but comes from the unique administrative context and design of an organization that has been refined over a substantial period of time.**

**Fifth, and related, because the capability comes from aligning the entire organization, direct imitation is difficult – emulation of individual pieces of the system is likely to be less effective. Only replication of the entire system can deliver similar results. Both because the system is path dependent and because of this tight alignment, such a capability therefore passes the imitation test of a valuable resource. However, it does not prevent other firms substituting their own version of the system, built from their own idiosyncratic and path dependent organizational routines – since there is no scarce factor over which companies compete that underpins the capability.**

**Sixth, there is a limit to the extent to which TPS dynamic capabilities can be employed. In particular, the conflict between the administrative structures required to sustain the current abilities – Policy Deployment reviews, personnel, visible metrics and so on - and those which would change the entire process, limit any company's ability to pursue higher order TPS dynamic capabilities. There are real tradeoffs between the pursuit of TPS dynamic capabilities and the more mundane lower level routines required to execute any new strategy after a radical shift in direction.**

**Finally, like any other strategic choice, building a particular dynamic capability involves tradeoffs with other sorts of dynamic capability and with lower level capabilities. The time commitment of Danaher's senior executives to policy deployment reviews, the onboarding required of new executive teams, and the ongoing training sessions to ensure that DBS is deep-rooted within the firm - all make it hard for the firm and its managers to pay attention to other systems for driving performance or of creating new systems and processes. As with any strategic choice, alignment of every activity and process is critical to success so that, for example, having the compensation system reward long term performance, has to be consistent with the set of DBS tools that drive continuous, rather than short-term, improvement. Similarly, the choice to structure the company with a tiny corporate office means that opportunities for synergies are left exploited – Danaher had no corporate purchasing function until recently – even if it allows for readily trading businesses as a way of upgrading the portfolio, and perhaps encouraging exploration by operating units (Sengul 2018). Indeed, every choice that Danaher makes to implement DBS – the type of personnel they employ, the capital allocation process, and so on - constrains behaviors (such as risk taking) that might be appropriate for building different capabilities. As such, companies have to recognize that whichever capability they commit to choosing will have inherent limitations. Even a dynamic capability cannot solve all problems at once.**

## FUTURE RESEARCH

**As we believe that choosing to build a certain type of dynamic capability is a strategic choice, one obvious question is to determine under what conditions that might be the correct choice[16]. Teece himself (Teece et al 2006) seemed to recognize this in arguing that dynamic capabilities are more valuable in uncertain and unpredictable businesses. But a more general investigation of the conditions favoring dynamic capabilities would be fruitful. Are there circumstances when the slack potentially required to support dynamic capabilities is actually a detriment to performance and should not be invested in? Might Williams' notion of differential industry rates of change** (Williams 1992) **be a useful indicator of which contexts are most appropriate for certain types of capability? Perhaps the appropriate choice varies by the types of asset that underpin competitive advantage (Collis 1986)? Are dynamic capabilities more important in digitally enabled industries, or those that are data and information driven rather than traditional product-centric? All these questions merit further investigation.**

[16] For this, and several of the other research questions, we thank the editor and an anonymous referee.

**A related question concerns the boundary conditions under which dynamic capabilities are valuable. Most of the research and the case examples that have been described to date (Fujimoto 1999) refer to developed countries with robust institutional structures. A logical question is whether dynamic capabilities matter as much in emerging markets, or under a less developed institutional framework (Khanna and Palepu 1997).**

**Similarly, is it worth interrogating how far any one firm's dynamic capability can fruitfully travel. Since dynamic capabilities arise from embedded organizational routines there might well be cultural or geographic constraints on their applicability outside the domestic context. Aspects of the capability might also be specific to a particular set of industries, such as product-centric or B2B. Whereas the appeal of dynamic capabilities is that they provide a firm with the flexibility to move beyond its original industry and positioning, it would be valuable to understand the extent to which there are practical limitations on their fungibility.**

**In this regard, comparing and contrasting the dynamic capabilities of different firms would be revealing. What is the difference between the nature of the dynamic capability that Danaher has built when compared to that, of say, the Toyota Production System (Fujimoto 1999)? What do the two firms do differently, particularly since DBS was originally crafted as a copy of the Toyota System? How did they evolve differently? How far can each system travel across industries, or into activities other than manufacturing? What different tradeoffs are embedded in the two systems? Interestingly, Danaher's split into two companies presents a perfect opportunity to follow the trajectory of the same system as it evolves over time in now separate companies[17].**

**At a more micro level, we suggest that there is an underlying tradeoff between levels and types of dynamic capability. What would be valuable would be to understand the specific processes, systems and policies that support TPS dynamic capabilities, and those that perhaps are more useful for static efficiencies or lower level capabilities. What exactly do firms have to do to build sensing, seizing and transforming skills? While this would be useful in its own right to shift our understanding of the phenomenon from the theoretical to the practical, it might also suggest why it is impossible to build both dynamic capabilities and static efficiencies. Perhaps the answer, like Ghemawat and Ricart (1993), lies in policy differences, like incentive schemes or personnel attributes, rather than simply formal organization structure. Regardless, understanding in detail the specific organizational tools that build dynamic capabilities would be of normative value.**

## CONCLUSION

**Both the theoretical inquiry and the analysis of the Danaher case in this paper illustrate that dynamic capabilities can be valuable when they satisfy the VRIN tests for sustainable competitive advantage. While the TPS dynamic capability is, in theory, more valuable and desirable, it is unlikely to be the holy grail of sustained competitive advantage. In the first instance, competitors can replicate its outcomes even if they cannot imitate its specific routines and precisely the same structures; and,**

[17] **FBS (Fortive Business System) is already beginning to show some differences from DBS with regard, for example, to the transfer of high potentials across the organization.**

**the very existence of the capability expands the potential set of competitors against whom one has to be superior. But more importantly, there are tradeoffs between different levels of dynamic capabilities similar to the commonly observed tradeoffs between exploitation and exploration. Building a capability that requires discarding earlier sources of advantage that maintain static efficiency, is likely to undercut any advantage accruing to the pursuit of a new strategic positioning which cannot be effectively executed.**

**Only the capability to reposition and simultaneously generate an entirely new set of processes to drive lower level dynamic efficiency – i.e., an entirely new variety of DBS - would avoid this latter critique. This gets perilously close to a theoretical nirvana where a firm develops the best capability of all - the ability to always have a competitive advantage. In practice, as the Danaher case illustrates, dynamic capabilities invariably require long-term commitment by a firm in order to be effective, involve a set of choices that must be closely aligned with other choices made by the firm, and embody tradeoffs that imply that investments in any particular dynamic capability may be inconsistent with acquiring other ones. As a result, the likelihood that dynamic capabilities yield such strategic nirvana is unlikely, if not impossible.**

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**EXHIBIT 1**

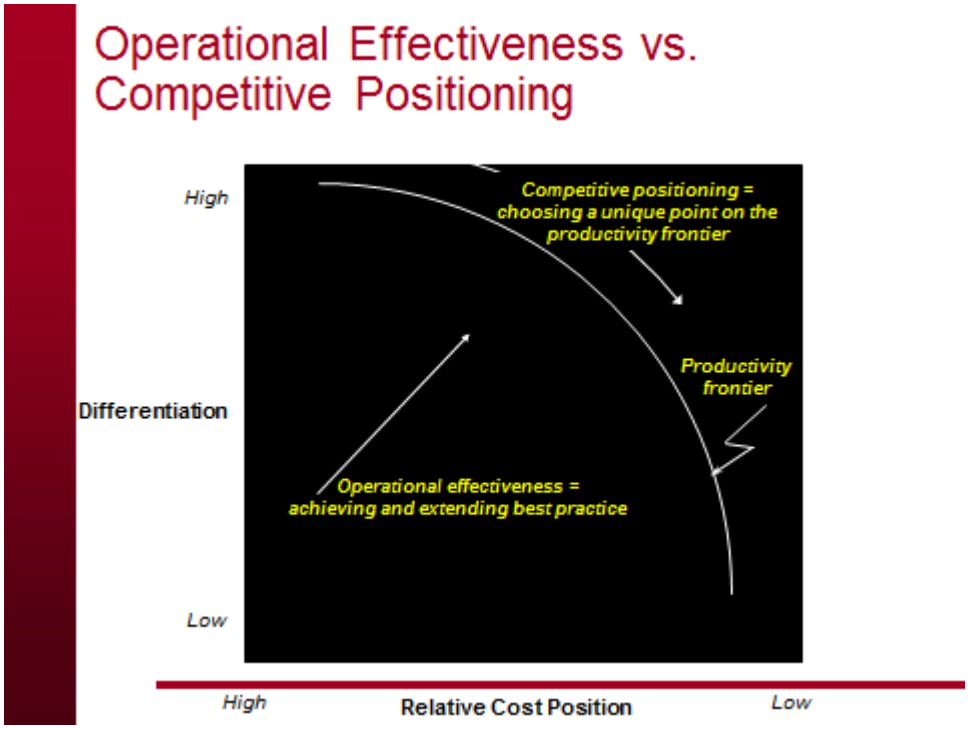



**EXHIBIT 2**

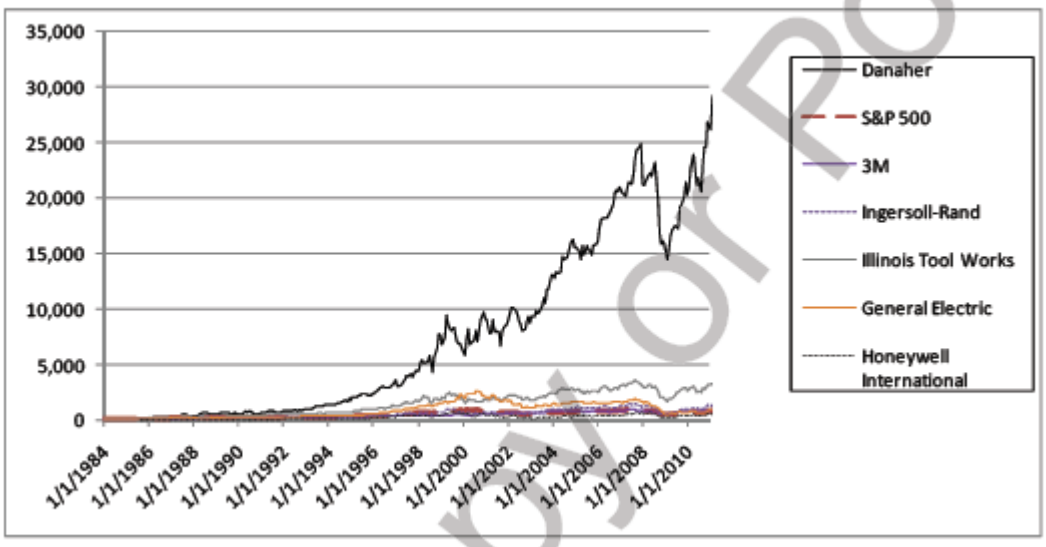
Operating Margin Expansion of Acquired Companies

| | | Op Margin year prior to purchase | Current Margins | Improvement |
|---|---|---|---|---|
| 1998 | FLUKE | HSD | 20%+ | +1200 bps |
| 1999 | | Mid Teens | 20%+ | +700 bps |
| 2000 | DANAHER | HSD | Low DD | +400 bps |
| 2002 | GERBER | MSD | Low DD | +700 bps |
| 2002 | VIDEOJET | Mid Teens | 20%+ | +700 bps |

Source: Company Investor Presentation, December 2005.

**EXHIBIT 3**

Danaher Share Price versus S&P and Competitors, 1984–2010 (indexed to 100)




Source: Created by casewriters using data from Thomson ONE Banker, accessed April 2011.

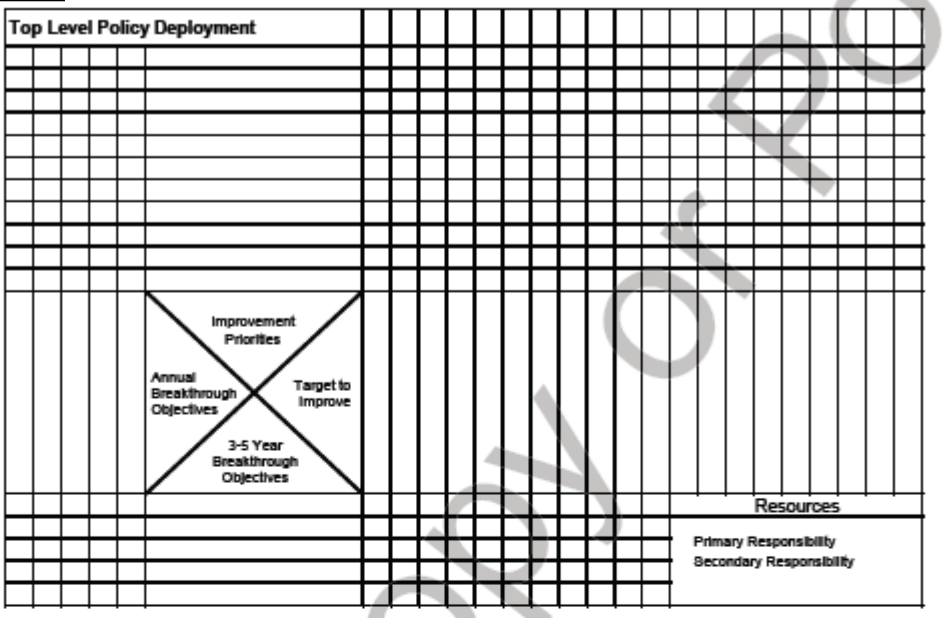
EXHIBIT 4

**Exhibit 11** DBS Training Modules

| Business Process | Lean, Supply Chain, Variation Reduction Tools | | I2E & Growth Tools | ociate velopment | Leadership Development |
|---|---|---|---|---|---|
| Strategic Planning | 5S Visual Mgmt. | (DMP) Danaher Materials Process | (VOC) Voice of the Customer | Introduction to DBS | DBS Immersion |
| Policy Deployment | Value Stream Mapping | Materials Assessment Tool | Value Selling | DBS Tool Certification MBB Process | ECO |
| Daily Management | Standard Work | (PSI) Product Sales Inventory | Customer Segmentation | DBSL Boot Camp | DBS Leadership Training |
| Kaizen Event Basics | Model Cell | Lean Supply Chain | Accelerated Product Development | Training & Facilitation Techniques | Crucial Conversations |
| Acquisition Integration | (SMED) Set-up Reduction | Sourcing Workshop | Product Life Cycle Mgmt | Root Cause/Counter Measure | Interview & Selection training |
| JIT Accounting | (3P) Production Prep. Process | Supply Base Management | Project Management | Change Management | Danaher Leadership Program |
| Accounts Receivable Benchmarking | (TPM) Total Productive Mfg | Commodity Management | Ideation | DBSL Continuing Education Workshop | DBS Zealotry Boot Camp |
| Financial Acumen | Flow/5S/Standard Work | (VRK) Variation Reduction Kaizen | TG-2 Kaizen | | |
| (IPP) Intellectual Property Process | Lean Conversion Boot Camp | (MSA) Measurement System Analysis | Open Innovation | | |
| | (TPI) Transactional Process Improvement | (FMEA) Failure Mode & Effective Analysis | Pricing Margin Management | | |
| | Heijunka | Six Sigma | Sales Force Initiative | | |
| | Lean Conversion Roadmap | Supply Chain & Logistics Best Practices | Breakthrough Ideation | | |
| | | | Lean Software Design | | |

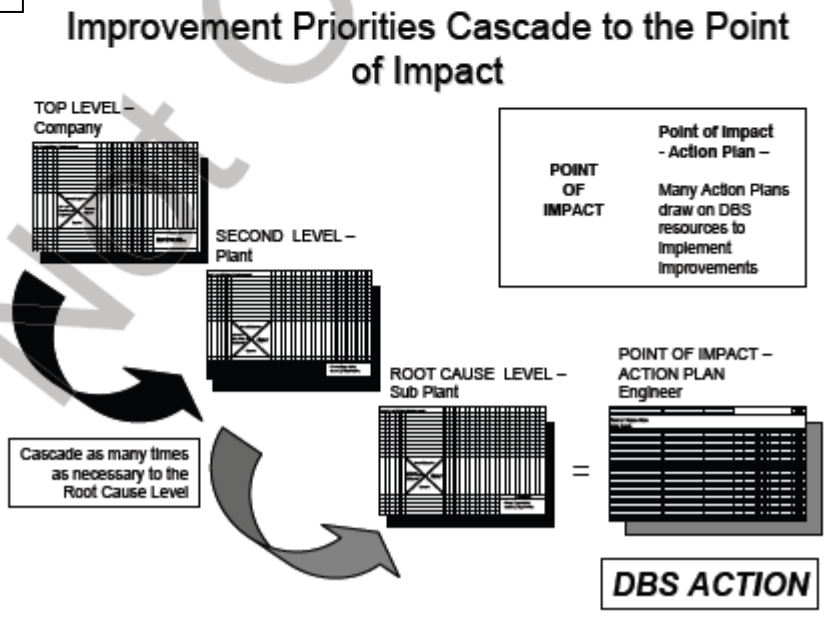
Source: Company materials.

**EXHIBIT 5** Top-Level Policy Deployment Chart




Source: Recreated by casewriters from company materials.

**EXHIBIT 6** Improvement Priorities Cascade Slide



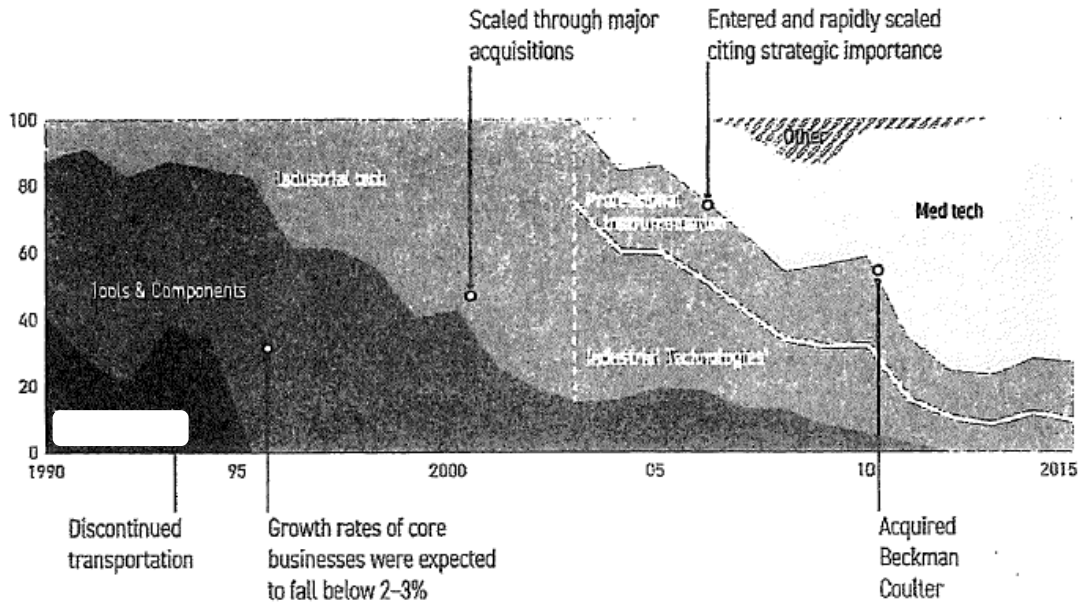

Source: Recreated by casewriters from company materials, as cited by Janney Montgomery Scott.

**EXHIBIT 7**

## Danaher's dynamic resource re-allocation

Danaher moved capex aggressively from old to new fields

**Share of capex by business unit, percent**




*1 The segment was split in 2003 into Professional Instrumentation and Industrial Technologies*

*Source: Compusat; Annual reports*

*Strategy Beyond The Hockey Stick*, Chris Bradley, Martin Hirt & Sven Smit, McKinsey & Company, 2018, Exhibit 27, Page 155.