Built to Become - HP’s History of Becoming - 1939-2015:
An Integral Process Overview*

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Abstract

This paper conceptualizes HP’s history of becoming between 1939 and 2015 in terms of an integral process overview encompassing seven distinct epochs and associated corporate transformations, and discusses the differential contributions of successive CEOs to that integral process. The paper examines how the strategic leadership of successive CEOs has mediated the interplays between external context dynamics manifest in the company’s evolving industry ecosystem and the internal ecology of strategy-making. Analysis of the messy process of corporate becoming highlights the paradox of corporate becoming, the antifragility of adaptive capacity of long-lived companies, and the existential situation facing successive CEOs.
Introduction

Different industries change at different rates (slow to fast) and magnitudes (small to large). For instance, change in the food processing industry is fairly slow and usually small; change in the oil industry is slow but occasionally very large (witness the effects of “fracking” in 2014); and change in the fashion industry is fast but usually small. The information technology-based industries, however, are characterized by fast and often quite large change. Not surprisingly, while the food processing, oil and fashion industries contain a number of long-lived companies, the information technology-based industries support relatively few of them, with IBM and HP perhaps the most outstanding examples.

This paper provides an integral process overview of long-lived HP’s history of becoming. It first develops the idea that corporate becoming depends on the capacity of strategic leadership to mediate the interplays between external and internal context dynamics through corporate transformation. Following this conceptual framing, the paper describes in some depth HP’s history in terms of seven epochs: distinct time periods since its founding in 1939 that can be clearly delineated in terms of the company’s evolving corporate portfolio of businesses. This is followed by a brief discussion of the role of HP’s successive CEOs in the corporate transformations that connect these different epochs, and by a brief discussion of the limitations of evaluating their performance in relation to HP’s share price movements during their tenure. The paper ends with identifying a paradox in HP’s history of becoming, elucidating the antifragility of HP’s adaptive capacity in that history, and highlighting the existential situation faced by HP’s successive CEOs in contributing to the company’s process of becoming. This sets the stage for the narrative chapters of *Built to Become* that offer an in-depth documentation and
analysis of the differential contributions of each of HP’s successive CEOs to the company’s integral process of becoming up to 2015 and beyond.

Corporate Becoming:
Surviving External and Internal Context Dynamics

Organizational Ecology and Organizational Learning Perspectives

The external context dynamics within which a company like HP operates comprises multiple forces: the changing bargaining power of buyers, suppliers, complementers (partners), and distribution channels; the changing degree of competitive intensity; the potential threat of new entrants and substitution; changing regulatory requirements; and, especially, rapid technological change. This system of forces forms an industry’s ecosystem – a highly complex system of interactions between all these forces – that is held together with various types of rules that we have identified in chapter 1: normative, technological, economic and cognitive ones. This ecosystem constitutes the external selection environment for all the companies that are part of it. Given its ecological nature, a change in one force may ripple throughout the entire system with consequences that are difficult to predict.

During some time periods, which are called here “epochs,” the rules governing the industry ecosystem change only incrementally and the system of forces remains in a relatively stable state of equilibrium (e.g., market shares of incumbents may change somewhat but often revert back to a stable distribution). At critical times, however, entrepreneurship-driven innovation radically changes the selective pressures of the external context dynamics. To survive a company has to be able to transform itself, which gives rise to a new epoch.
**Organizational ecology**

Different social science disciplines focus on different aspects of the external context dynamics and their implications for organizational change. For the purposes of this paper, the organizational ecology perspective is useful. The organizational ecology perspective suggests that organizational change must be understood at the level of entire populations of similar organizations, and as the result of replacement and selection rather than of strategic adaptation. Incumbents fail in the face of external context dynamics because inertia prevents them from adapting and they are replaced with new companies that do different things or the same things differently (“better,” in the eyes of the majority of customers). In other words, at some point in time they begin to fail the “relevance” test.

Organizational ecology researchers have provided empirical evidence and deductive theoretical support of the value of inertia for organizational survival. They point to the conundrum leaders intending to improve organizational performance face, for instance through what they call “architectural change” (e.g., changes in the form of authority, pattern of control relations, and so on): “Surely some architectural changes do improve performance and thereby reduce mortality hazards. Just as surely, others have the opposite effect. Should we assume the beneficial case as a default? We think not.” They warn that attempted changes are often hazardous because the organization-specific contingencies on which the success depends are very difficult to assess *a priori*; many changes are imitative, simply reflecting fads and fashions; and changes often lead to unforeseen and unintended consequences.

**Organizational learning**
The organizational learning perspective,\textsuperscript{6} in contrast, focuses on how organizations search for information to try to adapt; that is, proactively manage their fit with the external selection environment. While organizational learning does not necessarily lead to organizational adaptation – organizations can learn the wrong lessons! – this perspective leaves room for cognitive processes and knowledge development that is purposeful, even if only myopically so, in driving organizational change. Strategy-making as adaptive organizational capability is an important manifestation of the organizational learning perspective. Nevertheless, even leading organizational learning researchers warn about the potential dangers of organizational change, because while the upside of correct change decisions is very high, the downside of wrong ones can “…lead to major disasters…”\textsuperscript{7}

Equally dangerous, however, is the “creosote bush” phenomenon, a metaphor coined by Craig Barrett, a former Intel Corporation CEO. The creosote bush is a desert plan (Barrett lives in Arizona!) that poisons the ground around it, preventing other plants from growing nearby. Accordingly, the creosote bush phenomenon refers to the strategic inertia that a successful corporation experiences as it gets locked-in with its product-market environment. In some important ways, the creosote bush phenomenon is related to the danger that Dave Packard saw in the “One-Hoss Shay” phenomenon.\textsuperscript{8} Both are concerned with the ultimately self-defeating consequences of seeking to indefinitely extend perfection in matching product-market position with distinctive competence for a set of core businesses in the face of radically changing context dynamics, and thereby leaving no room for exploring and exploiting new business opportunities.\textsuperscript{9} This too poses a serious challenge for strategic leadership.
Internal Ecology of Strategy-Making

To integrate the implications for corporate longevity of the organization ecology and organizational learning perspectives it is useful to recognize that established organizations continue to remain subject to the selection force of the external environment. Many do in fact succumb to it in the long run. But it is also useful to recognize that established organizations have gained the opportunity to substitute, to some extent, internal selection for external selection; that is, their longevity depends on their capacity to enter into and exit from businesses in the face of changing context dynamics. This is the central idea of the internal ecology model of strategy-making introduced in chapter 1.

An established company, like HP, can be viewed as an ecological system in its own right, and its survival and continued success depend on the functioning of its internal ecology of strategy-making. While ecological processes at the level of organizational populations (e.g., industries) involve organizational founding and disbanding rates, the internal ecology of strategy-making involves strategic decisions that change the composition of the corporate business portfolio over time, including entering new businesses and exiting from existing ones over time. Computers, inkjet printers and networking, for instance, emerged as unplanned major new HP businesses. Various chapters in Built to Become discuss these strategic decisions in greater detail, as well as the spinoff of HP’s Test & Measurement business during Lew Platt’s tenure as CEO. In 2014, current CEO Meg Whitman has announced plans to spin off HP’s personal computer and printing businesses.
To illustrate the results of HP’s internal ecology of strategy-making for part of its history, Figure 2.1 shows the evolution of the composition of the company’s total revenues during the period 2001-2011. The data in Figure 2.1 span Epochs 5 and 6 in HP’s history and the CEO tenures of Carly Fiorina and Mark Hurd (see further below).

Figure 2.1 About Here

Figure 2.1 shows that between 2001 and 2011, the Imaging and Printing business evolved from 43 percent to only 20 percent of HP’s total revenue; Personal Systems went from 22 percent to 32 percent; Services went from 13 percent to 28 percent; and Enterprise Storage and Servers from 18 percent to 15 percent. These sorts of outcomes of HP’s internal ecology of strategy-making process have continued to shape its process of becoming. For instance, the data shown in Figure 1 indicate that HP would be much more exposed to the external context dynamics of the PC and Services businesses going forward beyond 2011.

So what is the Role of the CEO’s Strategic Leadership?

Historians and social scientists are trained to explain epochal changes in terms of impersonal forces. Different historical and social theories emphasize different forces\(^{14}\), but most eschew explanations based on the “great man (or woman)” perspective. Nevertheless, based on his mid-1970s Middle East shuttle diplomacy experience, Henry Kissinger, a former history professor at Harvard, reportedly told his biographer: “As a professor, I tended to think of history as run by impersonal forces, (…) But when you see it in practice, you see the difference personalities make.”\(^{15}\) In light of this, while remaining firmly rooted in the intellectual traditions of history and social science, the remainder of this paper intends to set the stage for documenting in greater
detail in *Built to Become* the role of strategic leadership of successive CEOs in the internal ecology of strategy-making through which HP has been able to navigate the external and internal context dynamics it has faced throughout its process of becoming.

**Leading corporate transformations**

Epochal changes associated with external context dynamics create “strategic inflection points” (SIPs). These are usually signaled by “strategic dissonance,” which means that the company’s senior executives no longer have a shared understanding of the strategic situation facing the firm and disagree about the strategic actions to take. Strategic dissonance must ultimately be resolved by the CEO (the “one” in the “peers-plus-one” strategic decision-making processes discussed in chapter 1) in order for the company to be able to transform itself as it tries to find a viable path while traversing the “valley of death” associated with an SIP. Corporate transformations thus bring into sharp focus the role of the CEO’s strategic leadership. This encompasses the CEO’s key strategic leadership tasks: (1) formulating the corporate strategy in terms of what the game is the company wants to be a winner in (and defining winning), (2) aligning product-market position and distinctive competence for competitive advantage, and (3) aligning corporate strategy and strategic action. It also encompasses the development of the four key elements of strategic leadership capability: (1) strategic leadership regime, (2) managing dynamic interplays of culture and strategy, (3) balancing strategic resource allocation to fit and evolvability, and (4) maintaining dynamic interactions with the board of directors.

**The fundamental thesis of corporate transformations**

The critical role of the CEO’s strategic leadership can be illuminated in novel ways in light of Burgelman’s formulation of the fundamental thesis of corporate transformation: *Successful corporate transformations, in contrast to unsuccessful ones, are likely to have been preceded*
by experimentation and selection processes in the internal ecology of strategy-making that reduced uncertainty and thereby gave the CEO confidence that the transformation could be effectively executed.\textsuperscript{18}

HP’s History of Becoming: Epochs and Corporate Transformations

Surviving the Relentless Pace of Technological Change

The genesis of the electronics industry can be situated in the mid-1930s with the first use of vacuum tubes as on-off switches in electronic circuits,\textsuperscript{19} which made possible the first innovative product devised by HP’s founders. This was followed by the invention of the transistor in 1947, the integrated circuit in 1958-59, and the general-purpose microprocessor in 1969. These hardware technologies gave rise to mainframe computers, minicomputers, electronic calculators, personal computers, tablet computers, smartphones, among other applications. For the past six decades the electronics and information processing industries have progressed at the relentless pace described by “Moore’s Law” that computing power would double roughly every 18 months.\textsuperscript{20} The last two decades also saw the emergence of the Internet and world-wide-web, and the build-out of fixed and mobile broadband communications technologies. Throughout this rapid technological evolution (some call it “revolution”), hardware-based innovations stimulated the development of commensurately powerful software innovations, both for the enterprise (e.g., enterprise resource planning systems) and consumer (e.g., Windows and iOS) markets. Started in 1939, HP is among the very few technology companies to have survived on this long journey through multiple technological revolutions, sometimes at the vanguard, sometimes struggling to catch up, but continuously remaining sufficiently relevant to customers and investors to be able to stay profitable, independent and in control of its destiny while almost all
of its erstwhile competitors have fallen way. In light of this, HP can be viewed as a “great” company because it has so far been able to transform multiple times in the course of its 75-year history.

Already in 1996, Robert Burgelman and Andy Grove wrote:

The history of HP has been and continuous to be a series of transformations all achieved by “peaceful means” in the hands of internal management. To see this, compare their ability to move from instruments to computers (and their growth spurt) with that of their major competitors in instruments. When computers moved from minicomputer-based technology to microprocessor-based technology, compare their performance with that of other minicomputer manufacturers. HP made the transformation with hardly working a sweat. In recent years, HP has transformed itself again, becoming the world leader in desktop printing and gradually working itself into a strong position in desktop computers. HP’s culture is more “SIP-ready” than any we can think of.21

Similarly, House and Price in their well-documented history of innovation and business transformation at HP up to 2008, identify six transformations: (1) Audio-video test to microwave test (1949-1959); (2) frequency domain test to scientific test (1959-1968); (3) electrical engineering test to scientific systems (1968-1976); (4) scientific systems to business computing (1976-1986); (5) computing to printing and imaging (1986-1996); and (6) enterprise to professional services.22 These transformations and the time spans that they encompass are primarily defined in terms of technologies and products, which is probably due to the strong engineering and engineering education background and experience that must have shaped the perspective of these authors. They provide an intriguing explanation for how these transformations came about:

Usually a redefinition of terms accompanied the transformations; for example, discovering that tools for radio and television designers were not unlike tools for AT&T long-distance telephony if it was called “the frequency domain.” Similarly, computer peripherals became “printing and imaging,” becoming larger than the computing engines that spawned them. The Compaq merger allowed the redefinition of computing into
personal terms more clearly than HP had for three decades; the EDS acquisition will re-
characterize much of HP going forward.\textsuperscript{23}

House and Price are puzzled, however, by why HP had been able to see new opportunities while other major competitors often did not:

In retrospect, one must conclude that something odd and unusual occurred at HP several times, enabling it to anticipate new markets and prevail in many instances where other companies missed the signals. In other situations, something enabled it to persevere and endure until winning combinations could be composed, when most companies would cut their losses and quit early.\textsuperscript{24}

They attribute this to the curiosity, innate skill, perseverance, and an ability to “think outside the box” to create transformative solutions, which they consider all part of the HP Way.\textsuperscript{25} Crucial for the fundamental thesis about corporate transformation, they also note that \textit{Bill Hewlett} \textit{resisted three transformations, and Dave Packard was on record at some point to have opposed all of them}.\textsuperscript{26} This implies that each time a corporate transformation of HP had to be sanctioned and embraced by the founders, an internal experimentation and selection process had already been under way in the company’s internal ecology of strategy-making. How printing became eventually accepted by John Young as an important new business for HP and, much later, networking by Mark Hurd, provides some evidence that this bottom-up innovation process has continued to be an important part of HP’s internal ecology of strategy-making beyond the time of the involvement of the founders.

\textbf{Epochs and Corporate Transformations}

Building on House and Price’s insights, but with a different focus, the remainder of this paper provides an integral overview of the history of epochs and corporate transformations that shaped HP’s process of becoming. Epochs and corporate transformations are defined here in relation to
the evolving composition of HP’s corporate business portfolio; that is, they are discussed in
terms of the functioning of the company’s internal ecology of strategy-making that shaped the
evolving relative importance of HP’s different core businesses, the generation of new ones and
the exit of old ones.

**The messy evolutionary process of becoming**

The epochs in HP’s history of becoming, however, were shaped by key external forces,
especially radical technological change, as well as by key internal forces associated with the
internal ecology of strategy-making and CEO strategic leadership. This is shown in Figure 2.2,
which shows the first five epochs in HP’s process of becoming in relation to the evolving
external and internal forces.

Figure 2.2 suggests that the evolutionary process of becoming is complex and in some interesting
ways also quite messy; that is, the key external forces frequently produced unanticipated radical
technological change, and there was no clear long-time vision and grand strategy driving HP’s
strategic responses to these changes. In fact, the company often was relatively late in responding
to these changes. Figure 2.2 comes close to giving support to the wry view that history is just
“One damned thing after another,” which is of course unsatisfactory for the purposes of this
book. So, how to gain systematic insight in the process of corporate becoming?

**Discovering systematic insight**

From a methodological point of view (see chapter 1), the dimension of time is used in the next
two sections of this paper to compare, first, six distinct epochs and the associated outcomes of
the internal ecology of strategy-making, and second, the role of successive CEOs’ strategic
leadership in the corporate transformations that connect these epochs in HP’s history: from its founding in 1939 to make electronic instruments to becoming a more than $112 billion leader in computing hardware, software and imaging and printing in 2014. Going forward beyond 2014, a seventh epoch and associated corporate transformation are in the making as HP’s current CEO has decided to split the company in two by spinning out the PC and Printer businesses.

Epochs in HP’s Process of Becoming:
Outcomes of Its Internal Ecology of Strategy-Making

Epoch 1: Start-Up to Leader in Analog Test and Measurement (T&M) Equipment

The first epoch in HP’s process of becoming starts with the company founding in 1939 and lasts until 1957. When HP started, vacuum tubes were key elements of the circuitry powering electronics at that time. As a start-up, HP’s first product, an audio oscillator, was distinguished by a vacuum tube-based technical innovation Bill Hewlett had created.

HP continued to pursue technical innovation in its instruments business and grew rapidly during World War II. The company experienced a major layoff when revenue fell sharply after the war but recovered quickly, in part due to their investment in instruments for the microwave communications market. This became an important technology for a growing segment of the measurement instrument business. One of HP’s biggest competitors, General Radio, missed this market and HP took full advantage.

In 1947 the transistor was invented at Bell Labs. This technology enabled a revolution in electronics by replacing vacuum tubes (which were large, power-hungry and prone to fail) with comparatively tiny and efficient transistors that allowed for smaller, faster, more complex and far
more reliable devices that would not have been feasible with vacuum tube technology. HP successfully adopted the new technology in its instrumentation products.

**Outcomes of the internal ecology of strategy-making during epoch 1**

Under the continued strategic leadership of the company founders, HP grew its product offering from its first product into a full line of audio, video, and microwave instrumentation, which were sold to engineers and scientists through regional US distributors. By 1957, HP had become a leading provider of test and measurement instrumentation.

At this point in time, HP had revenues of $47.1 million, and had become too big for Packard and Hewlett to manage day to day. Although the two founders worked closely together, Packard was HP’s CEO for the span of its first epoch. In order to keep growing, Hewlett and Packard had to figure out how to redesign the company for the opportunities and challenges ahead.

**Epoch 2: Global Leader in Analog and Digital T&M Equipment**

The second epoch in HP’s process of becoming starts in 1957 and lasts until the late 1960s. HP became a public company in 1957. A new organization was also put in place in 1957 along with the codification of the HP Way, which reflected the founders’ long-term institution building purpose and their understanding of the adaptive capability necessary to help HP become a long-lived company (chapter 1). These steps led to increased growth and success. HP expanded globally in order to increase the size of their available market, and also purchased their main distributors to create an in-house sales force for the first time.
As HP successfully navigated the transistor revolution, it also successfully rode the even bigger integrated circuit revolution. This technology was developed in 1958 and allowed engineers to overcome a limitation that emerged in transistor technology. The physical limitations of transistors, such as the need to be connected by soldered wires and the sheer numbers of transistors required as devices became more advanced, were overcome by the invention of the integrated circuit in which all the components needed were made out of the same block of material. This invention made modern computers possible. As with transistors, HP did not invent this technology, but it adapted it to its lines of business.

By the mid to late 1960s, with the advent of low cost digital integrated circuits, electronic instruments were rapidly incorporating digital hardware and software technology and were increasingly programmable by computers to make much more sophisticated measurements. HP introduced its first computers at this point with the intent of using them as control instruments for their increasingly complex measuring systems (they were initially called “instrument controllers”). HP also entered the market for electronic desktop scientific calculators, with the goal of replacing electro-mechanical calculators that previously had been used for scientific calculation.

By the end of the 1960s, many HP products were based on integrated circuit technology. To keep growing in the market for instrumentation, HP needed to keep innovating and creating new products with high levels of contribution. It also acquired some new businesses. HP also purchased its distributors to create its own sales force, and expanded operations outside of the US to capitalize on the rapid growth of international markets. This is when the founders reorganized
the company into multiple, largely independent, product divisions, each responsible for their own profits and losses and run by General Managers. This allowed Packard and Hewlett to focus on creating new businesses organically or adding them via acquisition, while the new division managers could focus on existing product areas and bottom up innovation in related areas.

Outcomes of the internal ecology of strategy-making during epoch 2

By the end of its second epoch, HP had revenues of over $300 million, and had become the leading global, diversified electronic measurement company, expanding into Chemical, Analytical, and Medical fields, and had also entered the market for computing systems. During this time HP competed against a variety of companies including instrument maker Tektronix, Texas Instruments and others. Packard continued to serve as CEO throughout HP’s second epoch.

Epoch 3: Global Leader in T&M Equipment and Rising Contender in Computers

The third epoch in HP’s process of becoming starts in the late 1960s and extends through the late 1970s as HP’s center of gravity shifted from its legacy T&M business to computers. Bill Hewlett served as CEO during this epoch. Dave Packard returned from government service in the early 1970s, and took the role of Chairman until his retirement from the company in 1993. As HP continued to grow, the success of the independent division model spawned another level of management between the division and the CEO.

For much of this epoch HP’s market-leading T&M businesses continued to grow and deliver excellent profit. During this epoch, however, HP also developed multiple computer systems developed independently in bottom-up fashion in multiple divisions and locations across HP. HP’s computing businesses grew much faster than the legacy T&M business. HP’s original
intent for providing minicomputers and desktop calculators was to provide additional tools for engineers and scientists, but computers are general purpose by nature, and HP’s computing business soon expanded into the large and rapidly growing market for minicomputers in manufacturing and business markets.

Outcomes of the internal ecology of strategy-making during epoch 3

In 1978, by the end of HP’s third epoch, total revenues were $1.3 billion. In terms of HP’s internal ecology of strategy-making, 57 percent of total revenues still came from T&M, but 43 percent came already from the computing businesses. The profitability of HP’s computer business, however, was well below that of T&M. Also, HP was only 17th in overall computer market share, going up against the likes of IBM, DEC, Data General and Wang. It was clear that the company needed to make a fundamental strategic decision about how to compete better in the rapidly changing computer business.

Epoch 4: Global Leader in T&M Equipment, Computers and Desktop Printing

The fourth epoch in HP’s process of becoming begins in the late 1970s and extends through the mid-1990s when HP was still a global leader in T&M and had also become a global leader in Computing, and Desktop Printing. The start of this epoch was marked by John Young becoming HP’s CEO in 1978 and remaining in the job until 1992, and continued through the first years of Lew Platt’s tenure as CEO (1992-1999).

During the entire fourth epoch, HP’s market-leading T&M businesses remained strong. Soon after Young became CEO, however, he and Packard made the strategic decision that in order to keep relevant and growing, HP had to become a leader in computer systems (minicomputers in those days). This became Young’s primary focus for the rest of his time leading HP.
Under Young’s strategic leadership, HP replaced its multiple overlapping 16-bit computer lines (developed during Epoch 3) with a leading 32-bit reduced instruction set computing (RISC) architecture. He also placed large and important bets on a version of the Unix operating system instead of on HP’s proprietary operating systems, and on TCP/IP networking protocols instead of on the proprietary systems used by other vendors. Both of these strategic decisions paid off well, but only many years later after HP’s new RISC architecture was launched and the transition to Unix and TCP/IP was completed. Young also drove many gut-wrenching organizational changes for HP’s leaders and drastically changed the operating model that had been put into place in 1957.

Roughly parallel with HP’s forays into the minicomputer business, Intel’s invention of the general-purpose microprocessor in 1969 and its introduction in 1971 spawned the PC industry during the 1980s. The PC revolution had been ignited by the introduction of the consumer-friendly Apple II personal computer (based on a microprocessor developed by Motorola) in the mid-1970s, but became turbocharged by IBM’s entry into it in 1981. IBM had chosen Intel’s microprocessor and Microsoft’s desktop operating system as key components of the IBM PC, and by the late 1980s these suppliers had been able to wrestle control of the PC industry away from IBM. HP also entered the PC business, but remained a laggard as John Young was wary of this type of business where the technical contributions were mainly from Intel and Microsoft.

HP also created and led the market for non-impact laser-based and later also inkjet-based desktop printers enabled by the rapidly growing PC market. Printing became a fast growing and very
profitable new business for HP. This helped Young fund the larger than planned investments required to turn HP into a major player in the computer systems business. Under Young’s leadership, HP revenues grew from $1.3 billion to $16 billion, and HP became #5 in minicomputer/server market share, the leading provider of (very profitable) desktop printers, and continued to be the worldwide leader in T&M. When John Young retired in 1992, HP had become a much bigger, and much more complicated multi-business company.

Lew Platt, another long time HP leader, who had started in HP’s Medical business, followed Young to become HP’s 4th CEO. During the early part of Platt’s tenure, the positive momentum of all of HP’s businesses continued unabated. T&M remained strong. HP soon achieved #3 market share in the mini-computer/server business trailing only IBM and DEC. After many years of heavy investment, computer systems were finally generating good levels of profit. Platt was more supportive of the PC business than Young had been, and this part of HP’s portfolio began to grow rapidly, although delivering meager profits by HP standards. HP’s highly profitable and market-leading printing business was becoming very large and continued to grow rapidly. By the end of HP’s fourth epoch (end of 1995), total HP revenues had risen to $31.52 billion.

Outcomes of the internal ecology of strategy-making during epoch 4

In terms of HP’s internal ecology of strategy-making, under Young the composition of total revenues moved from 57 percent T&M and 43 percent Computers in 1978 to 27 percent T&M and 73 percent Computers by 1992. By 1995, during the first part of Platt’s tenure, 80 percent of total revenue came from computers, storage, software, printers and related services and support, and only 20 percent from T&M businesses. Clearly, during epoch 4 HP became transformed into
a computer company, but still mostly focused on enterprise customers with proprietary HP technologies and products.

**Epoch 5: Global Leader in Industry Standards-Based Computers and Desktop Printing; Rising Contender in Digital Networking and IT Services; Exiting the T&M Equipment Business; Missing the Internet**

The fifth epoch in HP’s process of becoming starts in the mid-1990s with the first wave of Internet-based commerce and continued until the mid-2000s. It encompasses the CEO tenures of Lew Platt and Carly Fiorina.

In the mid-1990s, still during the tenure of Lew Platt as HP’s CEO, there was a transition to industry-standard (Wintel based) servers that began when Compaq introduced its line of Proliant servers. HP also entered the industry-standard server business. The power of industry-standard servers continued to grow, eating into the traditional server market. In contrast to Compaq (at that time) and Dell, who only offered industry-standard servers, HP struggled with how to position and sell their Wintel-based servers and their proprietary PA-RISC-UX-based ones. HP’s server business began to suffer, particularly compared with Sun, Dell, and Compaq. This created tremendous conflict among the company’s senior executives that was resolved by Platt in favor of the commoditizing Wintel-based business. It was also paralleled by the formation of a partnership between HP and Intel around the development of radically new 64-bit microprocessor architecture (called “Itanium”) for high-end enterprise servers.

At the same time, HP’s fast growing printing business led the industry in market share. The printer business and the highly profitable printer ink (and other “consumables”) business comprised the greatest percentage of HP’s revenue and profit. HP’s very low (sometimes
negative) margin PC business also continued to grow. Due to the combination of PC’s and printers, HP became the leader in the consumer information technology (IT) market. Over time, however, the relative share of revenue from printers declined as HP invested more in its other businesses—investments supported by profits from its printer cash cow. Also, the T&M business was not able to deliver traditional levels of growth and profit.

A company’s size is the by-product of its growth trajectory and rather than seeking to determine the “optimal size” top management should try to dynamically match strategy and structure along its growth trajectory. This implies, however, that the internal ecology of strategy-making may sometimes drive top management to reduce the overall size of the company and that great companies do not necessarily have to proceed on a sustained quantitative growth trajectory. In the mid-1990s, Lew Platt had become concerned about the growth difficulties HP encountered and commissioned a study about the growth “stall points” that established companies seemed to systematically encounter once they reached a certain size. By 1999 Platt had come to the conclusion that the T&M’s business model no longer fit well in HP’s business portfolio and also that the “measurement-computing-communications” (MC²) foundation for driving HP’s competitive advantage and innovation could not be effectively pursued. These conclusions, reinforced by the “stall point” study, led Platt to decide to spin off HP’s legacy T&M businesses (renamed Agilent). Ned Barnholt, a top-level HP executive, became Agilent’s first CEO and vowed to instill in the new organization what he saw as the greatness attributes of the HP Way (a decentralized management philosophy and structure with bottom-up new product and new business development, a culture of innovation focused on making a meaningful contribution, a commitment to advanced research, and hiring and retaining the best people).
Also, by the late 1990s the emergence of the Internet had begun to transform the computer business, but HP completely missed the first phase of the Internet and was passed in servers by Sun Microsystems’s clever exploitation of HP’s presumed lower commitment to Unix servers. HP’s real problem, however, was that Sun leapfrogged HP’s high end HP UX servers just when the .com companies emerged and needed higher performing servers. HP’s shareholders and the board became frustrated with the company’s performance compared to its competitors. Lew Platt had grown HP from $16 billion to over $40 billion but the board wanted new leadership for the Internet era and forced Platt to retire in 1999.

The fifth epoch continued with the hiring of Carly Fiorina in July 1999 as HP’s 5th CEO, and the first from outside of the company. After unsuccessfully trying to buy Price Waterhouse Coopers’s consulting business to allow HP to compete more effectively against IBM in global accounts, Fiorina convinced the board to let HP acquire Compaq, which itself had earlier bought DEC and Tandem. The purpose of this acquisition was to make HP the largest tech company and to pursue a corporate strategy based on scale and scope to be able to deliver high technology solutions at low cost. In spite of initially strong resistance on the part of founders’ family members on the board of directors, the acquisition was completed. The subsequent strategic integration of Compaq with HP was generally viewed as highly successful.

Fiorina, unfortunately, was not able to take full advantage of the Compaq acquisition’s potential for cost reduction and, consequentially, was systematically unable to meet HP’s projected quarterly earnings. The company’s stock price suffered accordingly. By early 2005, HP also still had not been able to develop a compelling corporate strategy for capitalizing on the Internet.
opportunities. In April 2005, the board fired Fiorina. By the end of her tenure, HP’s revenues had reached almost $80 billion.

**Outcomes of the internal ecology of strategy-making during epoch 5**

In terms of HP’s evolving internal ecology of strategy-making, toward the end of Platt’s tenure about 70 percent of total revenues came from computer-related and printing-related products/systems (about evenly split), about 10 percent from IT Services, and about 20 percent from T&M related businesses.

During Fiorina’s tenure, after the Agilent spinoff (and a renaming of the business categories), Personal Systems moved from for 22 percent of total revenues in 2001 to 31 percent in 2005; Imaging and Printing from 42 percent to 29 percent; Enterprise Systems from 18 percent to 21 percent; Services from 13 percent to 18 percent; and Financial Services from 3 percent to 2 percent. The elimination of T&M from the business portfolio and the relative growth of industry standard-based personal and enterprise computing products/systems, together with the relative decline of imaging and printing products/systems, indicate that during epoch 5 HP had transformed much more into an industry-standard computer and a more consumer-oriented company that was increasingly focused on developing and selling commoditizing products/systems.

**Epoch 6: Global Leader in Industry Standards-Based Computers and Desktop Printing; Contender in Digital Networking and IT Services; Rising Contender in Commercial Printing; Missing Cloud Computing and Mobile Communications**

HP’s sixth epoch begins in the mid-2000s when cloud computing and the massive data centers that supported this new computing paradigm, together with the digitization of content and the
emergence and extremely rapid growth of smartphones and tablets, transformed the converging computing, mobile communications, consumer electronics and media (content) industries. It encompasses the CEO tenures of Mark Hurd, Léo Apotheker and Meg Whitman (until late 2014).

Mark Hurd was hired as HP’s 6th CEO and second outsider to lead the company. Hurd’s initial strategic actions were focused on remedying the lack of operational efficiency during Fiorina’s tenure. He executed forcefully and highly effectively the scale-and-scope strategic logic developed by Fiorina during HP’s Epoch 5. He also identified major opportunities for HP in commercial printing in which it still had only a small market share. Hurd’s intense focus on operational efficiency and aggressive cost cutting greatly improved HP’s financial performance.

In 2006, HP achieved Fiorina’s goal and became the world’s largest tech company (surpassing IBM), and HP stock soared to $53. To increase HP’s slowing growth rate Hurd bought companies including networking company 3-Com and services giant EDS. Revenue from PCs grew, and revenue from services, a business in which HP had long been a minor player, spiked after HP acquired EDS and renewed its focus on this segment. Enterprise storage and servers, plugged along as a steady source of revenue, although the growth was in industry standard servers that delivered lower profits than HP’s higher end server line.

With Hurd still focused on improving the execution of Fiorina’s Epoch 5 scale-and-scope-based corporate strategy HP missed the early signs of the emergence of epoch 6, in particular the movement toward cloud computing and smart mobile devices. On the cloud computing front, service providers such as Google and Amazon were much quicker than HP to exploit the new
paradigm. Also, virtualization (driven by VMware) and further hardware standardization, in particular rapid progress in processing power of Intel’s x86 architecture-based servers that reduced the relevance of the long-delayed new 64-bit architecture HP was developing together with Intel, further reshaped the competitive landscape and reduced both revenue growth and profit for the traditional server, storage, and networking providers.

On the mobility front, HP also missed the emergence of smartphones and tablet computers that had grown rapidly with the introduction of the iPhone in 2007. As a means to enter mobile computing Hurd bought Palm in 2010. By then Palm was an “also-ran” with a small and fast declining market share in mobile operating systems. In efforts to sustain HP’s stock price, Hurd also approved aggressive stock buyback plans. The major acquisitions and stock buybacks drove HP’s long-term debt to record levels. In August 2011, Hurd was fired (for alleged personal expense-related improprieties). Toward the end of his tenure, HP’s revenues reached $114.55 billion (end of 2009) but were beginning to head downwards.

Epoch 6’s radically new strategic challenges facing HP’s businesses were becoming increasingly clear, yet had still not been explicitly stated as such by top management when Léo Apotheker succeeded Mark Hurd in September 2010. Apotheker became HP’s 7th CEO and the third consecutive outsider to run the company. By that time, Apple and Samsung surpassed HP in size as it struggled with both growth and profitability. Apotheker’s strategy to help HP meet the radically new strategic challenges was to transform the company equally radically by making it focus on enterprise software and potentially exit the company’s commodity and consumer-oriented businesses. He convinced the board to let HP pay a very high price for the (“Big Data”)
software analytics UK-based company Autonomy, and hinted publicly that he was considering selling HP’s large but low-profit PC business. In response to apparently unanticipated intense shareholder objections to the prospective exit from the PC business the board fired Apotheker shortly after he made his ambiguous announcements.

Epoch 6’s potentially debilitating impact on HP’s continued process of becoming, however, had become undeniable when Meg Whitman, a recent addition to the HP board, was named as HP’s 8th CEO in September 2011. She was essentially the 4th consecutive outsider to lead HP. Whitman quickly decided to keep the PC business, noting the cost advantages from that business’s considerable overlap in components with HP’s other computing businesses, and stuck with the principle of “better together” during the first three years of her tenure. During that period she also decided to focus HP strongly on cloud computing for the enterprise, big data (with the Autonomy acquisition, in spite of initiating a law suit against the founders of that company), security and mobility. Facing challenges in its commodity and consumer-oriented as well as in its enterprise-oriented businesses, HP’s revenue declined for six consecutive quarters to $112.3 billion for fiscal year 2013. Whitman did however improve profits, in part by large layoffs and greatly reduced long term debt, and in October 2013 projected revenue to get growing again in 2016.32

**Outcomes of the internal ecology of strategy-making during epoch 6**

HP’s internal ecology of strategy-making continued to evolve in different directions during epoch 6. During Hurd’s tenure, Personal Systems moved from 31 percent of total revenues in 2006 to 32 percent in 2010; Imaging and Printing from 29 percent to 20 percent; Enterprise Systems (Storage and Servers) from 19 percent to 15 percent; HP Services from 17 percent to 28
percent; HP Software from 1 percent to 3 percent; and Financial Services remained at 2 percent. Hurd’s impact was clearly in the direction of increasing the relative importance of information technology services for the enterprise market. Apothekers’s brief tenure as CEO, and the normal delay in accounting for the revenues of the Autonomy acquisition, prevented him from having a material impact on HP’s internal ecology of strategy-making.

Meg Whitman, in contrast, did already have a material impact on HP’s internal ecology of strategy-making during the first part of her tenure. Personal Systems saw a relatively small decrease from 31 percent of total revenue in 2011 to 28 percent in 2013, Enterprise Systems (Storage and Servers) a significant increase from 17 to 24 percent, Imaging and printing a small increase from 20 to 21 percent, HP Services a significant decrease from 28 to 21 percent, and HP Software and HP Financial Services remained unchanged at 3 percent. Toward the end of HP’s turbulent epoch 6, it looked like the internal ecology of strategy-making was beginning to drive the company again in the direction of giving greater strategic emphasis to the enterprise market.

Epoch 7: Splitting HP in two Companies

Epoch 7 grew out of the external and internal contextual shocks that buffeted HP during epoch 6 and had created severe strategic dissonance. Recognizing the strategic impact of the radically changed external context dynamics, and perhaps also motivated to overcome the potential growth “stall point” challenge (already experienced by Lew Platt during Epoch 5), Meg Whitman, in October 2014, announced the plan to split HP in two companies, separating its computer and printer businesses from its corporate hardware, software and services operations. One company will be called HP Inc., with revenues of $58.4 billion (for the 12 months ended
July 31, 2014); and the other one Hewlett-Packard Enterprise, with revenues of $57.2 billion (for the 12 months ended July 31, 2014).³³ The move, to be completed in 2015, looked quite similar to the controversial strategic action Whitman’s predecessor, Léo Apotheker, had intimated might be necessary in 2011. By fall 2014, however, the announced split generated warm approval by Wall Street with HP’s share price rising 4.7 percent to $36.87 the Monday after the announcement.³⁴

Meg Whitman would remain in charge as CEO of the Hewlett-Packard Enterprise company and stay on as chair of the board of the HP Inc. company. Almost two-and-one-half decades after the end of John Young’s tenure as CEO, HP seemed to be turning back to its original roots as a business-to-business company, starting all over with a new, radically changed internal ecology of strategy-making.

**Corporate Transformations in HP’s Process of Becoming:**
**The Role of Strategic Leadership**

**Strategic Leadership as Organizational Capability**

The integral process overview of the seven epochs and of the associated evolution of the internal ecology of strategy-making in HP’s history provides the background for examining the differential contributions of each successive CEO to HP’s process of becoming. It is important, however, to underscore that HP’s internal ecology of strategy-making, which has shaped its process of becoming, involved the hard work of a great number of employees, managers and senior executives, who performed key entrepreneurial and strategic leadership activities. The interviews for *Built to Become* included more than 60 of these former and current senior executives. Senior executives such as Dick Hackborn (printers), Wim Roelandts (enterprise
computing and networking) and John Brennan (networking), for instance, played key roles in encouraging and guiding entrepreneurial employees and in helping successive CEOs conclude the strategic context determination process for entirely new businesses for HP. Likewise, House and Price in their exhaustive study of HP’s history of innovation and business transformation up to 2008 provide detailed descriptions of the contributions of several dozens of senior executives in HP’s multiple corporate transformations.

House and Price also point out that there was a tremendous senior leadership turnover with each shift in computer technology - from minicomputers to the early PC era to the decision to bet on Wintel (the latter leaving the “deeper scars”), but that each time HP was able to spawn new senior leadership from within. This capacity of spawning new “critical leadership” from within faltered during the tenures of Carly Fiorina and Mark Hurd whose very large acquisitions brought numerous middle-level and senior executives from outside into HP and again caused many seasoned HP executives to leave the company. Importantly, by 2014 Meg Whitman had been working to bring some of these executives back into the HP fold as members of the critical leadership.

**Strategic Leadership Role of the CEO**

It have been HP’s successive CEOs that made the ultimate strategic decisions that ratified the outcomes of HP’s internal ecology of strategy-making during each epoch and guided or sustained the corporate transformations that made it possible for the company to morph from one epoch into another, sometimes beyond their own tenure. As Carly Fiorina put it forcefully
and concisely, the CEO who respects the people and institution he or she leads must strive for sustainable performance that will lasts beyond his or her tenure.\(^{37}\)

**The indispensable role of the CEO**

In light of this, it is useful to keep in mind that the CEO tenures of the HP founders drove the evolution of HP’s first three epochs and the corporate transformations that connected them; but that epochs 4-6 all involved more than one CEO. This implies that HP’s successive CEOs had to initially cope with and execute strategic changes that were already in the making by the time they took over from their predecessor. In addition they had to be able to effectively deal with the strategic challenge and opportunities of the new epoch, as well as be ready to initiate or lead the corporate transformation necessary to move HP into the next one.

As described earlier in this paper, John Young, HP’s first non-founder CEO, led the corporate transformation that morphed Epoch 3 into Epoch 4 by having to cope with the strategic implications of the rapidly growing intersection of digital processing equipment, first called “instrument controllers” and only later “computers,” with HP’s T&M businesses during Epoch 3. He gave impetus to the emergence of Epoch 4 by making the major bets that drove HP’s transformation further into a computer company and a printer company; and Lew Platt, during the first part of his tenure as CEO, continued the momentum of these businesses, to complete Epoch 4.

During the second part of his tenure, Platt led the corporate transformation that morphed Epoch 4 into Epoch 5 by supporting the accelerating growth of HP’s printing business, strategically pivoting HP’s computer business toward industry-standards and spinning off HP’s original T&M
businesses. Carly Fiorina turbo-charged the corporate transformation during Epoch 5 by pursuing a scale and scope-based corporate strategy and using a major acquisition that solidified HP’s pivot toward the industry-standards computing business and set in motion the corporate transformation to Epoch 6.

Mark Hurd’s forceful execution of Fiorina’s corporate strategy fundamentally transformed what was left of the original HP Way and began to morph Epoch 5 into Epoch 6. While missing the major external drivers of Epoch 6, Cloud computing and pervasive mobility, Hurd further solidified Epoch 6 by using additional major acquisitions to drive HP much deeper into the networking and services businesses. Epoch 6 turned more turbulent after Hurd’s departure when Léo Apotheker, against the background of rapidly changing external context dynamics, made the highly controversial, and in 2011 still unacceptable, suggestion to split up the company. It was necessary for Meg Whitman, after Apotheker’s auto-da-fé, to start her tenure by calming down the controversy and getting each of HP’s businesses to focus on improving their strategic position and performance. Whitman then set her own corporate transformation process in motion in October 2014, which heralded HP’s Epoch 7.

The hazardous role of the CEO

It is also important to keep in mind that the external and internal context dynamics that defined the challenges and opportunities associated with leading HP’s corporate transformations created hazardous currents for the CEOs that succeeded the founders. As HP grew into a large, diversified and global, public company with over 300,000 employees, strategic inertia and cultural adulteration, predicted by organizational ecology theory, inexorably set in. Strategic leadership of the necessary but increasingly complex corporate transformations became much
more difficult. Ironically and seldom highlighted in the popular HP mythology, while the strategic leadership of HP’s successive CEOs secured the company’s continued process of becoming, all the CEOs that succeeded the two founders, except current CEO Meg Whitman, either retired under pressure or were fired.

**Successive CEOs’ Contributions to HP’s Stock Market Performance**

Maintaining the support of shareholders to continue a public company’s process of becoming is a necessary condition (though not a sufficient one because many independent companies do fail!). In light of this, Table 1 shows the adjusted share price and market capitalization at the beginning and end of each of HP’s successive CEO’s tenure, as well as the annualized shareholder returns they realized during their tenure. It also compares these annualized returns to the annualized NASDAQ composite returns and the returns achieved by relevant competitors. Note that stock price data between January 1962 and October 2014 are adjusted for splits and dividends. For instance, the first stock price shown below for Dave Packard on 1/2/62 is 13 cents a share, but the actual price at the time was $35. These adjusted data offer a reasonable basis for a comparative performance appraisal.

| Table 2.1 About Here |

**Dave Packard**

During the period 1962-1969 of Packard’s tenure as CEO, HP’s stock price changed by a factor of 2.31. It rose from $0.13 (1/2/62) to $.030 (1/6/69). During his tenure, HP created about $1,035 billion in market value.
Bill Hewlett

During Hewlett’s tenure as CEO, HP’s stock price changed by a factor of 2.28. It rose from $0.29 (1/7/69) to $0.66 (5/18/78). During his tenure, HP created an additional $1.201 billion in market value. Hewlett’s 7.45 percent of annualized shareholder returns compares well to IBM’s 3.36 percent.

John Young

During Young’s tenure as CEO, HP’s stock price changed by a factor of 6.35. It rose from $0.66 (5/19/78) to $4.19 (10/30/92). Importantly, however, the stock price had reached $6.05 by March 20, 1992 before decreasing to $4.19 at the end of October. This strongly displeased Packard and probably contributed to his decision to encourage Young to retire. Nevertheless, during his tenure, HP created an additional $12,621 billion in market value. Young’s 13.9 percent in annualized shareholder returns dwarfs that of Packard and Hewlett and is also higher than the Nasdaq average of 11.7 percent and significantly better than IBM’s 4.58 percent.

Lew Platt

During Lew Platt’s tenure, HP’s stock price changed by a factor of 8.51. It rose from $4.33 (11/2/92) to $36.86 (7/19/99). It seems likely, however, that much of the initial appreciation of HP’s stock price during the first part of Platt’s tenure was due to the large investments that John Young had made in turning HP into a major computer company, which took time to show results. The continued rise of HP’s share price during the second part of Platt’s tenure was also roughly in sync with the rise of the overall stock market during the Internet boom. During his tenure, HP created an additional $102,904 billion in market value. Platt’s 38.19 percent in annualized shareholder returns beats the Nasdaq average of 25.82 percent, but is lower than IBM’s 38.62 percent and significantly below Dell’s 91.87 percent and Sun Microsystems’s 52.14
percent. Clearly the 1990s were halcyon days for technology stocks. Nevertheless, Platt’s contributions to HP’s stock price performance seem excellent; and yet, in spite of it, for reasons related to his presumed deficiency in strategic leadership capacity for the future, he was forced to retire.

**Carly Fiorina**

How fast things can change! During Fiorina’s tenure, HP’s stock price changed by a factor of 0.54. It dropped from $35.08 (7/20/99) to $18.81 (2/10/05). It is interesting to note that the stock price continued to rise during the first year of her tenure to $55.10 (July 13, 2000). This probably reflected to some extent the continued momentum of strategic decisions made by Platt, as well as the effects of the general rise of the stock market due to the Internet boom. Subsequently, the stock price declined precipitously as a result, in part, of the forceful headwinds of the Internet bust in the early 2000s and the economic challenges faced in the wake of the terror attacks in the United States on September 11, 2001, as well as in reaction to the strategic decisions made by Fiorina. During her tenure, HP lost $55,253 billion in market valuations. Her negative 11.88 percent of annualized shareholder returns compares unfavorably with the Nasdaq average of negative 5.61 percent and the smaller negative results of IBM, and Dell. Sun Microsystems with negative 23.26 percent, on the other hand, performed far worse as it took the brunt of the Internet bust after benefiting strongly from the Internet boom. The poor stock market performance of HP during Fiorina’s tenure most likely contributed to her being fired.

**Mark Hurd**

During Hurd’s tenure as CEO, HP’s stock price changed by a factor of 2.02. It rose from $19.08 (4/1/05) to $38.45 (8/6/10). It is important to note that during his tenure the financial crisis of 2008-09 had very strong negative effect on the overall stock market, but also that by April 14,
2010, HP’s stock reached $50.01, the highest value during Hurd’s tenure. It then declined significantly during the last months of his tenure, which may have reflected increasing doubts about HP’s growth prospects. It is, however, interesting to note that after Hurd’s unexpected and brusque firing, HP’s stock price kept increasing again to $45.19 (February 16, 2011), which would seem to suggest that some of the earlier shareholder doubts were, rightly or wrongly, beginning to be somewhat alleviated. During his tenure, HP added $45,579 billion in market value. Hurd’s annualized shareholder returns of 15.95 percent beat the Nasdaq average by a factor of 6X, dominated IBM’s 8.58 percent, and left Dell with negative 18.20 percent in the dust. As Hurd remained in the CEO position until August 2010, his strong results were achieved in spite of the financial crisis that started in 2008.

**Léo Apotheker**

During Apotheker’s brief tenure as CEO, HP’s stock price declined by a factor of .55. It dropped from $38.74 (9/30/10) to $21.16 (9/22/11), after the abovementioned short but significant rise to $45.19 in February 2011. This was to a significant extent due to shareholder anxiety about some of the strategic actions that Apotheker was planning to make, which led to his being fired. During his tenure, HP lost $60,796 billion in market value. The aftermath of the financial crisis does not seem to be a sufficient cause to explain the enormous drop in returns to negative 46.46 percent during Apotheker’s short reign as CEO, especially not if compared to the positive 3.41 percent of Nasdaq, the positive 27.31 percent of IBM, and the positive 7.96 percent of Dell.

**Meg Whitman**

During the first part of Whitman’s tenure as CEO, HP’s stock price changed by a factor of 1.65. It rose from $20.81 (9/23/11) to $34.32 (9/9/14). Whitman, so far, has been focused on strengthening HP’s balance sheet and its cash-generation capability, while at the same time also
being able to drive the HP stock from the mid-$10’s to the mid-$30’s and to increase dividends. Whitman’s tenure as CEO continues into 2015.

**Implications for Evaluating CEO Performance**

In her memoir, Carly Fiorina questions the usefulness and validity of evaluating CEO performance strictly in terms of a company’s stock price performance during his or her tenure. While this might be viewed by some as somewhat self-serving, the review of the stock price evolution during the tenure of each of HP’s successive CEOs (see above) provides significant support for her proposition.

Besides the uncontrollable vagaries of the stock market that affected each of HP’s successive CEOs in unique ways there were clearly also systematic interdependencies in stock price movements between successive CEOs. As noted already, the strong rise in HP’s stock price during CEO Lew Platt’s tenure most probably benefitted from CEO John Young’s strategic actions in building the foundation of the company’s computer business. Similarly, CEO Carly Fiorina had little choice but to build on CEO Platt’s strategic pivot toward industry standard-based computer products/systems and the difficulties she encountered in fully following through on the necessary gut-wrenching cost reductions imposed by competitive pressures probably contributed to the extended decline in HP’s stock price during her tenure. On the other hand, her scale and scope-based corporate strategy also provided CEO Mark Hurd with the opportunity to execute forcefully on it in ways that she had not been able to, which strongly drove up HP’s stock price during his tenure. After Hurd left, however, HP’s performance deteriorated rapidly, raising questions about the longer-term strength of his strategy. Perhaps most poignantly in light
of this, CEO Léo Apotheker’s diagnosis of HP’s strategic situation indicated that the scale and scope-based and consumer-oriented corporate strategy of his predecessors was unlikely to continue to be successful in the face of the growing importance of cloud computing, software as a service, digitization of content (including images), mobile communications and social networks. His controversial proposition that to avoid becoming “irrelevant” HP should divest its most commoditized and consumer-oriented businesses and focus on enterprise software-based businesses, however, created external as well as internal confusion and a concomitant precipitous decline in HP’s stock price during his brief tenure. Yet, in important ways it also set the stage for CEO Meg Whitman’s strategic decision to split HP in two companies in October 2014.

The fact that significant positive or negative stock price movements during a CEO’s tenure are not independent of the strategic actions of his or her predecessor(s) makes meaningfully evaluating any individual CEO’s performance based narrowly on stock price movements during his or her tenure extremely difficult. This suggests that Fiorina’s view that a leader who respects the people and the institution will strive to create conditions for sustained performance beyond his or her tenure should be seriously considered in evaluating a CEO’s contribution to a company’s process of becoming. In important ways, her view complements the three principles that Dave Packard late in his career identified as key to HP’s continued success: making a significant contribution, competing externally rather than internally, and finding new fields in which to make new contributions.
Implications and Conclusions

It is useful to draw three important implications and conclusions of the integral process overview provided in this paper: (1) the paradox of built to become, (2) the fragility and antifragility of adaptive capacity, and (3) the existential situation facing successive CEOs, who have to deal with the path dependencies created by the strategic actions of their predecessor(s).

The Paradox of Built-to-Become: Messy Beats Perfection

The integral process overview has highlighted the evolving external and internal context dynamics that gave rise to seven different epochs in HP’s history of becoming. As noted earlier, the story told by this sequence of epochs is a messy one. It clearly reveals that HP was often a late starter, struggling to catch up and become a contender; and that even in its highly successful printer business it was never the “only game in town.” Yet, the company was able to transform itself five times with a sixth transformation in the making; and all of these took shape in information technology-based industries characterized by frequent and large changes. In its long and messy process of becoming HP has continued to be able to make sufficiently important contributions to remain relevant to customers and always stay profitable, and to provide sufficiently large returns to remain relevant to shareholders and maintain their support for keeping the company independent. In doing all of this, HP has outlasted and outlived many great competing companies, notably the once formidable Digital Equipment Corporation that was acquired by the once formidable Compaq which, in turn, was acquired by HP.

The messy story of HP’s history of becoming suggests that there may be a paradox associated with built-to-become. Consider a company that achieves complete dominance in its product-
market and is thereby able to appropriate most of the available profits in that product-market. To maintain its dominance, the company must spend more and more of its resources on driving that product-market forward because the other players do not have the resources to do so (e.g., Intel or Microsoft in the PC industry). As a result, the company becomes more and more specialized to that product-market and becomes subject to the strategic inertia associated with co-evolutionary lock-in. Such dominance eventually begets dependence. As long as the product-market environment keeps growing strongly (e.g., the PC industry during the 1990s) and is not made obsolete by the emergence of a radical innovation (e.g., tablets replacing notebook PCs), the company will continue to do very well. However, if these external context dynamics change radically for the worse, the dominant company runs the high risk of going down with the product-market on which its success has depended (e.g., Kodak, Polaroid, Nokia Mobile Phones).

The paradox, therefore, is that built-to-become depends on a company not being able to achieve complete dominance in its product-market environments. The process of becoming remains relatively messy because external and internal context dynamics prevent the company from achieving the strategic-cum-organizational perfection that would lead it to fall into the “one-hoss shay” trap that Packard was terribly afraid of at the end of his involvement with the company. In an unexpectedly profound way, Packard’s metaphorical use of the “one-hoss shay” metaphor heralded already the paradox of built-to-become.
Antifragile Adaptive Capacity

While HP has not dominated its various product-markets, the effects of external context dynamics (reflected in variations in environmental munificence), while large, have most of the time remained small relative to the company’s adaptive capacity. This suggests that HP’s adaptive capacity most of the time has met the criterion of “antifragility.” In other words, in the face of variations in environmental munificence HP’s adaptive capacity has been able to generate more upside (for a positive variation) than endure downside (for a negative variation). This is illustrated in Figure 2.2.

Figure 2.2 shows the antifragile adaptive capacity, represented by a convex function, that HP has enjoyed during most of its history of becoming. To repeat, as Epoch 3 morphed into Epoch 4, some of the financial resources generated by T&M were used to help the fledgling enterprise-focused computer business take hold. In Epoch 5 the fledgling printer business became a major player in its product-market environment and took on the role of supporting the fast growing and rapidly commoditizing PC business. Networking for a long time was not even considered a business, and during Epoch 5 was set up to be sold but could not find a buyer. Only in Epoch 6 was its potential as a new business recognized and commensurately supported. In late 2014 it looked like the story continues.

At some points in its history, however, HP’s adaptive capacity has turned potentially fragile, with negative variations in environmental munificence creating more downside than positive ones would create upside. This is illustrated in Figure 2.3.
Figure 2.3 About Here

Figure 2.3 shows HP’s fragile adaptive capacity, represented by a concave function, during two epochs in its history of becoming. The first involved the spinoff of the original T&M business during Epoch 5 at the end of Lew Platt’s tenure as CEO. This suggests that by that time the external context dynamics (reflected in environmental munificence) had changed such that the adaptive demands of the T&M and computer businesses had diverged beyond the company’s adaptive capacity to effectively deal with simultaneously. The second critical moment is taking shape at the end of 2014 with the decision by CEO Meg Whitman to spin off the most commoditized and consumer-oriented businesses and refocus HP on its enterprise-oriented ones, again indicating that the external context dynamics have changed in ways that the adaptive demands of both types of businesses have significantly diverged.

To further examine the positive role of an antifragile adaptive capacity for built-to-become it is important to recognize that there must be a limit to the level of potential disorder associated with variations in environmental munificence - a boundary condition - that the company’s adaptive capacity can bear before it actually becomes fragile. This can be explored in connection with research about physical systems operating in far-from-equilibrium conditions that has shifted research from a focus on “being” to one on “becoming.” Parallels with physical science need to be used cautiously, but observations about the role of tension in these types of physical systems seem relevant for shedding further light, at least by analogy, on the paradox of built-to-become. Tension is created by an external force operating on a system. Reaching a first threshold value of the external force stimulates the system’s self-organizing behavior; beyond a
second threshold value, however, the system becomes turbulent (chaotic). In light of this, a crucial condition for sustaining HP’s process of becoming has been, and is, the ability of the company’s adaptive capacity to keep operating with external context dynamics creating enough tension to sustain self-organizing behavior, while avoiding external context dynamics creating a level of tension that produces chaos.

This has been achieved during each of HP’s past six epochs with the help of the strategic leadership of the company’s internal ecology of strategy-making. HP’s internal ecology of strategy-making has involved a multitude of strategic actors that committed the company’s technical, human, financial and reputational resources (among others) towards the company’s evolving goals and objectives, and thereby shaped HP’s business portfolio and the ways in which it positioned and repositioned itself in the various information technology-based industries it participates in. The strategic leadership of HP’s internal ecology of strategy making has made it possible for the company to intelligently manage the tension created by external and internal context dynamics in order to remain adaptive through a mostly self-organizing process of experimentation and selection, while avoiding chaos.

**The Existential Situation of the CEO**

HP’s history of becoming has been shaped through the effective strategic leadership of its internal ecology of strategy-making. This paper also makes abundantly clear, however, that successive CEOs have played a crucial role in the company’s strategic leadership. It have been HP’s successive CEOs (again, the successive “ones” in the “peers-plus-one” strategy-making process in large, complex organizations like HP) who ultimately had to resolve the strategic
dissonance associated with the tension created by the external and internal context dynamics in the company’s internal ecology of strategy-making, and who had to drive the company in the new viable directions that they could envisage as a result of the internal experimentation and selection processes at the time of their tenure. One of Burgelman’s former MBA students, currently CEO of a large construction firm, aptly evoked this key aspect of the “existential situation” faced by the CEO when he observed, only slightly facetiously, that the CEOs must deal with problems for which there is no solution (otherwise, they would have been solved before they reach him or her). All of HP’s successive CEOs have faced these sorts of strategic dilemmas in their efforts to sustain HP’s process of becoming.

In addition, this paper has also highlighted a key aspect of the existential situation facing the CEO, which concerns the seldom considered inter-tenure dependencies, what was called in chapter 1 the path dependency, that successive CEOs must reckon with as they try to sustain their company’s process of becoming. On the positive side of this, HP’s successive CEOs have sometimes taken strategic actions that went beyond maximizing their own relatively short-term performance. They have been willing to make investments that benefited their successor(s) more than themselves. On the negative side, HP’s successive CEOs also have had to deal with the constraining aftermath of some less-well conceived strategic actions of their predecessors that made carrying out the key tasks of strategic leadership during their own tenure more difficult.

The sobering reality of the unhappy fate of HP’s successive CEOs after the founders, and the realization that their strategic leadership performance during their tenure was not completely independent of the strategic leadership performance of their predecessor(s), provide the main
justifications for the empathic approach adopted in *Built to Become*. Accordingly, chapters in *Built to Become* delve deeply and systematically into the immense strategic leadership challenges that HPs successive CEOs faced during their tenure, and into how the corporate transformations they oversaw helped connect the successive epochs in the company’s process of becoming. To do so in systematic and analytical ways, it is important to identify the initial conditions and the context dynamics faced by each successive HP CEO. The conceptual frameworks concerning the key tasks of strategic leadership and the four key elements of developing a company’s strategic leadership capability can then be used to assess each CEOs’ differential contribution against Packard’s three principles and his concern about the “one-hoss shay” trap, and how he or she has helped create what Fiorina has called the conditions for “sustained performance beyond their own tenure” to contribute to the company’s integral process of becoming.
Figure 2.1 HP’s Internal Ecology of Strategy-Making: Evolution of Four Core Segments’ Revenues as a Percentage of Total Revenue 2001-2011
Figure 2.2. First Five Epochs in HP’s History of Becoming: A Messy Evolutionary Process

Key External Forces
- Digital Integrated Circuitry Emerges
- TCP/IP and Unix Emerge
- Minicomputers and then PC Industries Horizontalize
- Internet & WWW
- Dotcom Boom
- Dotcom Bust
- Digitization – Web 2.0 – 3G Broadband
- Cloud Computing – Mobile Internet – Big Data

Key Internal Forces
- Epoch 1: Start-Up to Leader in Analog Measurement (T&M) Equipment
  - Instrument-centric focus: Technical innovation
  - Digital Instrumentation
  - Minicomputers

- Epoch 2: Leader in Analog and Digital T&M Equipment
  - Instrument-centric focus with emerging digital instrument controllers
  - Relocating R&D while growing into a big company

- Epoch 3: Global Leader in T&M Equipment
  - Computing-centric focus: A new wave of computers and desk-top printing
  - Growing organizational complexity

- Epoch 4: Global Leader in PCs and Desktop Printing
  - Industry standards computing focus
  - HP Spin-off
  - Missing the Internet
  - Manufacturing

- Epoch 5: Global Leader in PCs and Desktop Printing
  - Become largest IT company
  - Focus on scale and scope
  - HP acquisition (Palm)
  - EDS, 3Com, PA Memory acquisitions

- Printing becomes a highly successful HP core business
- Networking emerges as a new growth opportunity
- Significant potential is not recognized by top leadership

Time
- 1939
- 1970s
- 1980s
- 1990s
- 2000s
- 2010s

Key Competitors
- 1939: General Radio
- 1970s: Tektronix, Texas Instruments, Wang
- 1980s: DEC, IBM, Wang
- 1990s: Sun, IBM, Dell
- 2000s: EMC, IBM
- 2010s: Cisco, IBM, Oracle

CEO Tenures
- 1939: Dave Packard & Bill Hewlett (1957 – 1978)
# Table 2.3 HP Share Price Performance during Successive CEO Tenures

<table>
<thead>
<tr>
<th>CEO</th>
<th>HP Share Price at Start of CEO's Tenure</th>
<th>HP Market Capitalization at Start of CEO's Tenure</th>
<th>HP Share Price at End of CEO's Tenure</th>
<th>HP Market Capitalization at End of CEO Tenure</th>
<th>HP Annualized Return During Tenure</th>
<th>Annualized NASDAQ Composite Return During Same Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>David Packard</td>
<td>$371.25 (1)</td>
<td>N/A</td>
<td>$833.75</td>
<td>$1,034,959,500</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>William Hewlett</td>
<td>$79.50</td>
<td>$998,838,000</td>
<td>$78.50</td>
<td>$2,235,601,500</td>
<td>7.45%</td>
<td>N/A</td>
</tr>
<tr>
<td>John Young</td>
<td>$79.35</td>
<td>$2,256,960,750</td>
<td>$56.88</td>
<td>$14,057,228,750</td>
<td>13.9%</td>
<td>11.7%</td>
</tr>
<tr>
<td>Lew Platt</td>
<td>$58.75</td>
<td>$14,857,228,750</td>
<td>$116.25</td>
<td>$117,761,250,000</td>
<td>38.19%</td>
<td>25.82%</td>
</tr>
<tr>
<td>Carly Fiorina</td>
<td>$110.63</td>
<td>$112,063,125,000</td>
<td>$11.40</td>
<td>$62,507,657,870</td>
<td>-11.88%</td>
<td>-5.61%</td>
</tr>
<tr>
<td>Mark Hurd</td>
<td>$21.71</td>
<td>$62,862,247,690</td>
<td>$46.30</td>
<td>$108,087,163,030</td>
<td>15.95%</td>
<td>2.56%</td>
</tr>
<tr>
<td>Léo Apotheker</td>
<td>$42.04</td>
<td>$95,403,947,320</td>
<td>$22.80</td>
<td>$47,290,755,220</td>
<td>-46.46%</td>
<td>3.41%</td>
</tr>
<tr>
<td>Meg Whitman</td>
<td>$22.32</td>
<td>$46,295,161,290</td>
<td>N/A</td>
<td>N/A</td>
<td>13.43% (3)</td>
<td>24.36%</td>
</tr>
</tbody>
</table>

Notes:

(1) HP share price on March 17, 1961
(2) Adjusted share price takes into account splits and dividends.
(3) Returns for Whitman’s tenure calculated from September 23, 2011 to January 31, 2014
Figure 2.4 Antifragile Adaptive Capacity

Profitable Growth

Target

Adaptive Capacity

Environmental Munificence

Source: Robert A. Burgelman, Lecture Material, Stanford Business School
Figure 2.5 Fragile Adaptive Capacity

Profitable Growth

Target

Adaptive Capacity

Environmental Munificence

©Source: Robert A. Burgelman, Lecture Material, Stanford Business School


5 Ibid.


7 March J.G., “Rationality, foolishness, and adaptive intelligence.” *Strategic Management Journal* 27, 2006: 201-206. In the case of HP, for example, attempts by several CEO’s over the years to create a single sales force to sell the increasingly diverse range of the company’s businesses invariably ended up creating tremendous problems.


18 Burgelman, o.c., 1991.


24 Ibid., 176-177.

25 Ibid., 176-177.

26 Ibid., 5.


28 RISC stands for “Reduced Instruction Set Computing,” a microprocessor architecture. TCP/IP is the combination of IP and TCP. IP stands for “Internet Protocol,” which specifies how information packets travel through the internet network; TCP stands for “Transmission Control Protocol,” that serves to make sure that all information packets are put together in the right order and complete when they reach their destination. UNIX is a computer operating system standard developed by Bell Labs in 1971.


31 House and Price, o.c., 2007, 421-422.

32 Analyst meeting 2013.


34 Ovide, R. and King, R. o.c. 2014.


36 House and Price, o.c., 2007,401.


38 Ibid.

39 Ibid. In light of this, she suggests four leading indicators to evaluate CEO performance: customer satisfaction, rate of innovation, management team diversity and ethics.


41 Burgelman, R.A. o.c., 2002.

42 Burgelman has conceptualized this potential trap in terms of co-evolutionary lock-in with a specific product-market environment.


44 Taleb, N.N. *Antifragile: Things that Gain from Disorder,* New York, Random House, 2012. While stridently dismissive of academic research and academic culture, this book provides glimpses of a remarkably lucid and perspective-shifting description of the way the world actually works.

45 Taleb, N.N., o.c., 2012, p. 8.

46 Ibid., p. 8.
