ELSEVIER

Long Range Planning 38 (2005) 281–298

LRP long range planning

www.lrpjournal.com

Learning from Failures: Why It May Not Happen

Philippe Baumard and William H. Starbuck

This study analyzes the outcomes of fourteen strategic failures in a very large European telecommunication firm. The study asks what the company learned from these failures. Does learning from failure differ from learning from success? How does the learning from large failures differ from learning from small failures? Rather disappointingly, the company learned little from its experiences. Why is learning from failures so difficult? What were the key impediments to learning?

© 2005 Elsevier Ltd. All rights reserved

Organizational Learning

The idea that individual organizations learn originated with Cyert and March. They said organizational learning involves changing goals and forecasts to reflect experience and current perceptions, adapting decision rules to suit circumstances, modifying goals to make them realistic, and searching where previous searches have succeeded. Especially relevant to this article is their claim that firms learn mainly by encountering problems rather than by experiencing successes.[1]

Cyert and March were not the first theorists to suggest that firms improve over time. In 1950, Alchian proposed that evolution reshapes populations of firms. He argued that firms can survive only by earning positive profits and so behaviors likely to yield positive profits will make survival more likely. Thus, said Alchian, an economist '*can state what types of firms or behavior relative to other possible types will be more viable, even though the firms themselves may not know the conditions or even try to achieve them*'. However, Alchian regarded the cognitions of individuals within firms as largely irrelevant. Whether individual firms improve or not, he said, control over firms' survival resides in a competitive environment that weeds out substandard profitability and improves the entire population.[2]

Thus, Cyert and March were advancing a new idea when they talked about people in firms analyzing their situations and changing their behaviors voluntarily.[3] This idea has spawned many research studies and generated considerable debate. The debate has at least four facets.

One facet of the debate argues that learning is essential to survival and success in the face of changing environmental demands.[4] There is no doubt that economic and social environments do change and these changes sometimes punish firms that fail to adapt. However, many firms have suffered

0024-6301/$ - see front matter © 2005 Elsevier Ltd. All rights reserved.
doi:10.1016/j.lrp.2005.03.004

because they tried to adapt to environmental fluctuations that lasted for only brief periods, or have based their adaptation efforts on faulty understandings of their environments or their own capabilities.

An opposing facet holds that adaptive changes by individual firms do not matter because they have negligible long-run effects on populations of firms: what matters are the behaviors that spread across many firms.[5] However, it is questionable whether populations of firms improve or merely change over time. Evolutionary pressures may not select high-performing firms, and firms' survival statistics look like the results of random processes.[6]

A third facet argues that learning may be essential for survival but creates no competitive advantages for the survivors. To confer strategic advantages, learning must be difficult, rare, and impossible to imitate quickly.[7] A large firm that has an advantage over its competitors loses half of this advantage in three to four years on average, which suggests that competitors usually cancel out one another's advantages rather rapidly.[8] However, firms do sometimes maintain advantages for many years in cases where competitive reactions develop slowly.

A fourth facet of the debate asserts that cognition does not afford a dependable basis for learning.[9] If cognitive learning is prevalent and effective, most managers should have accurate perceptions, but a majority of managers have very erroneous perceptions of both their firms and their business environments.[10] Thus, beneficial learning may depend at least in part on processes that reinforce successful behaviors and extinguish unsuccessful behaviors without relying on the accuracy of managers' perceptions.[11]

Feedback about performance may have either negative or positive effects on subsequent performance. Although feedback improves people's performance on average, feedback actually decreases performance more than one third of the time.[12] Feedback has more positive effects when it focuses people's attentions on their tasks and more negative effects when it focuses people's attentions on the people themselves. However, feedback's effects depend on many contingencies. In particular, organizations' core beliefs frame people's interpretations of feedback, and reactions to feedback involve political processes.

The study described in this article contrasts the outcomes of success with those of failure. The next two sections review concisely the research on learning from success and on learning from failure. Because there have been so few studies of learning from failure, we investigated how one large company dealt with fourteen failed ventures. Theorizing had suggested that organizations react differently to small failures than to large ones, so we compared seven small failures with seven large ones.

A surprising discovery is that learning from repeated success makes future failure very likely

Learning from Success

In general, research about learning from success says many firms improve their performance, but firms can over-learn the behaviors that they believe foster success and they become unrealistically confident that success will ensue. As a result, the lessons drawn from success gradually turn into straightjackets that prevent firms from adapting to social and technological changes.

Cyert and March emphasized the centrality of decision rules, and they said successes and failures induce firms to change their decision rules. Such changes make firms more likely to repeat actions that preceded successes, and often-repeated actions turn into standard operating procedures. Successes also, they said, encourage risk taking and experimentation.

Research about organizational learning has generally supported this description. For instance, production becomes cheaper with repetition; cost decreases come from both learning by individual workers and learning by entire organizations as systems.[13] However, research has also added caveats

to Cyert and March's characterization. Standard operating procedures induce firms to act automatically, and one result is that firms' actions may lack relevance to current problems.[14] Success does not always cause firms to standardize procedures, but may stimulate firms to experiment and possibly to discover new strategies.[15] Learning is frequently shortsighted and performance evaluations are mainly subjective.[16]

Perhaps the most surprising discovery has been that learning from repeated success makes future failure very likely. Long periods of continued success foster structural and strategic inertia, extreme process orientations, inattention and insularity. Learning eliminates activities that appear extraneous, with the result that firms become simpler, less aware of events outside their immediate domains and less capable of diverse actions. For instance a focus on core competence and competitive edge, which initially fosters success, later tends to make a firm more specialized and inflexible.[17]

The same processes that firms use to capture their learning from successes also undermine their long-run viability. To reproduce their successes, firms create behavioral programs and buffers, and they concentrate their information gathering and communication to make them efficient. Because they fear that their successes might not continue in changed environments, firms attempt to block environmental changes. Firms' environments create rigidity by demanding that firms provide rationalizations, predictions, and reliability. However, firms have limited abilities to block environmental change, and the information gathering they believe to be efficient may keep them from perceiving crucial changes. When they do perceive crucial changes, commitments to existing programs and to realizing their predictions may keep them from responding promptly and effectively. Top managers are often rather out of touch with current customers, current suppliers, and current technologies, and since they generally react to serious threats by centralizing control, responses to crises frequently aggravate the crises.[18]

Learning from Failure

Cyert and March asserted that firms are much more likely to change their behaviors in reaction to failures than in reaction to successes. Actual or expected failures, they said, may induce a firm to change its goals or its forecasts about outcomes. If these changes prove insufficient to allow forecasts of success, the firm searches for new alternatives. Thus, according to Cyert and March, the prospect of failure stimulates behavioral innovation. On a similar theme, Sitkin argued that moderate failures draw a firm's attention to potential problems, stimulate search for solutions for these problems and motivate people to improve. To enable 'intelligent failure', he said, people should choose actions (a) to yield diagnostic information, (b) to limit the costs of failure, (c) to generate feedback quickly, and (d) to focus on familiar domains.[19] Cannon and Edmondson suggest firms could avoid large failures by paying more attention to small failures.[20]

As it is often unclear whether a sequence of events adds up to success or failure, organization members slant interpretations to their own benefit

However, the idea that failure stimulates innovation contrasts with research findings from studies of individual people, which indicate that painful outcomes generally stop existing behaviors without stimulating efforts to change. A study of poorly performing firms in two industries also found that they generally did not alter their strategic orientations.[21] As Husted and Michailova observed, '*individuals do not freely and openly share knowledge about the mistakes they have made*'. They pointed to some reasons members of organizations do not discuss and hence do not learn from failures. One reason is fear that colleagues might blame those who participate in failed ventures, and another is a managerial hierarchy that reacts to failures by seeking and punishing culprits.[22] Such observations reflect organizations' political character and the processes that define events as successes and failures. As it is often unclear whether a sequence of events adds up to success or to

failure, organization members slant such interpretations to their own benefit.[23] Just as some people seek to take credit for successes, some people try to draw advantage of failures.

One significant contingency might be the magnitude of failure. Several studies suggest that organizations find it very difficult to deal with large failures. Managers react more positively to proposed variations, changes that would only modify firms' strategic domains incrementally, than to proposed reorientations, dramatic changes that would redefine the strategic domains. Variations exploit firms' experience, preserve existing distributions of power, and can win approval from partially conflicting political interests, whereas reorientations threaten to take firms outside their familiar domains and instigate struggles between power holders and power seekers.[24] When reorientations fail, the monetary and social costs are high. After several case studies of firms facing serious crises, Starbuck surmised that serious failures appear so challenging that halting them requires wholesale changes in top management.[25]

Although firms have many difficulties learning from both successes and failures, we are convinced that managers who really want to learn from their experiences can do so. The very successful law firm Wachtell, Lipton, Rosen and Katz has distinguished itself by its ability to learn from experience — from both success and failures.[26] This learning appears to have been a result of very conscious efforts by a small, cohesive group of founding partners who have maintained political and strategic control throughout the firm's history. These partners meet frequently to review their firm's experiences and to think about lessons that might be worth extracting. Since the partners' personal rewards are closely linked to their firm's success, they have strong incentives to improve their firm's performance. However, such learning would be very difficult to replicate in a large corporation where many senior managers compete for promotions, resources and political advantage, and can gain as individuals even if their firm loses, or vice versa.

Our Data

Unfortunately, evidence about the actual outcomes of failures, whether large or small, is sparse, and writings about learning from organizational failures draw few of their propositions from factual observations.[27] Therefore we decided to expand the data pool by investigating 14 strategic failures that had occurred at Eurocom (EC) over a period of two decades.

The name Eurocom (EC) is a pseudonym, of course, and we believe our descriptions of it could apply to any of three to five companies. Like these other companies, EC grew from a domestic telecommunications firm with strong governmental support into a global firm with many investors. During the period of our study, EC's revenues grew from less than €15 billion to more than €35 billion. Following European Commission actions in 1987, the study period also saw deregulation, competition, new technologies, and increased uncertainty.

All European telecommunication companies had to meet the challenges posed by new entrants, aggressive pricing, rapid technological change, service diversification, and a share-price crisis in 2001-2003. Many companies overestimated the demands for telecommunication services, and thus experienced failures very similar to those discussed in this article. EC avoided the excesses of some of its competitors because its top managers were rather conservative engineers who dampened down the optimistic predictions of their external consultants. For example, EC's actual sales of mobile communications were three times the predictions that its top managers had deemed realistic. EC's top managers also took strong pride in their firm's history and they took care to maintain full control of its traditional technological infrastructure. This protective orientation provided a financial cushion that may explain why EC did not scrutinize its failures more closely.

Since inexperience is a familiar cause of failures in young organizations, we avoided studying large failures that could be attributed to inexperience. The managers we observed had long experience in their industry, had forged sound relationships with outside experts, and had stable customers. Most of them also acknowledged, when they undertook the ventures that led to failures, that previously successful strategic postures had become uncompetitive.

Largeness and smallness are always relative concepts: from some viewpoints, our small failures are not truly small, but only seem so in comparison to the large failures, and from the viewpoint of top managers of a very large, multinational corporation. They do not look small in comparison with the scale of an average business venture, and represented major responsibilities for those who managed them. Thus, in principle, even our small failures might have damaged their managers' future careers.

Our research received considerable help from executives at EC, which in itself shows such managers' desire to learn from their firm's failures. Not only did one author work in EC's headquarters, but his data-gathering received support from many executives. In addition to him, twenty EC executives contributed information for this study, nine of them via repeated long interviews. In addition to interviews, the author had access to the company's decision logs and archives, which yielded data recorded years earlier to help counteract retrospective rationalizations. This level of managerial participation and data access strengthened the study by providing multiple perspectives and more reliable data about events years ago.

With help from executives in the firm, one of us (who had been an executive in EC) compiled data about seven large failures and a roughly matched sample of seven small failures. The match between large and small failures had to be rough because large-scale ventures are quite different politically, financially, and strategically from small-scale ventures. EC had experienced many small failures over the two decades, and, as we wanted to contrast the large failures with small ones, we tried to select small failures that involved actions similar to the large failures. Because each of the large failures had idiosyncratic elements, the categories in which we paired the situations do not have an overall conceptual scheme; we merely sought a small failure that seemed comparable to each large failure and then categorized the pair. For example, Gercom was a large failure that occurred when EC tried to enter the German cellular market by buying a large share of a German firm. We characterized this as 'attempted growth into a new domain', and then searched for a small failure that we could reasonably describe in similar terms. PlayOn-Line was such a venture, in which EC tried to gain new content for its Internet service by buying a French publisher of game software.

Table 1 describes the 14 failed venture cases, according to their size and categorization pairings. Characterizations for the categories came from various studies of organizations and strategies. Thus, *Attempted growth into a new domain* without adequate skills or experience might lead to failure;[28] *Transferring an old model to a new situation* might result in failure if the transfer was inappropriate;[29] *Product launches* can increase uncertainty and mobilize resources with low predictability of success; designing *New activities that are projections of core beliefs* can be a version of *Escalating commitments to losing businesses*;[30] projections of *Over-estimated demand* have also led to failures where organizations bore heavy fixed costs;[31] and *Resurgence of a core belief* came from the similarity of the 2003 Columbia Space Shuttle disaster to the 1986 Challenger tragedy, a similarity that highlighted the role played by persistent beliefs.

The four earliest ventures, all of which took place before deregulation, were TV Text, PageMe, Sat1 and Sat2. There was little overlap of personnel across these ventures as they were managed by different divisions and business units. EC is a very large company, so executives in charge of entertainment activities, for example, were very unlikely to interact with executives in charge of business applications. In addition, because the cases spanned 23 years, the ventures occurred under different teams of top managers and were managed by different teams of managers.

… managers tended to dismiss small failures that challenged [the firm's] foundation premises

Table 1. Case Studies

	Small failures	Large failures
Attempted growth into new domain	**PlayOn-Line** EC wanted to develop new content for its Internet activities. EC decided to buy PlayMe, a publisher of video game software that was for sale in France.	**Gercom** European countries were issuing only a few licenses for mobile telephone service and small companies had favored positions to receive licenses. Expecting to be unable to win a license in Germany, EC acquired one-third of a German mobile-telephone operator.
Transferring an old model to a new situation	**Net TV** A man with experience in television joined EC and wanted to create 'Internet television'. He became the protégé of EC's CEO, who had experience in supermarkets and who liked the idea that EC would distribute images.	**Wireless Application Platform (WAP)** France Telecom had had great success with Minitel, with 6 million customers in France as early as 1987. Executives from France Telecom who joined EC wanted to imitate this success with mobile phones. But the system could only transmit data unless latency times were very long, and WAP was slow to connect.
Product launch	**TV Text** A national government asked EC to develop videotex because of its high-tech image combined with its potential to reach a large portion of the population. Videotex promised to help the nation appear forward looking in telecommunications. Moreover, it would support a network that would inform the public about national data.	**GoMobil** EC built GoMobil networks in three cities. These networks targeted the bottom end of the mobile telephone market. They were mobile but customers actually had to stop walking or moving to make their calls, because they were dependent on local antennas.
New activity reinforced by core beliefs	**Truck Tracker** EC decided that there could be a market for truck supervision and scheduling. A small box with a satellite dish was developed that could be placed on the top of a truck. It was very innovative because it was before the Global Positioning System was available in Europe. Although the antenna was very expensive compared to the cost of a truck, the technology was superior to existing technologies, and EC decided to launch it.	**E-Business** A core belief of the telecommunication business is the desirability of interconnections between people that are reliable. The e-transformation and the emergence of powerful middleware players surprised telecommunication incumbents, who could not believe that an 'application layer' could be more meaningful than a reliable connection. They launched a new e-business activity that relied heavily on external partners and was loosely coupled to core business units.
Over-estimated demand	**TV Fax** The plan was to place fax machines in every home and to use these machines to display text on television sets. The head of international affairs asked equipment makers to produce 1 million fax machines.	**Queen** A series of deals built up a stake in Queen, a large cable operator in Britain. EC bought an English company because they believed in the convergence of networks and multimedia content.

(*continued*)

Table 1. (*continued*)

	Small failures	Large failures
Resurgence of a core belief	**PageMe** EC developed a trendy paging system for young people that could transmit brief text messages. The product was launched without EC really believing in it, and potential customers did not see themselves as users of 'paging'. The service was seen as too 'young' for professional users (doctors) and too austere for the young. This small failure was quickly rationalized as reinforcing the core belief that transport mattered more than content.	**Overlooking the rise of messaging** In the early 1990's, Some R&D engineers came up with the idea of installing instant messaging between telephones, but the project was shot down by disbelievers. Thus, the company failed to develop messaging, when it had a unique opportunity to become a world pioneer.
Escalation of commitment in a losing business	**Sat 1** EC's goal was to dominate the market for data for corporations. Since the extant network was not digital, EC bought a satellite. The forecast was a potential market of 350 clients, but the antenna stations proved to be too expensive for the demand, so EC decided scale back to 100 antennas.	**Sat 2** EC undertook satellite broadcasting in competition with two existing systems that had 80% of the market. EC chose to broadcast analog signals, not digital, and EC's CEO declared: '*There will never exist a numerical television*'. EC signed a contract with a small outsider, named Cube, but when Cube wanted to expand to a critical size, EC refused. Sat 2 was launched with 4 satellites.

Small Failures

Table 2 describes key aspects of the seven small failures, and here are three representative quotations from participants in the ventures:

> *NetTV could not have been a success. This company [EC] is just allergic to content. They tried everything they could, even borrowing the media-mogul language and attitude. We ended up speaking of 'programs', 'channels' and even 'prime time'! But that never convinced the Board of the mother company. Far from it.*
> *There was this idea, at that time, we are talking 20 years ago, that no telecommunication venture in this world could exist without EC leading the engineering. The idea that another company could start tracking trucks through the skies, without us, literally put down everything we had believed in. No matter the cost, it had to be ours.*
> *TV Fax was such an incredible story! They had this whole idea that telecommunications would be everywhere, and that a screen, a keyboard and a network could replace any home appliance. And that was back in the early 1980s. So, when they discovered that people did not like reading 'faxes' on a TV screen, they did not blame their technology. The more it was rejected, the more they were discovering grounds to go further.*

Our observations question the degree to which organizations learn from small failures. People in EC actually paid more attention to small failures than to large ones because small failures had effects on their behavior programs and their personal stakes. However, managers tended to dismiss small failures that challenged EC's foundation premises. Our data show reciprocal reinforcement: small

Table 2. Small Failures

	What was wrong?	Management	Discovery	Learning
PlayOn-Line	Free on-line games had difficulty selling advertising. There were struggles for control. Revenues from traffic benefited the parent firm, but the unit's profits plummeted.	Top managers paid little attention because the venture was so small. EC perceived games as not being serious business, the company's sales being twice the world market for games.	Executives did not acknowledge that the cost structure imposed on the unit made profits unlikely even with a growing audience. The on-line activity went bankrupt.	Failure clearly reinforced the core belief that EC should emphasize hardware and avoid software and content. One manager left EC and another moved to a different unit.
Net TV	The technology was inadequate and revenues were very low. The firm tried to import the TV model, but failed to adopt innovations.	This venture had strong support from the two top managers who created it. Many other managers were skeptical.	After six months, the venture had lost four times its initial investment.	Failure was interpreted as showing again that EC should not be involved in content. The two managers left EC.
TV Text	The cost of this experiment was horrendous ($40,000 per household), and the bandwidth was narrow. Customers did not use it.	The venture had little oversight because it was seen as imitating an activity that had succeeded in Britain.	Signs of trouble were dismissed, but the losses were too large to ignore.	Failure was interpreted as proof that imitation is a bad idea; technologies should be developed in-house, it was said.
Truck Tracker	Equipment cost over $5000 per truck. Geographic coverage was incomplete.	Top managers ignored warnings of problems because they wanted to prove that trucks could be tracked from the sky.	Many engineers issued warnings, especially about the lack of competitiveness with emerging technologies.	The development group learned the importance of getting data about customers' reactions.
TV Fax	The tests of technology were conducted in very artificial conditions. Equipment makers, eager to enter the new domain, made unrealistic cost estimates to ensure that the experiments received authorization.	A new telecommunications domain was emerging, and management would not allow staff new to EC to explore this new domain.	Test customers did not want to use their televisions to display messages. The technology never entered the market, and the venture was liquidated.	The manager was promoted to a senior position. The project was seen as idiosyncratic. The experiments were considered a successful proof that EC could enter this new domain. EC did later enter this domain successfully.

Table 2. (*continued*)

	What was wrong?	Management	Discovery	Learning
PageMe	PageMe was successful for a short time, but the marketing targeted young people rather than professionals, and the firm concluded than messaging had no market outside professional boundaries.	The activity was low within the corporation, without any involvement by the CEO's staff, so commitments escalated without top managers' noticing.	The financial losses were large. Operations were managed with rigor and sound procedures, but managers lost sight of the overall market. The managers in charge were very disappointed.	The project was seen as idiosyncratic. The failure was seen as showing EC ought to focus on voice rather than text for its mass consumption market. Executives later thought that the project had failed because it had been ten years in advance.
Sat One	The cost of each station was thirty times the estimates, plus the cost of a satellite, so the project had to be scaled back drastically. Sales never exceeded the cost of three stations. The desire to be part of a new era led the firm to exchange roles with its main competitors.	EC's top managers decided to continue because they wanted EC to remain a leader in all types of communications. They ended up broadcasting images, and letting competitors broadcast data, contrary to their core belief about EC's proper domain.	Managers reported their concerns about bandwidth, geographic coverage, and the number of stations.	EC saw this project as idiosyncratic, and dismissed the failure as a cost of learning about satellite communications. The firm later became a leader in TV broadcasting, but then yielded its position to competitors. EC ignored lessons it might have learned from Sat 1 when it undertook Sat 2.

failures tended to reinforce core beliefs, and core beliefs in turn gave small failures consistent patterns over time. Managers agreed to try experiments that did not challenge their core beliefs, and accordingly, the experiments propagated the core beliefs. Failed experiments became ideological playgrounds where people sought new ways to reinforce existing beliefs about past successes. On the one hand, managers interpreted the small failures as demonstrating the foolishness of attempts to deviate from the firm's core beliefs, but on the other, the interpretation processes tended to modernize the core beliefs, thus creating some incremental change. Small failures also provided opportunities to synchronize the core beliefs with current or emerging trends, and this ideological flexibility protected organization members from having to revise their beliefs and perceptions, with the result that EC became more vulnerable to serious crises. When managers found such interpretations to be implausible, they dismissed the small failures as '*unique*', '*idiosyncratic*', '*non-replicable*', '*experimental*', '*trial*' or '*exploratory*'. Thus, there was some incremental learning, but the perceived consistency of small failures with core beliefs meant that such failures did not seriously challenge the validity of the core beliefs.

Small failures were seen as experiments, and, as Nystrom and Starbuck have proposed '*People who see themselves as experimenting are willing to deviate temporarily from practices they consider optimal in order to test the validity of their assumptions*'.[32] However, our observations indicate that the embedding of experiments into core beliefs largely eliminates opportunities to test assumptions. Evidence that contradicted core beliefs was discarded, and top managers who had keen interests in maintaining core beliefs either chose experiments that were likely to sustain these beliefs, or assigned experiments that threatened these beliefs to people who were likely to fail. The managers of failed experiments moved around the parent organization, taking their learning to domains where it became irrelevant, so the organization lost sight of lessons that it might have drawn.

Large failures supported even less learning than did small ones

Large Failures

Table 3 describes key aspects of the seven large failures; here again are three representative quotations from participants in the ventures:

> *The whole idea of Gercom really came from external financial advisors and our CFO at that time. There were only four external members on the Board, and they did not really understand the technical justification at all. When it came to the financial instrumentation of the deal, they understood even less. This was a deal that would take at least five years in the making, and ten years in reaching profitability. It's not unusual in our industry, but really it makes it difficult to tell if somebody failed or not after the facts. In this case, it's pretty obvious. We lost 15 billion Euros.*
>
> *The E-Business division really started impulsively. Every senior manager has heard how IBM did so well with small businesses, that Microsoft was transforming the whole business world through electronic intermediation. It seems that not being part of this game was just like admitting to be a dinosaur. And then, there were those people from planning who were buzzing us all the time, saying that 'e-transformation' was less than 1.5% of sales. The failure was to have jumped on this business in the first place, listening to external hype.*
>
> *The whole story of our WAP Unit was one of technical stubbornness. Guys from Marketing really alerted us soon enough that with these lags and delays in connection times, there is no way they could produce any marketable services. There was a lot of dispute on these measurements. And a lot of arguing. I believe they disregarded all these reports, because Internet was the new frontier, and we ought to be there. Well, everybody kind of knew that this protocol had nothing to do with the future Internet technologies, but it was like a step forward anyway.*

Table 3. Large Failures

	What was wrong?	Management	Discovery	Learning
Gercom	A management fad and EC's investment bankers encouraged EC to take on excessive debt. EC purchased a stake in Gercom at a high price inflated by a telecom bubble. The German government issued more licenses than promised. Gercom went into bankruptcy when EC refused to invest further.	Only three managers knew the details of the arrangement. EC's new CEO reported to shareholders that the investment had had little scrutiny. Plummeting stock prices activated key stockholders, who demanded that EC change its governance processes and tighten its control over large ventures.	Gercom's CEO showed reluctance to disclose data on performance, but EC discovered that the CEO had lied about Gercom's profitability. EC's stock price fell when all telecom stocks declined, forcing EC to rethink its investment.	EC's CEO and CFO resigned under pressure, and the Board was reorganized. EC created a unit to screen potential acquisitions. The failure was blamed on poor governance processes. Afterward, all initiatives for new ventures were seen as threatening, even sinful.
Wireless Application Platform (WAP)	EC 'built incredible expectations in the mind of the press.' Connection times were very slow, but the service was launched despite this deficiency. EC lost credibility as a provider of mobile data services.	EC was seen as a telephone company, and EC's top managers wanted a more avant-garde image. They dreamed of putting the Internet on mobile phones.	Managers issued warnings about slow connection times. Signs of trouble were dismissed on the ground that 'industry analysts' were predicting the Internet would soon be on mobile phones.	EC had similar slow-connection problems with several projects but learned little from them. EC continued to try to follow its traditional technical standards despite emergence of disruptive new technologies.
GoMobil	EC, with analog experience, assumed that analog would be superior. Another technology (GSM) came to dominate because GoMobil required them to stop walking or moving to make calls. Involvement with GoMobil slowed EC's move to GSM.	Since EC saw GoMobil as a forecast of the future, it treated costs and revenues lightly. Managers saw GoMobil as displacing previous technologies, and they overlooked an entirely new technology that rendered GoMobil obsolete.	Signs of trouble were dismissed on the ground that GoMobil was an experiment. Accounting statements gave the impression that GoMobil was profitable, but these statements omitted the costs of building new infrastructure.	EC learned that it needed to learn how to handle digital technologies in addition to analog. EC then invested heaviliy in digital technologies and became a leader in them. EC also learned how to develop a network of antennas.
E-Business	EC had focused on communication transport; it had neither experience in supplying 'business services' nor personnel capable of developing them. Managers of this unit outsourced the actual services to external partners, who took all of the potential profits. IBM was a formidable competitor.	Consultants and investment bankers convinced EC that managers' expectations were outdated. The consultants misjudged EC's capabilities. EC's efforts were managed by engineers, who wanted a single service package that would suit all customers.	Early signs of poor profitability were discounted because this was a new domain. But the unit was closed after only one year, on the ground that such activities should be distributed throughout all divisions and not concentrated in a stand-alone unit.	Managers in the unit realized that their efforts to develop communication content were inconsistent with EC's focus on communication transport. EC merged all of the units that were delivering business services. Some managers from this unit went into the merged unit and others left EC.

(*continued*)

Table 3. (*continued*)

	What was wrong?	Management	Discovery	Learning
Queen	EC's managers were eager because EC had missed two previous opportunities to enter this business. The financial arrangements were very complex, and EC's managers had overlooked the rights of minority stockholders, which gave control to a CEO who was not from EC.	The CEO was visionary and charismatic and EC's top managers gave him 'too much'. credibility EC's top managers wanted EC to have capabilities in all technologies — cable, radio, satellites, etc. — and Queen seemed to fit EC's core beliefs.	Queen's stock price had been in freefall. This drop was a surprise to EC, as the CEO had provided no performance data. But EC has not yet acknowledged that this venture has failed. But EC's book losses are tremendous.	Managers with long tenure saw Queen as another demonstration of the difficulty of being 'European' and the risks of geographic expansion. EC decided to change the way it screens and controls external acquisitions.
Overlooking the rise of messaging	This proposal was seen as a derivative of TV Text, which had failed. The proposed color screens appeared to be too expensive. No other company was offering or using messaging.	The designer of EC's prevailing service believed in cost cutting, lean management, and limiting service to 'essential functions'. These did not encompass messaging.	Top managers perceived messaging as being used by an exclusive customer group whereas the prevailing service was designed for mass usage.	EC realized later this proposal had been 15 years ahead of competition. EC never really recovered from this missed opportunity, and excellence in messaging became an obsession that fed a 'not invented here' syndrome.
Sat 2	A promise of government subsidy led EC to scrutinize the project less carefully than usual. One of two major competitors expanded more quickly than expected and cut its prices. EC chose to broadcast analog signals, which left them in a dead-end when digital showed superiority.	EC's top managers believed that EC should be capable in all communications technologies. They assumed that EC was technically superior to its competitors. They expected Sat 2 to replicate what they perceived as the success of Sat 1.	Three satellites were technologically obsolete and the financial write-offs were very substantial.	EC discounted the implicit lessons that might have been learned from Sat 1. EC 'learned' that the company should focus on terrestrial technologies.

Large failures supported even less learning than did small ones. When asked what they learned from large failures, EC's managers interpreted every one of the large failures as having largely exogenous causes – '*exceptional or historical conditions*' or '*society was undergoing large, dramatic change*'. The larger the failure, the more exogenous causes they saw. They saw no relations between new large failures and previous ones; even though the same top managers supervised many of these ventures, they said each large failure had a very distinct pattern. Although EC's Board of Directors played peripheral roles in these failures, EC's managers made little of these effects.[33]

Managers said they perceived the larger failures as having occurred in ventures to which the firm had weaker commitments, over which the firm had weaker control, or as dependent on programs to which the organization's members had weak personal commitments. The large failures also concerned very long-range projects that built up slowly over time, and managers had changed, so the projects had dispersed stakeholders and few managers (or none) who felt responsible for them. The ventures' costs were distributed over time and hidden by other events. Thus, both external and internal stakeholders needed long times to digest and understand the large failures. Nonetheless, said the managers, some of these ventures '*made history.*'

EC's core beliefs seem to have played a smaller role in the large failures than in the small ones. A few of the large ventures (e.g., Gercom and Queen) may have been efforts to adapt core beliefs to a large geographic scale, but other ventures were mainly efforts to respond to trends that were sweeping the world. Of course, each of the large ventures had the backing of beliefs that EC adopted at that time and that explained why the venture was a 'good thing to do', but most of these beliefs were imports from EC's environment. Consequently, managers rarely mentioned EC's core beliefs when they explained why they thought the large ventures had failed, but they often mentioned influences in EC's environment.

Pervasive Problems in Both Large and Small Failures

The reporting about both large and small failures was incomplete, and both those who made and those who received early reports of trouble discounted them. Managers' reporting focused on fulfilling the operational expectations of top management. They did report problems they encountered when implementing projects they perceived as essential for EC. However, these reports dealt with implementation issues, efficiency problems, lack of coordination, and more generally, routine learning issues. Managers did not report on problems that seemed 'out of the box' and difficult to explain, yet such problems were the ones that might have cast doubt on the basic premises underlying ventures and thus possibly foretold larger failures to come. The higher the expectations for a project, the more reluctant were managers to question its ideological foundations. Managers sometimes reported critical liabilities that suggested ventures ought to be terminated, but they did so without questioning the background ideologies that had originally justified the ventures.

The higher the expectations for a project, the more reluctant were managers to question its ideological foundations

The managers in charge reported difficulties during early stages of their development in only 8 out of the 14 cases studied, and the reports concerned faulty management practices (e.g. incorrect control practices, faulty distribution of power), lack of operational results or outcomes, technical problems, or the existence or emergence of a better performing product or technology in the market. In all these 8 cases, top managers paid little attention to the reports because they believed that the current technologies were transitory and would be replaced by new solutions later on, or because other firms that were engaged in similar projects were not performing any better. The larger

the venture, the stronger the reasons were to keep on trying and escalating efforts; the smaller the venture, the stronger was its perceived relationship to the organization's core beliefs.

While failures were actually occurring, EC had difficulty distinguishing between vital and trivial problems. When problems arose, people tried to find justifications for the solutions they had previously adopted or ones they were willing to adopt in the near future. Small failures that accompanied, but did not expose, the development of larger failures, tended to reinforce core beliefs. Plausible outcomes from initial experiments, even if they fell below expectations, acted as reinforcing traps. Such outcomes offered assurance to top managers and external financial markets that the ventures undertaken were not merely vague promises, but could resist confrontation with facts and figures. Managers then used comparisons with competitors to discount financial losses. Thinking their ventures were losing no more than competitors, managers tended to exaggerate small, immediate successes and to disregard long-lasting flaws that had already emerged during early stages of development.

External pressures — investment bankers, the State, management fads — not only induced managers to undertake ventures in which they did not believe, they also relieved managers of responsibility for ensuing failures, and so reduced the responsibility to learn from the failures. In four of EC's largest failures, consultants and investment bankers recommended actions that brought them additional fees.

Conclusion

EC learned surprisingly little from the failures we investigated. Managers generally explained away large failures on the basis of general societal trends or the involvement of outsiders. They saw the large failures as having idiosyncratic and largely exogenous causes, and the larger the failure, the more idiosyncratic or exogenous causes they saw. They also perceived the larger failures as having occurred in ventures to which the EC had weaker commitments and over which the firm had weaker control. Furthermore, managers saw no relations between new large failures and previous ones, even when the same people had managed more than one failed venture. In EC, large failures were commonly concealed until they could no longer be hidden. Because the large failures developed over very long periods, their high social and monetary costs were not immediate. A failure that managers later saw as large seemed to be only having complications while it was happening, so the large failures were always past events and accountability was always ex-post.

EC's managers interpreted most small failures as demonstrating the foolishness of deviating from the company's core beliefs. When such interpretations seemed implausible, they described the situations as idiosyncratic or experimental, as if one should expect experiments to fail. Maneuvers for political advantage often took precedence over the substantive strategic issues, and managers used their vows of allegiance to the EC's core beliefs to justify failures in which they participated. Thus, postmortems have not seriously challenged the correctness of core beliefs: in fact, some individuals who did question the core beliefs received demotions. At EC at least, moderate failures did not draw attention to potential problems or stimulate searches for possible solutions to these problems.

… managers interpreted most small failures as demonstrating the foolishness of deviating from the company's core beliefs

Like many large, divisionalized firms, EC is a political system in which senior managers compete with each other to control resources and to gain political power. Managers can win as individuals even when EC loses, or they can lose as individuals even when the EC wins. EC affords many places to bury bodies. One result seems to be deficiencies in communication. In only 8 of the 14 ventures were any problems reported at all. The managers of small ventures did not report problems that

might imply the ventures had been ill-advised. The managers of large ventures did not report problems that they conjectured might diminish in the long run. The managers who did report problems portrayed these as involving only implementation issues. As a result, it was very difficult for senior managers to distinguish vital problems from trivial ones.

It seems that learning is unlikely to occur at all in a large, divisionalized firm. Because other people associate managers with the ventures under their supervision, such managers resist analyses that might hold them responsible for errors or oversights or failed promises and they conceal the causes of failure. In addition, opportunities to draw erroneous inferences from experience are legion. Managers find it easy to explain both large and small failures as having idiosyncratic or exogenous causes that no one could have foreseen, and to rationalize their personal actions in terms of their firm's core beliefs.

Organizational learning, which appears so benign and desirable… can be dangerous or ineffective

Organizational learning, which appeared so benign and desirable when Cyert and March first pointed to it, can be dangerous or ineffective. The learning that follows success can evolve from a source of further success into a source of failure. The learning that should follow failure often does not occur, and when it does occur, it often teaches the wrong lessons. It seems that most organizations could benefit from paying more explicit attention to learning — whether it is occurring and what lessons it is teaching — as well as the processes they have created to make it occur. The example of Wachtell, Lipton, Rosen and Katz cited above demonstrates that firms can benefit from learning. In that case, partners' rewards depended on their firm's profits, so partners were motivated to improve profitability. Further, a core group of senior partners placed high value on learning, made consistent efforts to extract lessons, and held sufficient political power to apply what they learned. In other words, the top managers of Wachtell, Lipton were both intellectually and financially motivated to learn. Although the intelligence and pride of EC's managers motivated them to learn, their personal monetary rewards did not depend on EC's profitability and explicit analyses of failures could be damaging to their careers and reputations. And top managers can exert much more influence on learning in a firm as small as Wachtell, Lipton than in a firm as massive as EC.

A Few Lessons

Although EC itself learned little, others may be able to profit from EC's failures. Here are some prescriptions we would extract.

First, benefits can come from linking the outcomes of ventures to the personal rewards of those who manage them. Both financial and reputational rewards can be effective motivators. Obviously, the balancing trick is to motivate managers to seek improvements without inflicting such high penalties on the managers of failures that they block data gathering and analysis.

… to label a venture as an 'experiment' is a two-edged sword

Second, to label a venture as an 'experiment' is a two-edged sword. Participants may lower the risks of disaster by hedging their bets on an experiment and they may be willing to analyze the outcomes of an experiment more objectively. At the same time, the hedging of bets may keep participants from exerting the extreme efforts that would turn an 'experiment' into a success, and the label 'experiment' may imply that people need not extract general lessons.

Third, one should be suspicious of efforts to explain failures in terms of idiosyncratic circumstances or external events. Such explanations surface after every failure, but they never

appear after successes. Of course, every event in life has some idiosyncratic aspects and reflects some external influences — the mere occurrence of such effects is an unsatisfactory explanation that leaves people and firms no better prepared for the future.

Fourth, do not underestimate the cynicism or self-interest of participants in ventures. Managers in large organizations know that they have high probabilities of not being held responsible for failures. At least two of EC's failures involved questionable accounting practices. External advisors are likely to be recommending actions that serve their own interests, such as additional fees. To be practical, learning processes must deal with human beings as they are, not as we wish them to be.

Finally, the few managers who had participated in more than two failures seemed to express extreme confidence in their abilities to reproduce past successes. Accordingly, we wonder if unlearning successes may be a prerequisite for learning from failures.[34]

To be practical, learning processes must deal with human beings as they are, not as we wish them to be

Acknowledgements

We owe thanks to Frank Lekanne Deprez for his helpful suggestions.

Methodological Appendix

We selected the case studies through an informal survey of numerous senior managers. One author of this article was an executive in EC, and he asked his colleagues two kinds of questions: '*Do you recall a large or small failure that left an enduring impression on you?*' and '*Were you part of the failed project or was there another reason it impressed you?*' He also searched for failures in the corporate archives, but informal questions identified more cases than did this scouting of archives because the archives do not identify projects as failures. Indeed, the archives identify many of the large failures we studied as historic achievements.

We assess learning through the perceptions of our informants, which implies that we treat learning as primarily cognitive. Given this perspective, we regard learning as an ability to draw lessons from experience with lucidity; these lessons might either identify plausible causes of failure or plausible corrective actions. Of course, since all data came from insiders, it is probable that outsiders might have seen these situations differently.

The author told interviewees the objective of data collection clearly. This was not perceived as awkward within EC. The engineering and innovation culture makes it acceptable to talk openly with researchers, and as the author was part of the team at corporate headquarters, all interviewees had had previous working relationships or formal contacts with him. However, none of the conversations was taped, as the topics of the interviews were too sensitive.

The author read and analyzed archived documents and reports about the identified failures before engaging with interviewees. Not all of the interviewed managers agreed about the scales of the failures, and interviewees sometimes debated informally with each other as to whether failures were 'small' or 'large'. Interviewees systematically called upon financial losses as their primary evidence as to the issue of scale, but managers with longer experience and higher positions in the hierarchy paid less attention to financial criteria. Managers who had been with EC more than 20 years tended to invoke '*strategic reorientation*' or '*missed historical opportunity*' as rationales for classifying a failure as large rather than overt financial losses. Heads of divisions or directors of functions tended to associate 'large' failures with 'industry-wide' phenomena, whereas engineers tended to relate 'large' failures with 'missed opportunities'.

Interviews ranged from 45 minutes to 2.5 hours. Managers showed a great deal of interest in the research question, and they were keen to read and discuss the final report. This partly reflects the

high educational levels of personnel in EC's headquarters: in the author's department, seventy per cent of the managers had more than two degrees.

All interviews were transcribed immediately after the interviews. When possible, these accounts were then shown to the interviewees for immediate feedback the same or the next day. This practice increased the level of trust and allowed the author to develop new contacts through previous interviewees.

The author reviewed the final selection of 14 cases with his long-term peers within EC, and there was strong agreement on the final 14 cases.

The author was a direct participant in the cases of PlayOn-Line and E-Business, and a non-participant observer in the cases of Gercom and Queen. Data about these four cases also came from corporate archives and interviews. Corporate archives and interviews with executives formed the bases for the cases of Net TV, Wireless Application Platform, TV Text, GoMobil, Truck Tracker, TV Fax, PageMe, Sat 1, Sat 2, and the discarded proposal for instant messaging. The author completed two or more interviews for every case except TV Fax.

References

1. R. M. Cyert and J. G. March, *A Behavioral Theory of the Firm*, Prentice-Hall, Englewood Cliffs, NJ (1963).
2. A. Alchian, Uncertainty, evolution, and economic theory, *Journal of Political Economy* **57**, 211–221 (1950). The quotation is from page 216.
3. W. H. Starbuck, M. L. Barnett, and P. Baumard, *Payoffs and pitfalls of strategic learning*, Submitted manuscript (2004).
4. P. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday, New York (1990).
5. M. T. Hannan and J. Freeman, Structural inertia and organizational change, *American Sociological Review* **49**, 149–164 (1984).
6. S. G. Winter Jr., Economic 'natural selection' and the theory of the firm, *Yale Economic Essays* **4**(Spring), 225–272 (1964); D. A. Levinthal, Random walks and organizational mortality, *Administrative Science Quarterly* **36**(3), 397–420 (1991).
7. J. B. Barney, Firm resources and sustained competitive advantage, *Journal of Management* **17**, 99–120 (1991).
8. Y. Ijiri and H. A. Simon, A model of business firm growth, *Econometrica* **35**, 348–355 (1967).
9. W. H. Starbuck and B. L. T. Hedberg, How organizations learn from success and failure, in M. Dierkes, A. B. Antal, J. Child and I. Nonaka (eds.), *Handbook of Organizational Learning and Knowledge*, Oxford University Press, Oxford, 327–350 (2001).
10. J. M. Mezias and W. H. Starbuck, Studying the accuracy of managers' perceptions: A research odyssey, *British Journal of Management* **14**, 3–17 (2003).
11. Starbuck and Hedberg (2001) op. cit. at Ref 9.
12. A. N. Kluger and A. DeNisi, The effects of feedback interventions on performance: A historical review a meta-analysis, and a preliminary feedback intervention theory, *Psychological Bulletin* **119**, 254–284 (1996).
13. D. Epple, L. Argote and R. Devadas, Organizational learning curves A method for investigating intra-plant transfer of knowledge acquired through learning by doing, *Organization Science* **2**, 58–70 (1991).
14. W. H. Starbuck, Organizations as action generators, *American Sociological Review* **48**, 91–102 (1983).
15. Starbuck and Hedberg (2001) op. cit. at ref 9.
16. D. A. Levinthal and J. G. March, The myopia of learning, *Strategic Management Journal* **14**, 95–112 (1993).
17. D. Miller, The architecture of simplicity, *Academy of Management Review* **18**, 116–138 (1993); D. Miller, What happens after success: The perils of excellence, *Journal of Management Studies* **31**, 325–358 (1994).
18. W. H. Starbuck, A. Greve and B. L. T. Hedberg, Responding to crises, *Journal of Business Administration* **9/2**, 111–137 (1978).
19. S. B. Sitkin, Learning through failure: The strategy of small losses, in L. L. Cummings and B. M. Staw (eds.), *Research in Organizational Behavior* **14**, , 231–266 (1992). The term 'intelligent failure' is quoted from page 243.
20. M. D. Cannon and A. C. Edmondson, Failing to learn and learning to fail (intelligently): How great organizations put failure to work to innovate and improve, *Long Range Planning* doi:10.1016/j.lrp.2005.04.005 (2005).

21. F. J. Milliken, T. K. Lant and B. Batra, The role of managerial learning and interpretation in strategic persistence and reorientation: An empirical exploration, *Strategic Management Journal* **13**, 585—608 (1992).
22. K. Husted and S. Michailova, Diagnosing and fighting knowledge sharing hostility, *Organizational Dynamics* **31**(1), 60—73 (2002).
23. H. K. Anheier, *When Things Go Wrong. Organizational Failures and Breakdowns*, Sage Publications (1999).
24. R. Normann, Organizational innovativeness: product variation and reorientation, *Administrative Science Quarterly* **16**, 203—215 (1971); A. B. Wildavsky, The self-evaluating organization, *Public Administration Review* **32**, 509—520 (1972).
25. Starbuck (1983) op. cit. at Ref 14.
26. W. H. Starbuck, Keeping a butterfly and an elephant in a house of cards: The elements of exceptional success, *Journal of Management Studies* **30**(6), 885—921 (1993).
27. J. Bruderl, P. Preisendorfer and R. Ziegler, Survival chances of newly founded business organizations, *American Sociological Review* **57**, 227—242 (1992); see also Cannon and Edmondson (2005) op. cit. at Ref 20.
28. E. T. Penrose, *The Theory of the Growth of the Firm*, John Wiley, New York, NY (1959); J.-C. Spender and P. Baumard, Turning troubled firms around: Case evidence for a Penrosian account of strategic recovery, *Academy of Management National Meeting*, Vancouver, Canada (1995).
29. W. H. Starbuck and F. J. Milliken, Challenger: Changing the odds until something breaks, *Journal of Management Studies* **25**, 319—340 (1988).
30. B. M. Staw and J. Ross, Commitment to a policy decision: A multi-theoretical perspective, *Administrative Science Quarterly* **23**, 40—64 (1978).
31. J. J. Schul (ed.), An Evaluation Study of 17 Water Projects Located Around the Mediterranean Financed by the European Investment Bank, *European Investment Bank Research Report*, EIB, Luxemburg (1999).
32. P. C. Nystrom and W. H. Starbuck, To avoid organizational crises, unlearn, *Organizational Dynamics* **12**(Spring), 53—65 (1984). The quotation is from page 62.
33. K. Mellahi, The dynamics of boards of directors in failing organizations, *Long Range Planning* doi:10.1016/j.lrp.2005.04.001 (2005).
34. Nystrom and Starbuck (1984) op. cit. at ref 32.

Biographies

Philippe Baumard is a Visiting Scholar at the University of California, Berkeley, and also a Professor of Strategy in the University of Aix-Marseille III, IAE Aix-en-Provence. He has held visiting positions at New York University, the University of Technology, Sydney, and Lund University. He is the author of eight books and 26 articles on topics such as tacit knowledge of executives, imaginary organizations, competitive dynamics and strategic information in large firms. *University of California, Institute of Business and Economic Research, F508 Haas MC 1922, Berkeley, CA 94720-0001, Phone 510-643-1935, E-mail: pbaumard@berkeley.edu, web page: http://iber.berkeley.edu/Res/pbaumard.htm*

William H. Starbuck is the ITT Professor of Creative Management in the Stern School of Business at New York University. He has held faculty positions at Purdue, Johns Hopkins, Cornell, and Wisconsin-Milwaukee, as well as visiting positions in England, France, New Zealand, Norway, Oregon, and Sweden. He was also a senior research fellow at the International Institute of Management, Berlin. He has been the editor of Administrative Science Quarterly, he chaired the screening committee for senior Fulbright awards in business management; and he was the President of the Academy of Management. He has published more than 120 articles on accounting, bargaining, business strategy, computer programming, computer simulation, forecasting, decision making, human-computer interaction, learning, organizational design, organizational growth and development, perception, scientific methods, and social revolutions. *Stern School of Business, New York University, 40 West Fourth Street, Room 7-22, New York, NY 10012-1118, Phone: 212-998-0232, Fax: 212-995-4235, E-mail: wstarbuc@stern.nyu.edu, Web page: pages.stern.nyu.edu/~wstarbuc*