

1

INSISTING ON SURVIVAL

In a turbulent economy, the first task of the leader is insisting on survival—that is, continuously identifying and addressing potential threats to the long-term survival of the organization. At first glance this statement may seem obvious, even trivial. Doesn't it go without saying that no organization can be successful if it doesn't first survive? Yet the rapid increase in the pace of change in business has made survival more problematic than ever before. The frequency with which organizations face major challenges to their survival is growing.

In the days when most established companies had relatively stable markets and competitors, survival was only rarely an issue. To be sure, every now and then a company might face a major crisis, but once that crisis was addressed, things went back to normal. Few companies today have that luxury. Threats to survival aren't occasional; they are nearly continuous. If an organization waits for a full-blown crisis to develop, it may find that it is already too late.

The growing frequency of threats to survival is especially evident in technology- or innovation-based businesses. In such businesses, success at any one generation of technology is really only buying an option on the future. It wins you the right to compete at the next level of technology, but offers no guarantees of continual success. Indeed, quite the opposite: often it is those companies that are most successful at one generation of technology that have the most difficulty in adapting to subsequent generations.

I believe it was the increasingly problematic nature of survival that Andy Grove had in mind when he claimed famously that “only the paranoid survive.” As Grove describes in his book of that name, sooner or later, every business reaches what he calls

a “strategic inflection point”—that “time in the life of a business when its fundamentals are about to change. That change can mean an opportunity to rise to new heights. But it may just as likely signal the beginning of the end.”¹ Grove makes clear that such strategic inflection points can be caused by technological change but they are about more than just technology. They can be caused by new competitors, but they are about more than just the competition. “They are full-scale changes in the way business is conducted.” As such they “can be deadly when unattended to.”

Despite the proliferation of such threats to survival in business today, most people in most organizations avoid engaging squarely with the issue. This is partly a result of the complacency that comes with success. But even more, there is something in the very nature of an organization that leads its members to take its ongoing existence for granted. In this respect, an organization is a lot like an adolescent. It assumes it is going to live forever!

It’s easy to understand why most people would prefer not to think about potential threats to their survival. It’s scary, and fear can be paralyzing. Nobody wants to consider the possibility that “I might not survive!” What’s more, threats to survival generate massive uncertainty. To survive such threats means to take risks. But risks are by definition uncertain. What if we try and fail? What if things don’t work out? No wonder people avoid the issue of survival, if they can get away with it.

The job of the leader is to make sure they don’t get away with it. A leader must represent to the organization the imperative of survival, the challenge of survival, and the reality of threats to survival. By constantly asking “What will it take to survive?” leaders in effect force people to anticipate *in advance* the potential threats facing the organization. In this way, they become the catalyst for continuous adaptation that allows the organization to avoid a genuine crisis of survival.

To do this effectively, you must take a position consciously “in opposition” to the organization and its identity and systematically resist the taken-for-grantedness that one finds in any organization.

The leader has to embody the possibility that the organization can fail and fail disastrously—precisely to make sure that it does not.

A Wartime Childhood

In retrospect, I realize that my preoccupation—some might say *obsession*—with survival is, at least in part, a by-product of my experience as a child during the Second World War. My parents, Abraham and Feijga Frohman, were Polish Jews who emigrated to Holland in the early 1930s to escape the rising anti-Semitism in Poland. I was born in Amsterdam on March 28, 1939, just months before the start of the war.

After the German invasion of the Low Countries in 1940, we continued to live in Amsterdam. But in 1942, as the Nazi grip on Holland's Jewish community steadily tightened, my parents made the difficult decision to give me up to people they knew in the Dutch underground, who hid me with a family in the Dutch countryside.

Antonie and Jenneke Van Tilborgh were devout Christians, members of the *Gereformeerde Kerk* or Calvinist Reformed Church, the most orthodox branch of Dutch Protestantism. They lived on a farm on the outskirts of Sprang Capelle, a small village in the region of Noord Brabant, in southern Holland near the Belgian border. The Van Tilborghs had four children. Their oldest daughter, Rie, was twenty-one but still living at home. Another daughter, Jet, was fourteen. And the two boys, Coor and Toon, were ten and six. The Van Tilborgh family hid me from the Germans for the duration of the war. Only a few close neighbors knew that I was staying with them.

I was only three when I arrived at the Van Tilborgh household, so it is difficult to differentiate between what I actually remember and what I was told later. But one thing I do recall was feeling different. For example, I had dark hair, and the Van Tilborgh children were all blond. I had to wear a black hat to hide my black hair.

I also remember hiding when the Germans would search the village. Sometimes I would hide under the bed, sometimes in

the root cellar (I have a warm memory of treating myself to the apples that were stored there), sometimes with my “brothers” and “sisters” out in the surrounding woods. To this day I have a scar on my wrist that, according to the Van Tilborghs, came from a time when we were running through the woods and I tried to jump over a creek and got caught by some barbed wire.

Other memories are more disturbing. One day, looking out the cellar window, I saw German soldiers execute a fellow soldier. I don’t know why they were doing it; perhaps he was a deserter, perhaps he himself had helped some Jews who were in hiding. Whatever the cause, I have the image seared in my mind of seeing him hit by the bullets and falling to the ground in a heap.

My parents did not survive the war. They were taken in one of the many roundups of Jews by the Nazis. Much later, I learned that my father died in Auschwitz. I never learned for sure where my mother died, although it’s likely she was taken to Auschwitz as well.

I see now that my experience during the war inculcated in me a stubborn conviction that nothing is truly secure, that survival must never be taken for granted—but also that the actions of determined individuals can “achieve the impossible” and have a literally heroic impact on events. If it weren’t for my parents’ ability to make the excruciatingly difficult choice to give me up to the underground and for the Van Tilborghs’ willingness to take me in, I wouldn’t be here today.

Who knows what motivates human beings to do something truly heroic? In the case of the Van Tilborghs, it is clear to me that a major source of their motivation was their deep religious faith. Without such bedrock convictions, they wouldn’t have been able to do what they did. I also suspect that their own experience as members of a minority religious sect in Holland allowed them to empathize and identify with the plight of Holland’s Jews and develop a compelling urgency to do something about it. Orthodox Calvinists made up only about 8 percent of the population of the Netherlands in the 1940s. Yet they were responsible for helping

roughly a quarter of the approximately twenty-five thousand Jews who went into hiding. Thanks to the help of people like the Van Tilborghs, some sixteen thousand Jews who went into hiding survived the war, including some four thousand children like myself.²

In agreeing to hide me, the Van Tilborghs took unimaginable risks. They endangered not only themselves, but their own children as well—to a degree that, seen from the outside, may appear almost irresponsible. In contemplating their example over the years, I learned something essential about leadership: survival requires taking big risks, and sometimes the risks a leader takes, when viewed from a normal or conventional point of view, can appear crazy. But it really only looks that way. Often, genuine leadership is the result of the leader's commitment to a transforming vision and to a set of values that follow from that vision. A key challenge of leadership is to live with the tension between two incommensurate sets of values, perspectives, and commitments—in this particular case, the Van Tilborghs' responsibilities to their children and the responsibilities they took on in protecting me.

I also learned something else from the Van Tilborghs' behavior. If a leader is too focused on personal survival as head of the organization, he or she may end up, paradoxically, undermining the organization's long-term capacity to survive. A lot of ineffective leaders become so focused on their own survival in their leadership role that they avoid taking necessary risks and, in the long run, end up damaging the organization's survival capacity. Much like the Van Tilborghs who saved me during World War II, sometimes visionary leaders must risk themselves to do the right thing.

After the liberation of southern Holland in 1944, my father's sister, who had emigrated to Palestine in the 1930s, somehow was able to locate me. She had a friend who was serving in the Jewish Brigade—the volunteer fighting force of Palestinian Jews raised by the British that had fought in North Africa and Europe and that, at the time, was stationed in nearby Belgium. She sent the friend to meet with the Van Tilborghs and convince them to place me in

a Jewish orphanage, with the intention of eventually emigrating to Palestine.

The Van Tilborghs were hesitant to let me go and, to be honest, I didn't want to leave. By that time I barely remembered my parents. For all intents and purposes, the Van Tilborghs had become my family. But after all that had happened to European Jewry during the war, the Jewish community was determined to recover those children who had survived. Eventually the Van Tilborghs were persuaded that it was the best thing for me and, reluctantly, they gave me up. I lived the next few years in orphanages for Jewish children whose parents had died during the war, first in Antwerp and then in Marseilles, before sailing to the newly created country of Israel on the *Theodore Herzl* in 1949.

Eventually I was adopted by relatives in Israel. But I never forgot the Van Tilborghs, and over the years I have kept in touch with my Dutch family. Antonie and Jenneke are dead now, as are two of their four children. But the families continue to keep in touch. The children of my Dutch brothers and sisters know my children. We have attended their weddings in Holland, and they have visited us in Israel, where Antonie and Jenneke's names are enrolled on the list of the Righteous Among the Nations in the records of Yad Vashem, Israel's official memorial to those who died in the Holocaust.

"The Last Operation to Close in a Crisis"

It may seem absurd, or perhaps even inappropriate, to compare the threats I faced as a young Jew in Nazi-occupied Europe to the competitive threats that most companies face today. Yet, in part because of my childhood experience, I've always believed that an organization's survival can never be taken for granted—in bad times certainly, but also even in good times. For this reason, it is essential for an organization to accept complete responsibility for its own survival.

When you're working in a startup, this responsibility is obvious. Every day you live with the possibility that you might not

succeed. But when you are working in a large global corporation, it's easy to become passive, to assume that the company will be around forever, even to start thinking that your own fate relies on decisions made at corporate headquarters far away. When I founded Intel Israel, I was determined to fight this tendency, to cultivate the atmosphere of a precarious startup, even though we were part of a successful and fast-growing company. I wanted people not only to avoid complacency but also to feel that they—and they alone—were responsible for their own fate.

For that reason, my vision for Intel Israel always emphasized survival in a highly volatile industry and region. After all, semiconductors is a highly cyclical business, with dizzying booms often followed by extremely painful busts. And in the 1970s and '80s, when we were building Intel Israel, Intel was passing through some of the most important and most dangerous strategic inflection points of its history—in particular, the company's exit from the memory business in the mid-1980s. If that wasn't turbulence enough, we were also trying to build an outpost for Intel in the Middle East, a region wracked by political tension and war and that, despite moments of hope in the 1990s, still has not found its way to a definitive peace.

So I saw threats to survival everywhere and was determined to make sure we were tough enough to survive them. As I used to put it, I wanted Intel Israel to be “the last Intel operation to close in a crisis.” To be honest, many employees, including some of my direct reports, didn't much like this vision. They thought it was too negative. “Is that the best we can do,” they would ask, “just avoid being closed down?” Eventually we came up with a simple slogan: “Survival through success.” And I used that slogan to drive our behavior in every area of the business.

Take the example of layoffs. Layoffs at Intel were relatively rare—but they did happen, especially in the company's early years. In 1970 the company had had to lay off 10 percent of its (then still quite small) workforce after the market failure of its very first product. In 1974 the first big downturn in the industry caused the

company to lay off 30 percent of its workforce, about 350 people. And in 1986 there were plant closings and layoffs associated with exiting the memory business.

From the moment I helped establish Intel Israel, I simply refused to accept the idea that we would lay people off, and I went out of my way to make sure that whatever layoffs did occur at Intel as a whole happened to others, not to Intel Israel. Of course, the only sure way to avoid layoffs was to make sure that our operations were so competitive that they were “the last to close in a crisis.” But sometimes more extraordinary measures were necessary.

In the 1990s, for example, we had a small software development group at the Haifa design center. But in 1994, in a move aimed to cut costs, the global head of Intel’s systems software unit decided to close it down. To avoid losing what was a cadre of highly skilled software programmers, I immediately traveled to the States and met with Intel’s then-CEO Andy Grove to see whether there was any way to fund their positions, at least temporarily, until other more long-term opportunities opened up.

I argued that these were highly skilled employees and to lay them off now, although it might be penny-wise, was certainly pound-foolish. Come the next upturn, we would need these people, so we should keep them with Intel. Grove agreed to commit some \$700,000 to keep the people at Intel, and we distributed them among other engineering groups. The decision paid off three years later when, with the ramp-up to the Internet boom in the late 1990s, we found ourselves facing yet another shortage of software engineers. As a result of such efforts, there were fewer than ten employees who had to be laid off during my entire tenure at Intel Israel.

Containing Fear

Earlier I mentioned that people don’t want to think about survival because it is scary. In fact, there is a complex relationship between survival and fear. To insist on survival, a leader must know how to navigate fear. The goal is neither to exaggerate fear nor to eliminate it, but rather to contain it.

It can be difficult for leaders to maintain this delicate balance. Take an example that is top of mind for so many people today—the fear of terrorism. In my opinion, many political leaders in both the United States and Israel aren't containing fear over terrorism so much as exacerbating it. Indeed, they exploit fear to further their political agenda. When you think about it, their message is completely contradictory: on the one hand, they exaggerate the “existential threat” of terrorism to keep people in a state of constant anxiety; on the other, they promise perfect security—on the condition, of course, that the public support their policies. Both are illusions. In a turbulent world, there is no such thing as perfect security. But at the same time, extreme fear leads only to passivity and paralysis, making it all the more difficult to address the genuine challenges that we face. Whether for terrorism or any of the other threats we face in today's world, it is more true than ever that “the only thing we have to fear is fear itself.”

Yet it is impossible—and unwise—to eliminate fear completely. I disagree, for example, with the famous advice of quality guru Edward Deming that leaders must “banish fear” from the organization. This viewpoint strikes me as unrealistic. In situations in which survival is at stake, a certain degree of fear is inevitable. Indeed, a healthy fear of failure can be a good—indeed, even an essential—thing. It helps break through organizational complacency (it certainly kept me focused when confronting that thunderstorm over the coast of Greece). With the right amount of fear, people perform better because nobody wants to fail.

So leaders have to master a delicate balancing act. On the one hand, they must acknowledge the inevitable fear that survival situations engender; admit that, in a turbulent world, perfect security is not achievable; and, indeed, use that realistic fear to keep people on their toes. But at the same time, they also must contain the fear, keep it from paralyzing people, encourage risk taking, and mobilize the organization to rise to the occasion when its very survival is threatened. I call this “worst-case thinking”—always trying to anticipate what can go wrong. A lot of people can mistake this for simple pessimism, but it has none of the sense of passivity and

futility that often come with pessimism. A determined focus on all the things that can possibly go wrong can be extremely mobilizing and galvanizing. (Would that the Bush administration had embraced *this* kind of fear in the run-up to the war in Iraq!)

To understand how this worst-case thinking can play a constructive role in an organization, let me give you what may seem like a trivial example. At Intel Israel, as at most companies, whenever my managers would propose a new strategic initiative, they would put together the inevitable slide presentation. And equally inevitably, almost like clockwork, they would delay any discussion of potential risks to the project until the very last slide—at which point, of course, we had already run out of time.

So I developed a simple rule in order to make the reality of risks to our survival very real to them. “Don’t wait until the last slide to tell me about the risks,” I told them. “Put a ‘hand grenade’ icon next to every point where there is even the least question of potential jeopardy.”

People hated it. They didn’t want to draw attention to where the land mines were. They assumed that by identifying potential obstacles they would ruin their chances for getting their project approved. In fact, the precise opposite turned out to be the case. The more they surfaced the key risks and uncertainties, and the more we discussed them in our management team, the more we increased our comfort level with the proposal and the more likely it became that it would be approved. The long-term result was to create an atmosphere in which people were aware of potential threats to the business but also comfortable with taking the necessary risks to meet those threats and continue to succeed.

Setting “Impossible” Goals

It’s one thing to get an organization focused on survival when it faces a serious crisis; it’s quite another when things seem to be going well. In such situations, one of the most effective ways to insist on survival is to set not just *stretch* goals, but *impossible* goals.

Especially in good times, when the organization doesn't seem to face any clear external threats, asking for the impossible creates a kind of "virtual" survival situation. Almost by definition, it poses the likelihood of failure; odds are that the organization will not succeed. But what often happens is that people become so engaged in doing what's necessary to meet the impossible goals that they reach levels of performance they never thought possible—thus strengthening greatly the organization's long-term prospects.

For example, when we established the Jerusalem fab in the mid-1980s, I was determined to do something that had never really been done inside Intel before: to compete on costs. At that time Intel was still a relatively young company, and the lion's share of focus had always been on innovation and product performance—not cost competitiveness. We already had a labor-cost advantage in Israel of about 15 to 20 percent compared to Intel's U.S. fabs. But I didn't want to rely on that wage differential alone. Rather, I wanted our productivity to be so good that we would be able to compete on costs with any semiconductor fab anywhere in the world. To achieve this goal, I set an "impossible" target of cutting the average cost per die of the EPROM (our first product) by roughly fourfold—from \$2.50, the best performance in Intel at the time, to sixty-six cents. I christened this program "Sixty-Six Cents or Die."

To be honest, I had absolutely no idea whether we could reach this goal. But I wanted to set a dramatic target to get people focused on cost. We created a pirate flag with the campaign slogan and flew it from the flagpole in front of the fab. We came up with new metrics to track our progress—for example, complementing the traditional industry focus on "die yield" (the number of usable integrated circuits per wafer) with a new focus on what we called "line yield" (the number of usable wafers that moved through the production line during a given period of time). We collected these statistics daily and communicated the results broadly through the fab workforce. I wanted everybody to feel that if we didn't meet the goal, we would be sunk.

The campaign had an impact. Employees in the fab started to focus relentlessly on costs. They would put off purchasing new equipment until it was absolutely necessary. They reduced parts inventory significantly and improved productivity through effective and innovative debugging of new equipment. People worked so hard and were so creative in finding ways to save money and improve productivity that they did not even realize just how extraordinary their performance was.

The fact is, we never quite achieved the sixty-six cents target. But we came close. And as a result, we were able to bring the costs of the fab down so much that as Intel's microprocessor production ramped up in the late 1980s, we were able to win the lion's share of production for the 286 and subsequent generations of Intel's microprocessor product line. Because we were so focused on potential failure, we were able to survive through success.

A Catalyst for Innovation

I mentioned earlier that when I first began talking about being the last Intel operation to close in a crisis, many people at Intel Israel thought the message was too negative—especially for an innovation-driven business like semiconductors. They didn't want to just survive; they wanted to thrive! But in my experience there is a highly synergistic relationship between survival and innovation. For one thing, the imperative of continuous innovation in today's global economy is a key factor in creating the turbulence that makes long-term survival more difficult. But perhaps even more important, threats to survival can become a powerful stimulus for new innovation.

For an example of this synergy between survival and innovation, consider a threat that Intel Israel faced in the early 1990s. Typically, a semiconductor manufacturing facility has a relatively limited life, usually somewhere between ten and fifteen years. Rapid advances in chip design tend to rely on parallel advances in manufacturing and process technology. As innovation moves

forward, a fab designed for one generation of technology can quickly find itself obsolete.

We faced this situation in 1993, when we began to realize that the Jerusalem fab was nearing the end of its useful life. The fab had been designed in the mid-1980s to manufacture products with channel lengths of one-and-a-half microns (a micron is one millionth of a meter). Channel length defines the distance between the two terminals (known as the *source* and the *drain*) in a transistor. It's a key metric of a chip's performance, because the shorter the channel, the more transistors can be placed on a chip, and the better the performance in terms of speed and reliability. One-and-a-half microns was adequate for Intel's 386 microprocessor, the product we were running at the time, but the new 486 had a minimum channel length of one micron. If we hoped to compete for the 486 and subsequent generations of Intel's microprocessor technology, we would have to retool the plant. Specifically, we would have to completely replace the fab's laminar-flow air-conditioning system, because the smaller the channel length, the purer the air would have to be in the fab's cleanroom.

The looming obsolescence of the Jerusalem fab was actually a quite serious threat to my vision for Intel Israel at the time. In the early '90s we had started planning to build a second, more technologically advanced fab in Jerusalem, and by 1993 we had reached agreement with the Israeli government about an incentives package for the new plant—only to be informed at the last minute by Intel corporate that they had decided to build the next fab in Arizona, not Israel. So unless we could find a way to extend the life of the original Jerusalem facility, we would lose our foothold in semiconductor manufacturing. What's more, because nobody in corporate was asking us to modernize the fab, we would have to figure out a way to do it without stopping production—not even for a single day.

My facilities people said it was impossible. A semiconductor fab's air-conditioning system is critical for continuously filtering the air of the cleanroom and making sure impurities

don't get introduced into the chip-making process and ruin the semiconductors. There was no way we could build a whole new air-conditioning system while keeping the plant open. It had never been done anywhere—not at Intel or at any other semiconductor manufacturer.

I tried to explain that this wasn't a satisfactory answer. "Don't tell me why it can't be done," I said. "Tell me how we can do it and what the costs will be. I don't care how crazy the ideas are; just come up with something. Take a month and see if you can figure it out."

Three weeks later, the team returned to tell me, "We think we've found something, but you won't buy it." The basic idea was to "raise the roof" of the Jerusalem fab's cleanroom by adding a new structure on top and turning the existing roof into a false ceiling. Above this false ceiling we would install the new air-conditioning system in modules, section by section. As each new section of the system became functional, we would then break through the false ceiling and connect the new air-conditioning system to the existing one, in effect creating a hybrid system. By the end of the process we would have a completely new system, able to handle Intel's new one-micron technology. Retrofitting the entire plant would take time—about a year and a half—but it would have the advantage of allowing us to introduce the new system piece by piece without stopping the production line. The team estimated the cost of the project at about \$10 million.

It wasn't the money that I was worried about. The fact is, from Intel's point of view, \$10 million was a relatively small amount of money to extend the life of the fab—certainly far less than the roughly \$1 billion it would have cost at the time to build a brand new fab. But could we really pull it off? Despite the risks, I took the plan to the company's senior executives, who would have to sign off on the capital expenditure. "Are you sure you can do it without affecting current production?" asked Craig Barrett, who had recently become Intel's chief operating officer. To be honest, I wasn't completely sure that the plan would work. But I told him that we had the risks under control.

It took three or four months of trial and error to figure out the best way to build the new ceiling, install each module of the new air-conditioning system, and connect it to the existing system. You can't imagine the facilities team's pride when they finally figured it out and took me to see the first successfully working module. Over the next eighteen months we proceeded step by step, installing a new module, linking it to the existing system, then moving on to the next area of the fab. The project had a galvanizing effect, not just on the facilities team but on the entire fab workforce. Because everyone was so worried that production might suffer, they went out of their way to maintain and even improve on our performance. The paradoxical result: our output was even better during and after the project than before.

This approach to modernizing a cleanroom's air-filtering system had never been done before—and I suspect it has never been done since! Yet it is an excellent example of how focusing on survival and asking the impossible can stimulate risk taking and innovation. The modernization of the Jerusalem fab was not only key to our winning a significant part of Intel's global production for the 486 microprocessor, but it also contributed to our winning the next round in the global competition for investment in Intel's expanding production facilities: the creation in 1996 of a second Intel Israel fab in the town of Qiryat Gat.

In March 2008 the Jerusalem fab finally closed down, after twenty-three years of operation (which in the fast-changing semiconductor industry must be some kind of record). Yet despite the closing of the facility, semiconductor manufacturing at Intel Israel couldn't be healthier. In 2005, Intel announced that it would build a second fab at Qiryat Gat. The \$3.5 billion investment, the largest ever by a private company in Israel's history, will fund what will be one of the largest and most technologically advanced semiconductor manufacturing facilities in the world. At the new Qiryat Gat plant, channel length will be forty-five nanometers (a nanometer is one thousand-millionth of a meter), allowing transistors so small that thirty million can fit on the head of a pin.

Of course, I'm now completely retired from Intel and had nothing to do with the decision. Yet I have to believe that this investment didn't happen by coincidence. It happened because we created an organizational culture that, in good times and in bad, never took its survival for granted. It happened because we created an organization determined to be the last place to close in a crisis.