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Introduction

Envisioning the prototypical company of the 21st century

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It is a special privilege for me to write this Introduction. I have a deep appreciation of Dr. Karl-Henrik Robèrt's work as the founder of The Natural Step, the organization through whose efforts this book exists. I hope to provide a framework for what follows in this extraordinary collection of real examples of the rethinking and reshaping of economic enterprises that have been inspired by sustainability principles. I shall draw heavily on my experiences in my own enterprise, Interface, Inc., and will define the essential role The Natural Step plays in the ongoing transformation of my company toward sustainability as we seek to build an economically, ecologically, and socially sound enterprise.

One way or another, each of the enterprises described in this book has, of its own volition, begun to work through the complex process of integrating sustainability principles into its business philosophy and practices. I offer at the outset, by way of the Interface example, the general model that each of the organizations discussed throughout this book has undertaken in its own unique way. I hope, in the process, to provide a clear picture of how the entire industrial system must change to survive.

Others make the case that such change must happen; this book makes the case that such change is happening. The individual examples underscore the wisdom that physicist Amory Lovins, co-founder of the Rocky Mountain Institute, often expresses: "If it exists, it must be possible." Alan AtKisson, a sustainability advocate, advisor and author (see AtKisson 1999), offers a metaphor of ameba-like progress among early movers—people and companies—who are the "pseudopods" reaching out to establish a new foothold for moving the "body" of the industrial system to a new state—harmony with the natural world on which the entire economic system is utterly dependent.

As I write, I am wearing two hats. The first is that of an entrepreneurial industrialist, the founder of Interface, Inc., a start-up-from-scratch venture that has grown to be a billion-dollar, global manufacturer of carpets, textiles, and architectural products. The second hat is one that I share with every living creature, that of an astronaut on Spaceship Earth.

However, the mind beneath those two hats is one. It is reconciled to the inseparability and interdependence of the world of business and the natural world. This view may not be held by many, or even most, of my peers in the business world. I did not always hold it myself.

For the first 21 years of my company's existence I never gave one thought to what we were taking from the Earth to feed our petroleum-intensive manufacturing processes, or what we were doing to the Earth with our waste, emissions, and effluent. It was not until August 1994 that my own change occurred, when I read a book that changed my view of the world, my life, and, eventually, my company's very nature. The book was Paul Hawken's *The Ecology of Commerce* (1993).

I had been asked to make a speech to a newly formed company task force that was convening to assess our company's worldwide environmental position. The task force was assembled in response to growing customer questions about what Interface was doing for the environment. At the time, we had no good answers. In thinking about that speech, which I really did not want to make, I could not get beyond, "We obey the law; we comply."

At that propitious moment, as if by pure serendipity, Hawken's book landed on my desk. Reading it, I quickly came to a chapter entitled "The Death of Birth." That phrase, coined by the biologist E.O. Wilson to describe species extinction, felt like the point of a spear, a spear that I feel in my chest to this day. It was an epiphanal experience. For the first time in my life I became sensitized to the responsibility that we *homo sapiens*—astronauts on Spaceship Earth—have for the damage we are doing to our spacecraft and, as a consequence, to ourselves and to the countless creatures that share with us the thin shell of life that is the biosphere.

Absorbed in Paul Hawken's treatise, I was convicted as a plunderer of the Earth and as part of the system that is systematically fouling the passenger capsule of Spaceship Earth. Over time, that conviction has grown and grown. One needs only to take the long view—the truly long view of evolutionary time—to know that the present take-make-waste linear system, driven by fossil fuels, wasteful and abusive of a finite biosphere, simply cannot go on and on and on.

Well, I made that speech, drawing freely on Hawken's material. I shocked the entire task force with the challenge to lead our company to environmental sustainability and, through our example, to lead the entire industrial world to a new model for an industrial enterprise.

But, how to even think about sustainability? How to define it for ourselves? How to begin to move in that direction? And, just as important, how to communicate such a vision or present a plan of action to our company's 6,500 people, few of whom had ever heard the word "sustainability," much less thought about how to meld it into their work lives? These were the daunting questions with which I wrestled for a year, while the task force members went back to their businesses with my challenge to lead. Only one thing was really clear: this was a mountain to

climb, a mountain much taller than Everest and infinitely more difficult. We named it “Mount Sustainability.”

For that year, while I struggled with my questions and while the task force members confronted the status quo in their individual businesses, I spoke to our people at every opportunity to bring them along on the climb. It was easy to articulate the “why?” of the imperative to climb this mountain, but not so easy to offer “hows.” I am sure our people, for the most part, discounted my ranting as the program of the month that would surely go away in time, because it was just too hard to really do. It was too hard to even think about doing. It was the early days of the sustainability movement and there was no “how-to” manual.

But I stayed on the case. I read. I learned. I retained the best advisors that I could find. I engaged members of the task force to help work out ways to do something, anything, to make a start. And, gradually, a plan took shape. The plan clicked into place in my mind one night as I was watching the movie *Mind Walk* (Bernd Capra 1991), based on Fritjof Capra’s book, *The Turning Point* (1988). Capra had written about and in the film Liv Ullman, the actor-scientist, was talking about the interconnectedness of all things. Although they were describing things at the subatomic particle level, I began to think about the connections between Interface and its various constituencies. That thought process resulted in the schematic shown in Figure 1.1, depicting our company in terms of its connections to its customers and its suppliers (the supply chain), to its communities, and to the Earth (to the lithosphere [the Earth’s crust] and to the biosphere).

The circle at the center of the diagram represents Interface. Inside that circle are its people, capital, and processes. Economists often put “technology” where I have put “processes,” but, to my mind, “processes” is the broader word and better choice. At the core are the company’s values. Of course, this diagram describes every organization. The combination is unique for each company, but the general picture is the same for all. Yet no company stands alone. Any company is connected to a number of important constituencies. In our case, Interface is part of a supply chain, with suppliers and customers. Products flow through that supply chain in one direction; money flows in the other direction.

The supply chain does not stand alone either. It is connected to some other important constituencies. Our suppliers are dependent on Earth’s lithosphere for organic and inorganic materials. A very small amount of our raw material is natural, coming from the biosphere. Our processes are, unfortunately, connected to Earth’s biosphere by the waste-streams and emissions that we produce. And the products we make, at the end of their useful lives, go to landfill or incinerators, creating a further pollution load for Earth’s biosphere.

We are connected to our community as well. Our people come from the communities in which we are located. Their wages return to the community’s economy. Our capital comes from a sector of the community—the financial sector. If we are fortunate enough to earn sufficient profits, dividends are returned to those investors, along with interest to our lenders and, we hope, capital appreciation to our shareholders. Government is part of community, too. We are connected to it through laws, regulations, and, of course, the taxes we pay.

With these linkages in place we have the typical company of the 20th century and early 21st century. There are good linkages, bad linkages, and some missing

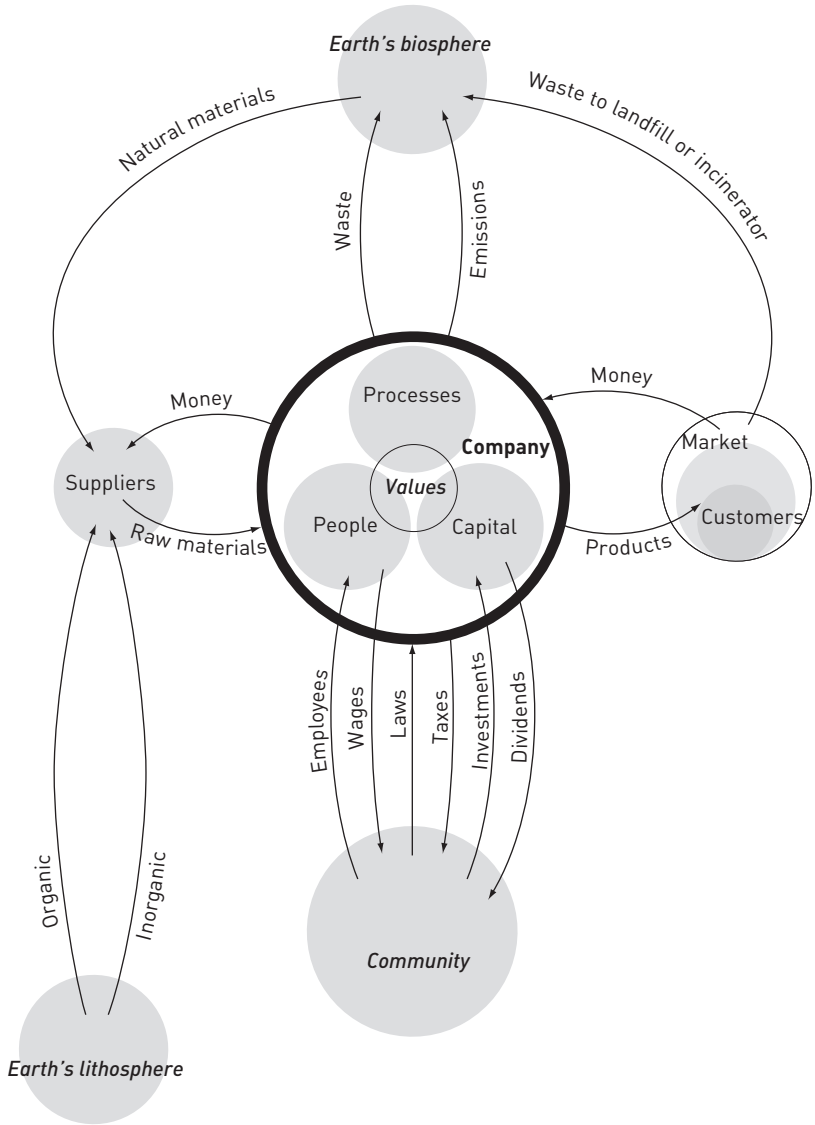


Figure 1.1 The Interface model: a typical company of the 20th century

linkages that should be added. If you are a businessperson, this diagram will describe your organization as well and every one of your suppliers and customers. This is a diagram of the ubiquitous, unsustainable enterprise and its unsustainable supply chain.

In a general sense, it is a diagram of the entire industrial system. Each supplier is an organization with people, capital, processes, and values. So, too, is each customer. The diagram is a description of the whole industrial system that has arisen out of the first industrial revolution—taking by extraction from the Earth; making by linear, fossil-fuel-driven, abusive processes; and wasting through emissions and waste-streams—all to deliver products that end up in landfills and incinerators. And notice the relationship with the community—it is very “arm’s-length,” especially with its employees:

- With employees: “we will offer you wages for work”
- With investors: “send us your money”
- With governments: “give us your laws, take our taxes, and go away”
- With the community: “send us your people”

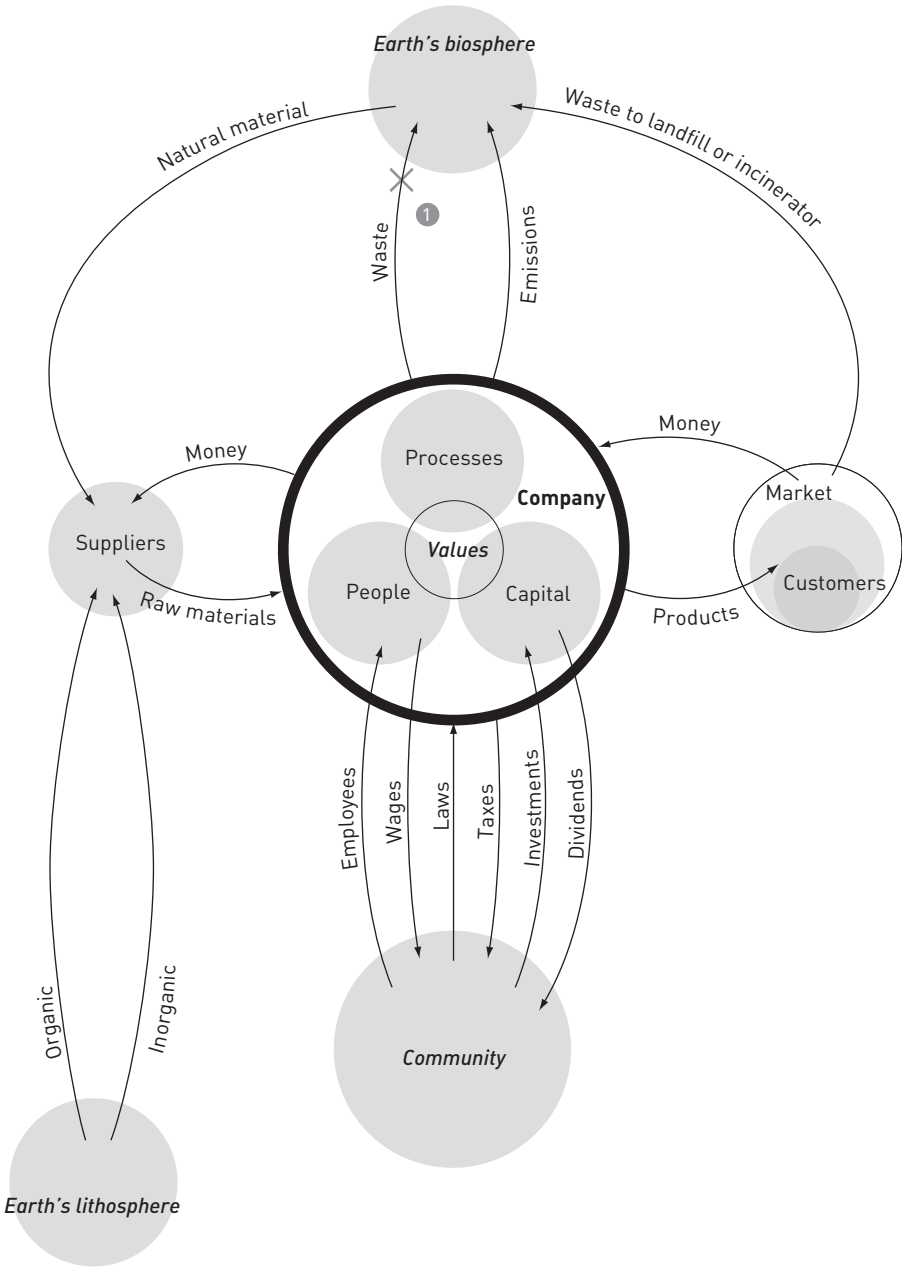
As for Interface, if this diagram is all there is to describe the company, then Interface is just typical. However, we are trying to transform our company into something different. I have called that new organizational state the “prototypical company of the 21st century.” Let us see what that means, step by step. How do we get there? What is the plan?

Scaling the seven faces of Mount Sustainability

We are pursuing this goal—of becoming the prototypical company of the 21st century—on seven fronts simultaneously, although we are at different stages of progress with each. You might say we are climbing the “seven faces” of that mountain. We hope the seven climbs will meet at the point at the top, symbolically representing zero environmental “footprint.” The system conditions of The Natural Step define that point, and define sustainability for us. Through hundreds of projects, our research subsidiary is driving this effort. Every part of the business is engaged right down to the factory floor to create that prototypical company of the 21st century.

Face 1: zero waste

The first face of the mountain is shown in Figure 1.2. It is the face of “zero waste.” In pursuit of zero waste, to attack an unwanted linkage to the biosphere—that is, to put an “X” on the unwanted “waste” linkage in the diagram—we have launched an effort we call QUEST, an acronym for “quality, utilizing employee suggestions and teamwork.” This initiative is our total quality management program and



Note: the linkage targeted at this face is labeled ❶; the cross indicates an attack on that linkage, to move towards zero waste

Figure 1.2 The Interface model, face 1: zero waste through QUEST (quality, utilizing employee suggestions and teamwork)

much more. Quality, to us, means zero waste of any kind. Any waste is bad—a mispriced invoice or a misdirected shipment, as well as scrap or defect. Anything that we do not do right the first time, any cost that goes into our product that does not produce value for our customers, is waste. Against ideal operational standards—which would have zero waste—we identified US\$70 million in waste in 1994, representing 10% of sales, a figure that has grown in absolute terms as the business has grown.

We were on a mission to cut waste by half by the end of 1997. However, it took us six years to reach an index of 0.49 (51% reduction), yielding US\$165 million in savings up to that point. Although we lost ground against the index in 2001 and 2002, with poor operating schedules resulting from economic slowdown, we have added US\$44 million to savings against the baseline of 1994, bringing the cumulative total to US\$209 million (see Fig. 1.3). This amount is in real money: hard dollars. It is paying for the rest of the revolution that we are engineering in our company, which we call EcoSense. One result has been an overall reduction of scrap to landfill of more than 60% from 1994 levels, and by 80% or more for most operations. QUEST has provided 28% of operating income over the nearly eight-year period.

We reframed QUEST for the second and third three-year periods. We found, after the early savings, that with a larger company there was still US\$80 million (per year!) in waste. We will pursue this initiative until all waste is driven out of our company, which will require reinvention of our company over and over. Therefore, we must be a “learning company,” which calls for great focus on our people and their development. It also means an unrelenting striving for perfection, or zero waste.

Face 2: benign emissions

The second face of our mountain is the face of “benign emissions,” at which we begin to attack another unwanted linkage to the biosphere. We inventoried every smokestack and every outlet pipe in our company to see what and how much was being emitted. Since then, we have continually reduced emissions. Including acquisitions since 1994, we started with 292 smokestacks. Over the period 1995–2002 we shut down 109 smokestacks (a 39% reduction). I hope to live to see the last one closed. Furthermore, a total of 22 effluent pipes has been reduced to a total of 10 such pipes (a 55% reduction). Factories with no outlet stacks or effluent pipes—that is the vision!

However, we know that to prevent toxic emissions altogether we must go upstream and prevent those toxic substances from entering our factories in the first place. What comes in will go out—as product, waste or emissions. We are staggered by how difficult this undertaking has proven to be. The inputs to our factories (and everyone else’s) are replete with substances that should never have been taken from the lithosphere in the first place. Nature put some of it there 3.85 billion years ago and it should be left there; we could not have evolved in its presence. Filters are not the answer; end-of-pipe solutions are not sustainable. What do you do with the dirty filters? The first and second laws of thermodynamics tell us there is no place called “away” to throw them. So we have learned

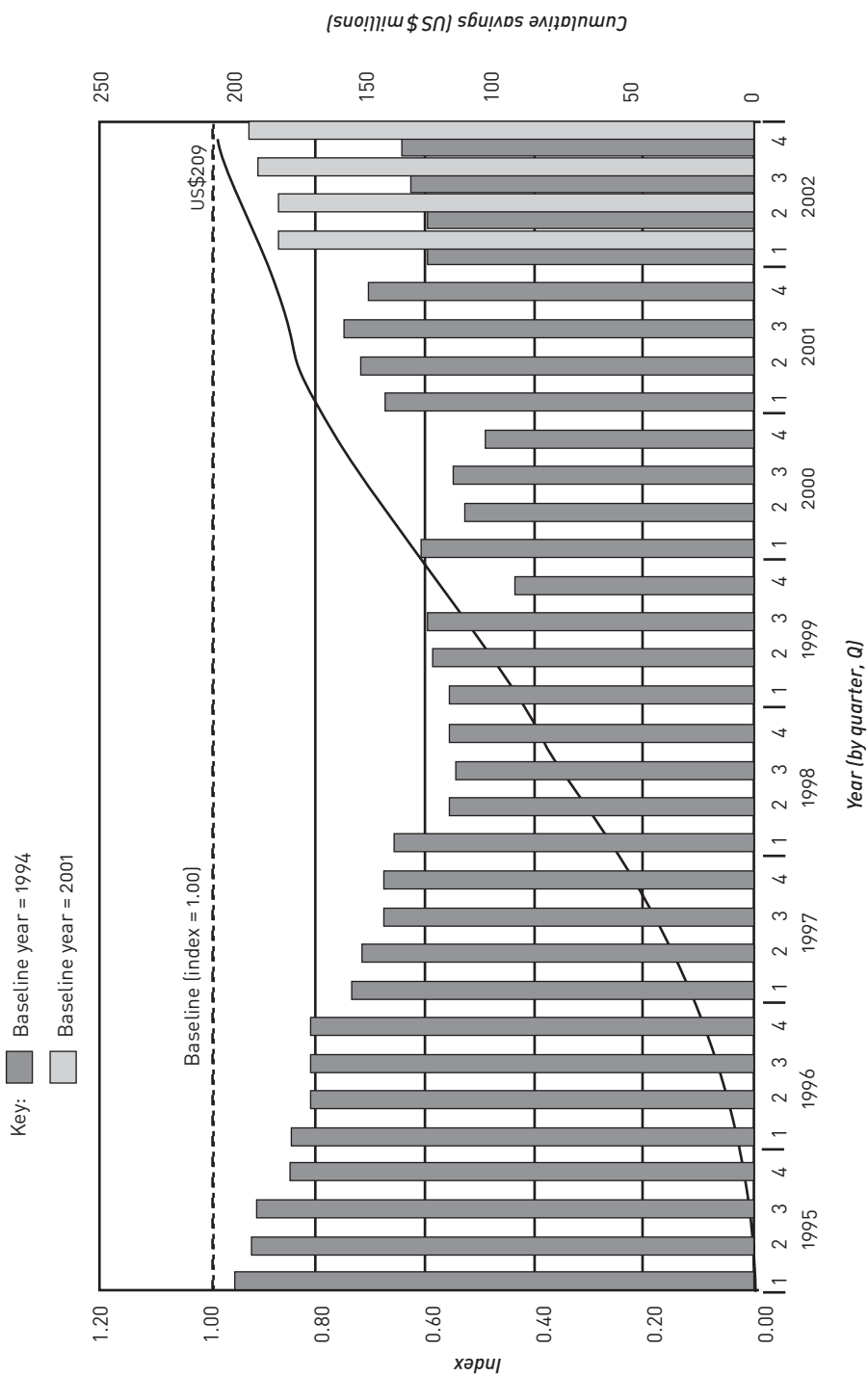


Figure 1.3 Interface, Inc.: cumulative results of QUEST (quality, utilizing employee suggestions and teamwork), from the first quarter (Q1) of 1995 to the fourth quarter (Q3) of 2002

to put the filters in our brains, not at the end of the pipes, and to work upstream on the inputs.

Face 3: renewable energy

The third face is that of “renewable energy,” where, to climb to the top, we must, in time, use solar, wind, and hydrogen to run our processes, with the possibility of gas turbines and biomass in the short-term. This shift will chip away at numerous unwanted linkages, both to the lithosphere and to the biosphere. There is good news on this front. Power from photovoltaic cells is coming down in cost. Wind power is already competitive with fossil fuels. Fuel cells are improving rapidly.

At Interface, our first large photovoltaic project was a 127 kWp (at peak sunlight) to produce the world’s first Solar-made™ carpet. Our specifier customers love the idea. Who cares if the electricity costs a bit more? It is the right thing to do. We have contracted in Canada, the United Kingdom and Holland for green power, mostly wind and biomass. It costs a premium, but with reduced usage through efficiencies it is the right thing to do—and the smart thing. Solar-made™ carpet sells in Canada and Europe, too.

Thus, encouraged by the marketplace, we have declared all fossil fuel energy to be waste under QUEST—first, to be reduced to the irreducible minimum through efficiency improvement, then to be replaced by renewable energy. The initial emphasis is on efficiency. Energy saving is far less costly than energy generating, by any means.

Face 4: closed-loop recycling

The next face to scale is “closed-loop recycling,” during which we further reduce unwanted linkages and bring new linkages into being. Through this work, two cycles are introduced. First, we introduce a natural, organic cycle that uses natural raw materials to make compostable products (“dust to dust”); second, we introduce a technical cycle, giving human-made materials and precious organic molecules life after life through recycling.

However, the recycling operation must be driven by renewable energy, too; otherwise, we will use more fossil fuel to supply the process with energy than we will save in petrochemical-based materials in the first place. Recycling without renewable energy is a misplaced focus, but, if we can get it right, we will never have to take another drop of oil from the Earth. Cutting the fossil fuel umbilical cord is also a part of the vision, along with factories without stacks. Standing in the way, however, is the next face: transportation.

Face 5: resource-efficient transportation and logistics

“Resource-efficient transportation (logistics)” is the face that is least within our control. We can video-conference to avoid making unnecessary trips for meetings and we can drive the most efficient vehicles available. We can site our factories close to their markets and plan logistics for maximum efficiency. But, unless we

choose to shut down contact with our customers and go out of business we are dependent on the transportation industry for more sustainable logistical options. Isn't everybody? I see this face as one of the hardest to conquer.

Yet Peter Russell's "global brain" (1995) is waking up. Honda and Toyota have introduced hybrid gas–electric cars. German companies are working on jet engines that use hydrogen. Daimler-Benz has invested millions in a fuel-cell venture in Canada. Amory Lovins is developing his "hypercar" (Hawken *et al.* 1999).

When we have done all else to reduce the greenhouse gases associated with transportation, we will close the remaining "carbon gap" with carbon offsets. "Trees for travel" and other offset programs will have to bridge the gap if we are to realize carbon-neutral, and thus climate-neutral, transportation. So, for every 4,000 miles one of us flies in a commercial jet, we plant a tree. When that tree is fully grown, in 200 years or so, Earth will have got even for that trip. This, you see, is a long-term strategy.

Face 6: the sensitivity hook-up

The "sensitivity hook-up," our sixth face, spawns numerous new and desirable connections: service to and investment in the community, especially in education, together with closer relations with suppliers, customers, and among ourselves. It is getting everybody on the same plan, understanding where we are going and why. These efforts lead to increased awareness of the thousands of little things we can all do to inch toward sustainability, breaking unwanted connections. Ties to the community, to our suppliers and customers and within our organization are all changed and strengthened. The principles of natural capitalism (Hawken *et al.* 1999) and the system conditions of The Natural Step become at once our shared framework and our compass, pointing the way and acting as a magnet, drawing us toward the summit of the mountain. The ISO 14001 environmental management system is a given, a map for tracking progress. We have coupled it with The Natural Step for a goal, a destination.

One result of Interface's commitment to involving its employees in sustainability efforts was that *Fortune* magazine selected us as one of the 100 best companies in the USA to work for in 1997 and 1998. Our people said so, citing the galvanizing effect of climbing "Mount Sustainability" on our organization, and validating Maslow's (1987) contention that people will rally around a higher purpose in their personal lives and their work.

Face 7: the redesign of commerce

The seventh, and final, face calls for the "redesign of commerce" itself, which probably hinges on the acceptance of entirely new notions of economics, especially prices that reflect full costs—internalizing the externalities associated with hydrocarbons—to create ecologically and socially honest prices. To us, it will mean shifting emphasis from products to services. Therefore, we have invested in downstream distribution, installation, maintenance, and recycling—all aimed at forming "cradle-to-cradle" relationships with customers and suppliers. We want to build

relationships based on delivering, by way of service agreements, the services our products provide—color, texture, warmth, acoustics, comfort, cleanliness, ambience, esthetics, and functionality—rather than selling the products themselves. The result is a further breaking of the undesirable linkages to the lithosphere and to the biosphere (see Fig. 1.4). In addition, another highly desired result is increased market share at the expense of inefficient, slow-to-adapt competitors.

We see many changes since we began the climb up the mountain. Numerous “X”s on a linkage indicate where we are attacking the unwanted linkages. There are also many new connections, depicting renewable energy, closed-loop material flows, more vital connections throughout the supply chain and with the community, and the service component that overshadows products.

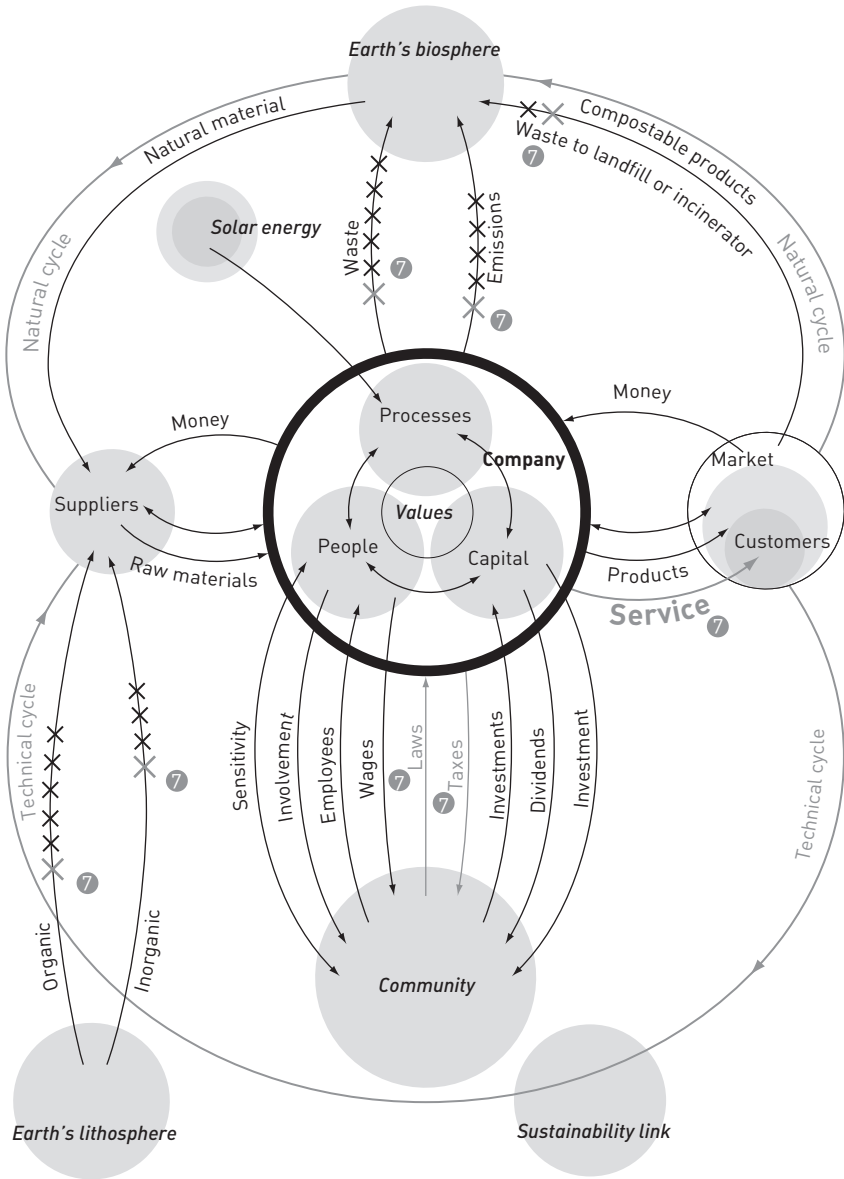
View from the summit

Success on all seven fronts—or a successful climb on all seven faces—will bring us to the summit of Mount Sustainability and our goal of becoming the prototypical company of the 21st century. The schematic in Figure 1.5 shows what this new enterprise will look like. Such a company will have a number of characteristics. It will be strongly service-oriented by means of products that deliver service. It will use resources efficiently, waste nothing and be cyclical (no more linear take–make–waste processes of the first Industrial Revolution). It will be driven by renewable energy (minimized, and thus afforded, through efficiency). It will be strongly connected to its employees and constituencies—with engaged communities, engaged customers, and engaged suppliers who have bought into the vision. What we believe will emerge is our own “ecosystem” of connected constituencies, with cooperation replacing confrontation. This company will be way ahead of all regulations, rendering the regulatory process irrelevant. Its values will have shifted, too. It will be committed to taking nothing from Earth’s lithosphere that is not rapidly and naturally renewable and to doing no harm to Earth’s biosphere. The undesirable linkages will all be gone. New, vital linkages will be in place.

The prototypical company will be sustainable and just. It will serve as an example for all and will be doing well by doing good. It will be winning in the marketplace, but not at Earth’s expense nor at the expense of our descendants. Rather, its success will be at the expense of inefficient competitors. And it will be growing, too, even in a no-growth world, by taking market share from inefficient, unsustainable competitors. All the while, this emerging new enterprise will ensure that there is declining throughput of virgin materials, eventually reaching zero throughput. Only zero throughput of extracted natural capital is sustainable over evolutionary time (the true long run)—a radical thought, but a necessary objective, not just for Interface but for the entire industrial system.

Progress to date and an invitation to join the expedition

Our goal is for Interface to reach the summit by the year 2020. We are getting ready for the day when the price of oil reflects its true cost and all prices are ecologically and socially honest and when virgin petrochemical-based materials become very



Note: the linkages targeted at this face are labeled 7; crosses indicate an attack on the linkage, to move towards the redesign of commerce

Figure 1.4 The Interface model: the redesign of commerce

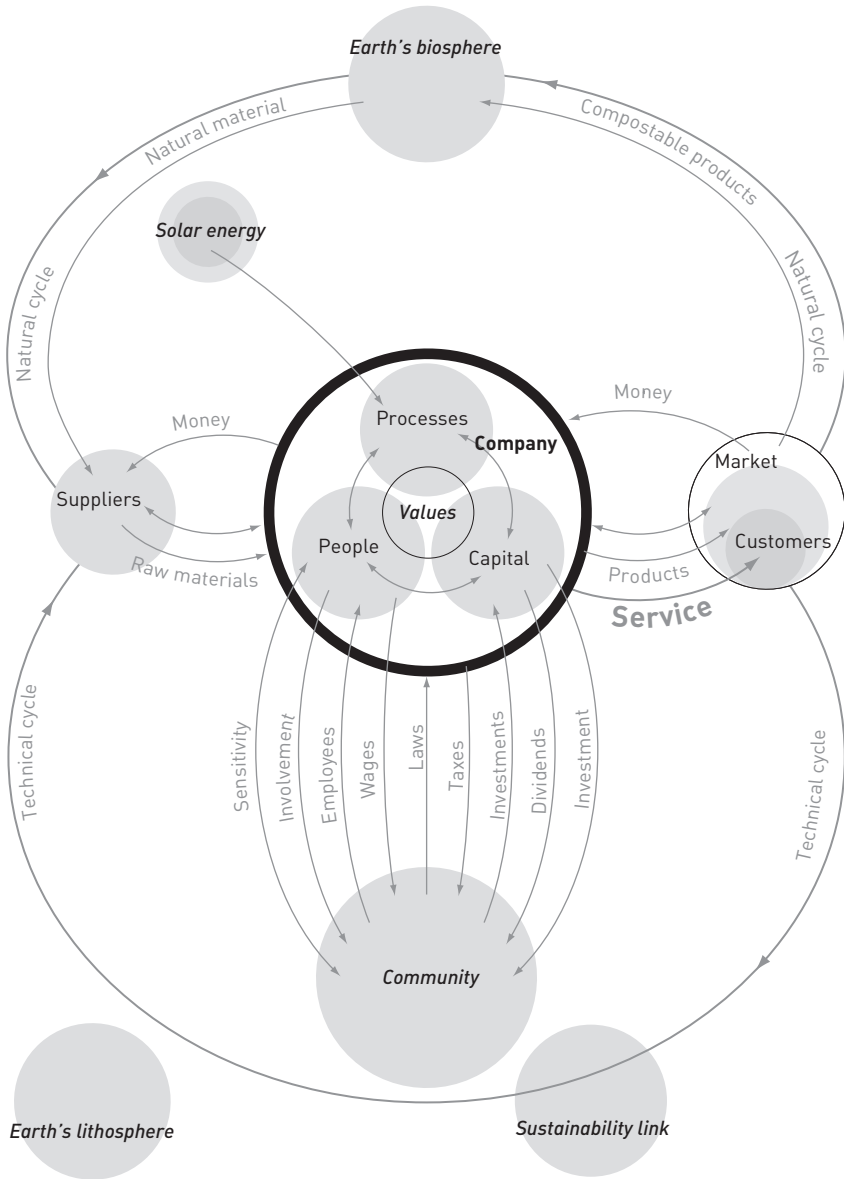


Figure 1.5 The Interface model: a prototypical company of the 21st century

dear. That is the day we will be ultra-successful in the marketplace, because we believe our customers will join in and climb this mountain of sustainability with us. Doing well by doing good is cause and effect, effect and cause—a positive feedback loop that is good for Earth.

The restorative company will add to this diagram the one missing linkage—that is, reinvestment in natural capital to restore the biosphere. This reinvestment will begin to repair the damage inflicted on Nature over the nearly 300 years of the industrial age.

How are we doing at Interface? This is a work in progress. Although we will not be satisfied until we reach the point where we leave “zero footprint,” at the top of Mount Sustainability, the progress in the first eight years of implementation of the plan has been remarkable. The carbon intensity of Interface is down 33% (in terms of pounds of extracted petrochemical stuff per dollar of revenue), which includes all the petrochemical-derived material and energy extracted from Earth and processed through the entire supply chain to produce revenue for Interface. Greenhouse gases are down 30% in absolute terms.

This is the Interface plan and the Interface model for a sustainable industrial enterprise. It describes how we intend to get from here (unsustainable) to there (sustainable). In the eight years that we have spent first planning then figuring out how to integrate sustainability into our business, we have learned, without a shadow of a doubt, that this approach is a better business model, in the strictest business sense. People, process, product, profit, and purpose are all well served by proper attention to place, our Spaceship Earth. Doing well by doing good is a new and better way to bigger profits and to greater, more genuine, shareholder value. In the most difficult economic conditions of our corporate existence over these past few years, the model has proven not only its viability but also its superiority. To businesspeople everywhere, I urge you to take the step. Just try it; I think you will like it.

An industrial system that simply cannot go on and on must change. I believe every enterprise that is to survive must climb this same mountain, and its same seven faces. Together we must map out and climb the eighth face—to restore the health and productivity of the biosphere as well as the social sphere.

Read on now and see these inspiring examples of how other organizations are approaching this awe-inspiring climb. I hope you will start making your plans for joining us at the top. There will be room for everyone who makes it there.