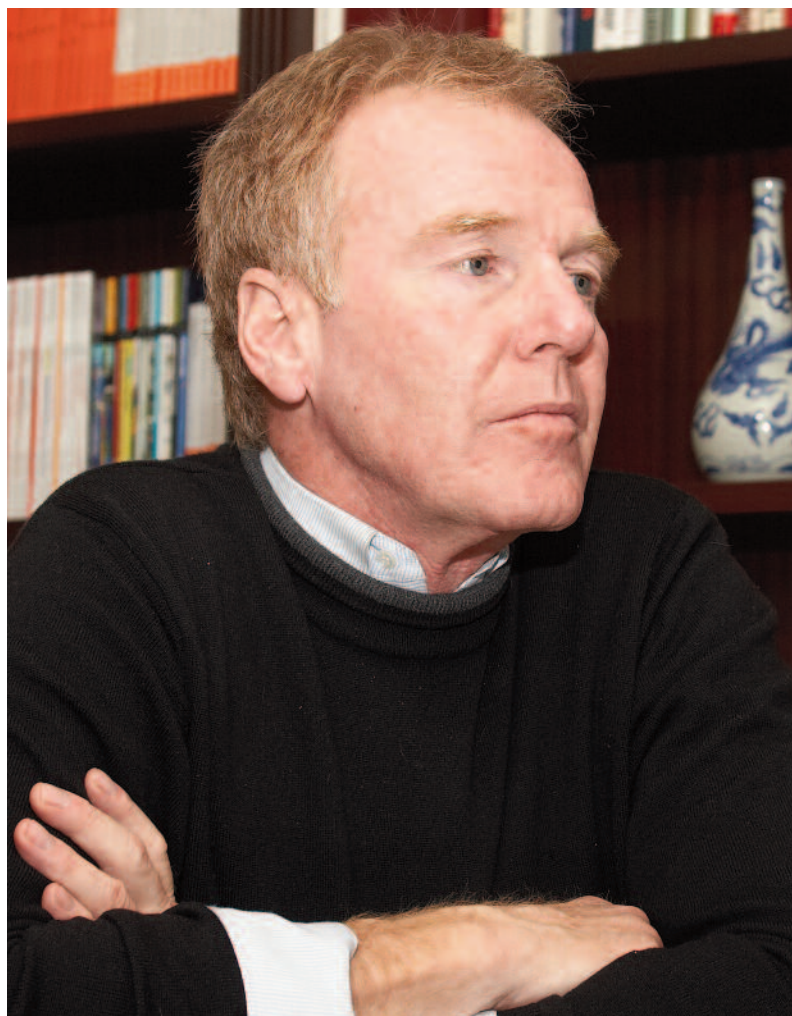


Companies—all of us, in fact—must change the way we do business.
Right now. Take it from Peter Senge.

As the Bubble Pops

Peter Senge remains best known for co-authoring 1990's *The Fifth Discipline*, but he has long since broadened his scope beyond what happens inside organizations. Today he hopes to help companies create "a future truly in harmony with a flourishing world." It's not as hippie-ish as it sounds, though: He believes that society is in dire straits, and that companies need to change what they're doing—indeed, their reason for being—for the sake of the planet and its inhabitants. Senge's new book, *The Necessary Revolution: How Individuals and Organizations Are Working Together to Create a Sustainable World* (Random House)—written with Joe Laur, Nina Kruschwitz, Sara Schley, and Bryan Smith, all affiliated with the Society for Organizational



Learning—urges companies to invest in as-yet-unproven initiatives and technologies, and to see their own existence in a societal context. He writes that "it's more important than ever to learn how to expand the boundaries of normal management attention and concern in order to see the larger systems in which businesses operate."

Garrulous and intense, thoughts and ideas pouring forth, brandishing a white Oxfam wristband, the MIT senior lecturer accepts the evangelist mantle. "I have been pretty obnoxious for a long time," he says. Senge, 60, spoke with *TCB Review* acting editor Matthew Budman on a recent visit to The Conference Board's New York offices.

First of all: Are we really still, as you say, in the Industrial Age? I thought we'd moved on to at least the Information Age.

It all depends how you define it. If you look at how much cement we make in the world, how many cars we manufacture, how many buildings

we build, how many factories there are, how many people are employed in those factories—guess what? All those numbers are higher today than ever before. And people don't think about the fact that when they plug in their PDAs to charge up at night, puffs of coal-fired smoke go up in the air.

This country is more dependent on coal than ever before. So we're right in the middle of the Industrial Age in terms of what we do and how we actually live.

And you characterize society today as the Industrial Age bubble. Why

is that the most appropriate metaphor?

We're obsessed about labor efficiency and the efficiency of capital, but we're enormously wasteful in the use of natural resources. And it struck me that what we're living in is a long-term bubble, one that's been growing for 150 years or so. Look: Nature generates no waste—zero. Everything in nature runs off basically the same energy source: the sun. Food doesn't travel ten thousand miles for any other species on this planet. So we're violating laws of nature, and laws of nature are not things you vote on—like you don't vote on gravity. This can't go on indefinitely.

Everybody in the United States complains about the price of gasoline. But a pint of bottled water costs at least a buck, and that's \$8 a gallon. Gasoline is half as expensive as water, and we're complaining! That's because there's an Industrial Age assumption that energy is free. We build all these buildings with no windows that open—no use of natural breezes, no thought of how to keep cool naturally in the summer and warmer in the winter. We heat and air-condition everything 24/7, 365 days a year. It's crazy.

So that's the bubble. What's surprising is that people don't notice it. There's a lot of concern about things like climate change, but I am very skeptical that the changes that will ultimately be needed will be achieved without looking more comprehensively at fixing society. The Industrial Age is not an age that has a long future. No society that's lasted for a while has ever operated this way.

So our bubble is ready to pop?

It's already happening. Climate change is probably the most tangible, measurable evidence, but you can also look at social conditions: We have a billion people today without access to clean drinking water; we've lost a billion hectares of topsoil in the

Fear is not a source of innovation; it's not a source of imagination.

world in the last fifty years from stupid farming practices. And at a subtler level, you don't have to look very far: People actually aren't very happy.

In fact, I think this whole consumerism thing is a bubble—just how many flat-panel displays can you buy? The Industrial Age is based on keeping people unhappy so they always need something else. It's a crazy model of human behavior. For all human history, there was something about your relationships and your sense of purpose, about living a meaningful life. These are things that really matter to people—not how much junk you have.

I have to say: At points in your book, I felt as though I was reading a manifesto from the early 1970s, like *Small Is Beautiful* or *Operating Manual for Spaceship Earth* or something on the Gaia hypothesis. Do you feel as though E.F. Schumacher and Buckminster Fuller had it right back then?

Oh, sure, absolutely. But the world was not ready then. And even though E.F. Schumacher and Bucky Fuller had great positive visions, a lot of what hit the mainstream was very negative: waste and toxins and starving kids and the population out of control. I think it was a tragic strategic error. The environmental movement tried to beat people over the head with how awful things are, because surely the fear would motivate them to change. And yes, fear is a powerful motivator, but it's a very limited motivator. Fear is not a source of innovation; it's not a source of imagination; it's not a source of creativity.

If not fear, what will force people to change?

I think we have to have a shift in the way we live. People don't need to be working eighteen hours a day, operating at the speed of their Black-Berries. They don't want to travel incessantly if it's not a matter of choice, they don't want to work in jobs that don't have meaning for them, and they don't want to be in communities that have no community. People sense that there's something ending, and the real question is: What do we want to create to take its place? The environmental movement never provided very good answers.

So with this book, are you describing a revolution, or advocating one?

I would say both. I mean, my group at MIT has put in ten years organizing a network and writing a book, so we're advocates, to be sure. It's a small drop in the bucket, though. The change process is never as simple as it looks from the outside—it never comes down to a CEO making a speech and his organization making a right-hand turn.

In keeping with your work on organizational learning, you advocate creating change organically, through bottom-up networks rather than top-down policy. Where, then, does the vision come from?

The question is not whether the organization has a vision—it's what's the level of energy and commitment in the organization. Are people passionate about what they're doing? Do they have an imagination that's active? Are they seeing a future that they are really excited about contributing to? If the answer to those



kinds of questions is yes, there's a lot of vision in the organization.

Think of a vision as a kind of living phenomenon: It's how a community orients itself; it's how people get energized and passionate about what they do. Where do new visions start? Sometimes the CEO comes up with it, although very rarely.

Isn't the ultimate goal pretty much the same for everyone? Why so much emphasis on a bottom-up process?

Well, in very broad terms, at the highest level, the goal is for life to thrive on the planet and for us to have a vibrant, regenerative society—an industrial system that nurtures life at all levels. But once you've gotten these broad, overarching principles laid out, then there's the real work: What does that mean for an organization or an industry? Ideas have to bubble up in

an organization as people really think about what their products or their business model could look like. Nobody has the answer, and efforts to impose a vision from the top always have limited impact.

My experience is that when bosses try to lead through a formal management system, you generally get compliance but not innovation. You don't get people staying up all night talking, and that's what needs to happen. In some sense, there is no such thing as a shared vision that's independent of people's personal visions; a shared vision is a phenomenon that emerges over time. Going back to *The Fifth Discipline*, we've been thinking about how to create an environment where people are continually thinking about what really matters to them, what it is that excites them when they get up in the morning.

You have to have leadership and vision from a lot of people in a lot of places. I think it's dangerous for people to rely on bold vision from the top—everybody goes, “Oh, well, we don't have that kind of CEO, so nothing can happen.” That's a big danger. Because I've been around a lot of companies with really insightful and farsighted CEOs, and believe me, it's not enough.

When you talk with CEOs, are they ever resistant to the entire idea of sustainability?

They're all over the map. I'll never forget doing a program about sustainability with a very wealthy entrepreneur who had several hundred businesses all in the oil business or tar sands. The guy looked at me like I dropped out of a tree, and he had a simple answer for everything: “The

market will solve this.” For him, that was the beginning, the middle, and the end of the story. Back to business. I remember Paul Hawken saying that markets are wonderful mechanisms for fostering innovation, but they make a crappy religion.

One market under God, to use Thomas Frank’s phrase.

Exactly. Markets were this entrepreneur’s religion. And there are all kinds of fundamental flaws in markets. Dee Hock of Visa says that after he gives a speech, people say, “You sound like a Communist,” and Dee says, “I am a fervent believer in free markets—I just hope and pray I live long enough to see one.” Think about it: Is this country’s market for energy really a free market? Or is it manipulated by a small number of big economic interests that basically tell everybody that it’s really important to keep oil cheap, and we’d better send our military to make sure it stays cheap?

And markets don’t take into account the long term. The real price of burning oil today is the price over the next fifty years of the carbon that’s in the atmosphere right now, because there’s a very long delay before effects make themselves felt. The real effects of what we have done to this point will be felt by our kids through their lifetime. It’s very hard for the market to price that. Market logic reinforces a transactional view of decision-making—everybody is a price taker, a price leader, but it’s all very short-term and transactional. That’s why markets have to be guided by some wisdom.

Throughout the book, you talk about the demand side of sustainability—about how customers are insisting on green practices and small footprints and social responsibility. But I’ve never seen much evidence that most consumers are willing to spend a dime extra on green products or that they’re willing to



go much out of their way to live sustainably. Can you really count on the demand side to drive the revolution?

That’s precisely the question. If there isn’t a fundamental shift in demand, is it going to happen? I would say no. That seems pretty necessary.

But there is a huge, self-reinforcing system where people don’t ask for a product that doesn’t exist even though they might be genuinely interested in it. Demand is latent, but people don’t express it in the focus groups these companies organize because they’ve never experienced it. Nobody was demanding the Prius. But once it was out

there, people started to see it and say, “Well, I don’t know what the hell we’re going to do about climate change, but I’m buying a Prius—at least that’s something I can do.” And then it starts to snowball. The more people start to do it, the more companies start to pay attention, the more products start to become available, and the more people start to do it, and before long, you’re at a take-off point. You’re at one of these so-called tipping points.

People see all this greenwashing stuff and “natural” this and “green” that, and they’re justifiably skeptical. So you’ve got to have a little time for people to be convinced that a new prod-

uct really does offer a benefit for social justice or environmental well-being. It's not that people don't care—it's that they're not convinced that this is really a sound offer.

But eventually you get 1 percent of a market, and then 2 percent, and then 5 percent. And once you've got 10 percent of the people willing to pay a little extra for a product that's environmentally sound or fair-trade, it gives safety to another 10 percent who have the same predisposition but don't want to look foolish. And once you get 20 percent, you've got a tipping point—something that's unstoppable. That's where the Prius is headed now. It's the in the thing.

When you talk about the Prius—and write about success stories such as DuPont and Alcoa and Sony Europe—I have to wonder why every Fortune 500 company hasn't followed suit.

Well, if there were a simple answer to that, we wouldn't have the organizational-learning field. We tend to think that companies are these kind of simplistic, rational animals. They're not. They're highly political. They're driven by their assumptions, not by facts and clear reasoning.

Companies have a host of learning disabilities; they simply cannot adapt as the world around them changes. A lot of companies are in denial; they're just basically doing their thing. Peter Drucker used to say that they don't know the practice of "disciplined abandonment"—they can't give up doing what they're doing as long as they're still making money, and by the time they have to give it up, it's too late. They can't start to reallocate resources away from their most reliable, highest-margin business areas and invest in lots of new possibilities, because they don't really know what's going to work. They may see something emerging and say that biofuels are going to be important, or that bio-based feedstocks will be important for a chemical company like DuPont, but that's a far cry from

Things really have to change, and they have to change on a big scale, in a hurry.

knowing what specific bets to place and what specific kinds of biofuels or feedstocks. For that, they've got to be willing to tolerate a lot of failure, a lot of different visions. Companies haven't created a culture to tolerate the capacity for experimentation needed to sort out very, very different new options.

So you're asking for more than just investment in new technology.

There's a mindset that progress is all about technology, and I'm not disputing the fact that a lot of new technologies are going to be important for the future, but the issue isn't whether technology is good or bad or whether or not we're going to need radical breakthroughs in the cost of photovoltaics. Obviously we will. It's the worldview, the pervasive culture, that needs changing.

The point is, things really have to change, and they have to change on a big scale, in a hurry. There will be a period of extraordinary innovation and all kinds of experimentation, and a lot of things won't work. That's the character of basic innovation: Lots of things don't pan out. We have a company that's part of our network that's probably the leading manufacturer of fuel cells, and no one can say how that particular technology is going to play out—it's still not economic, the reliability is not there, the cost per kilowatt hour is still high, and it may or may not prove to be an important part of a sustainable energy system.

BP invested in the solar business for twenty years and never made a dime. Finally, about three or four years ago, a new person—a very gifted manager—

came in to head up that business, and they committed \$10 billion over the next ten years. They saw that you could actually make money in this business—and that if you want to position yourself for the next two or three decades, you had better be a leader in alternative energy.

And that takes real money. When Wal-Mart, for instance, started to grow rapidly, it got locked into a low-cost business model, and that kind of business is going to find itself having trouble with fundamental innovation, because that takes investment, putting money into things. I mean, there's absolutely no mystery about why Toyota and Honda lead in hybrid cars—those are the two companies that had the money to invest. The Big Three had zero money to invest—at least the way they looked at it—so they didn't do anything.

How many companies are saying the right things but failing to follow through as soon as it becomes inconvenient or they run into financial trouble?

That's *most* companies. Everybody and their brother is saying all the right things these days—you've got to buff your image and look like you're green and all that, and that's going to increase. But you can only fake it for so long, with the combination of very skeptical customers and more and more vigilant NGOs playing a watchdog role. What you'll see, typically, is companies doing a lot of things that have a really good short-term business case. A lot of it will focus on waste: Companies can eliminate many types of waste just by paying attention and

getting some basic tools for analyzing how they use their energy. If you reduce energy use, you save money immediately, and that's true of a lot of waste. It's low-hanging fruit.

Now, the quality movement was full of organizations that picked off the low-hanging fruit and then went back to business as usual, and I think that is what you have to expect here—that people will do the things that are relatively easy and where they save money pretty quickly. You will be able to tell the well-managed, serious companies by what they do after that—whether they really start to look at their products and their core technologies and their business models. You're going to see a lot of incremental innovation focused on short-term costs, but you have to look at whether companies are creating new sources of value for customers, as customers start to pay attention to social and environmental imbalances.

It's one thing to ask manufacturers to streamline their use of materials, but aren't there entire sectors of the economy—like, say, financial companies—that may not be able to move much beyond recycling paper and switching to fluorescent bulbs?

You have to think in differentiated ways, because every business and certainly every industry and sector is going to have its own path, its own particular issues. If you look at a large source of investment capital like Citigroup, a lot of it is in buildings: in real estate and manufacturing facilities. Real investments are real investments, and guess what? It's infrastructure, automobiles—the same old stuff. And the energy, material waste, and toxicity of all that stuff is immense. Buildings can be huge energy sinks. Plus, a company like Citigroup has a huge electricity footprint; it can learn to be more efficient.

I assume that the companies truly invested in these issues are gen-

erally aware of their own carbon footprint and such, but do they know about their supply chains?

More and more companies are getting very good at it. At Nike, Hannah Jones, the vice president of corporate responsibility, can tell you how many pounds of CO₂ they generate per month, including the whole supply chain. It's a big challenge, because it requires a huge effort and cooperation with your suppliers, but I think you'll see more and more of that.

How will suppliers feel when informed that they have no choice but to get on board with these dramatic changes?

I'm sure it will play out much like most customer-supplier relationships play out. It will depend a lot on the philosophy of the customer. In other words, you have so many businesses that treat their suppliers like crap—that continually try to screw them to get lower costs and lower prices—and they'll do the same thing here. They'll say, You must do X or you can't supply us. But the companies that will succeed are those that build partnerships with suppliers; they and their suppliers can learn together and help each other with different innovation processes and cost strategies, with different impacts on carbon or waste footprints. It's not necessarily going to be easy, but it can be a totally different process than if you're in the traditional screw-your-supplier-to-the-wall mode.

At times in *The Necessary Revolution*, you speak about corporations as though they aren't profit-generating entities. You write that "it is bizarre that the one and only indicator of a company's success should be returns on financial capital." What should those indicators be?

That will be an important frontier. Quite a few companies are developing their own versions of a more integrated

scorecard. Nike is a wonderful example: They rate every single product based on embedded water, energy, waste, and toxicity. Of course, Nike's board is going to say, "What was your return on investment last quarter?" So both sets of issues have to complement one another.

Right now, managers use financial accounting—they try to manage their businesses based on indicators that were originally designed for investors. And it's a little bit like a baseball coach trying to manage his team by looking at the scoreboard: "We're four runs behind, guys—try harder." What you really want is your catcher coming off the field at the end of an inning and saying, "Hey, the pitcher has lost three inches off his fastball" or, "We can't locate his slider." That's managerial accounting. That's information from within the system that you've got to have to make good decisions. Nike is working very hard on its managerial-accounting practices for sustainability, but it's also going to have to look at the investor's criteria. I think we're going to find more and more of a conflict.

It's one thing to be talking about putting a sustainability page in this year's annual report and another to call for, as at the end of the book, "a reversing of investment priorities," to move from producing "physical and financial capital" to "reinvesting in living systems." That call for a reversing of investing priorities—is that as radical as it sounds?

I think so. I think it's radical from the standpoint of our present-day mainstream society. Certainly it's radical from the standpoint of business, Management 101, the MBAs, and all that stuff. Everybody learns about the financial theory of the firm. In the theory of the firm taught to every MBA student in virtually every program around the world, the purpose of the firm is the maximization of return on investment capital. Peter



Drucker said, “Profit is like oxygen; if you don’t have it, you’re out of the game.” But, man, your purpose isn’t to *breathe*. You’ve got to have a large mission—that’s what makes a great enterprise. We’ve got to once again see business in the context of a healthy society.

A lot of businesspeople have great ideas and a lot of vision, but they’re pretty disconnected from the reality they’re operating in. They think, “We’ve got to understand this little business we’re part of.” They don’t see the larger footprint of the supply chain, or their overall social and environmental impact.

It’s a lot to take in. You talk about how people get so overwhelmed by the scale of these problems that they throw up their hands and say, “I can’t have any impact.” But at the

same time, you want us to see the sustainability crises as interconnected and even bigger. Won’t that make people feel even less effectual?

You’re absolutely right. It can easily seem too daunting to people: We’re not going to solve the world’s crises ourselves. So we have to answer the question of what do we really want to create, then take that down to a more local level. No one operates on the globe as a whole—even the president of the United States. Everybody has a locality. So I think you take those larger principles and say, “Well, OK, right here, right now, this is what I can do with my home, my family, my community, my organization, my supply chain. What kind of products do we want to produce?” You just keep working with the same principle, moving it up and down, broadening and contracting, so that it’s focused and local.

One last thing. Throughout *The Necessary Revolution*, you manage to maintain a tone that’s more or less upbeat. Do you consider yourself an optimist? Do you think that we will keep our bubble from popping all the way?

Obviously, anybody with even a cursory familiarity with the conditions of the world gets pretty discouraged. If you don’t, you’re not paying attention. If you’re really honest and objective about the present reality, yeah, it’s really discouraging sometimes. But we all have to learn how to deal with our dark hours and get serious about contributing, whether it’s in writing articles or building new products or working with customers on a new idea. And probably the most important thing to do is keep working on your sense of humor, because if you don’t have that, you’re cooked. ☺