

TECTONIC STRESSES

TENS OF THOUSANDS of people are walking toward me.

It is 6 p.m. on Thursday, August 14, 2003—three months, almost to the day, after my tranquil afternoon in Rome's Forum. I'm standing on Yonge Street, Toronto's central artery, looking down a slight grade to the skyscrapers at the city's center. For several kilometers, as far as I can see down the road, the sidewalks are choked with people trudging north.

Two hours earlier, the power failed across an immense wedge of eastern North America extending from New York to Detroit to Toronto. It's the biggest blackout ever on the continent. Subway trains shuddered to a halt, traffic lights went dead, and all surface transport was snarled in gridlock. Unable to get home the usual way, people are leaving the urban centre on foot.

I talk to a few of them. Some are frustrated and annoyed, but none seems angry. Some find the whole thing a novelty—a fun interruption of a hot summer afternoon's routine. Others generously pitch in to direct traffic or guide pedestrians across chaotic streets.

But everyone seems puzzled and at least a little disconcerted. What happened? Was it terrorism? How long will it last? And how will we get home?

The view down Yonge Street reminds me of something I'd already seen, but at first I'm not sure what. Then I realize that it resembles a grim day only two years before, when the world had gaped in horror as people



September 11, 2001, won't be the last time we walk out of our cities.

fled on foot from southern Manhattan, the smoke of the collapsed Twin Towers billowing into the sky behind them. Unlike 9/11, the great 2003 blackout didn't claim thousands of lives or trigger a war. But it echoed that earlier catastrophe. Both events were complete surprises that materialized suddenly out of a complex world we only remotely understand. Both had effects that were greatly amplified by the intricate networks that tightly connect us together and that move people, money, information, materials, and energy. And both starkly reminded us how vulnerable we've become to the abrupt failure of critical technological, economic, and social systems.

When the power went off in August 2003, all air conditioners, elevators, subways, and traffic signals failed—but that wasn't surprising. What did surprise many people, though, was the simultaneous failure of portable phones, automatic tellers, debit card machines, electronic hotel-room doors, electric garage doors, and almost all clocks. Most disconcerting of all was the loss of the constant flow of information that's become a drug in our lives, as people were cut off from television, e-mail, and—worst of all—the Web. No one could tell what was going on. It was as if darkness had fallen in mid-afternoon. People clustered around cars that boomed out reports from radio stations running on backup power.

In the sudden gridlock downtown, cars weren't much good for getting around, but at least they had batteries, so their radios worked.

Most of us in cities are now so specialized in our skills and so utterly dependent on complex technologies that we're quickly in desperate straits when things really go wrong.¹ When we can't drive, catch a cab, or take the subway, we have to fall back on such age-old methods as walking to meet our immediate needs.

When, next, will we see people walking out of our cities—in the darkness of a mid-afternoon?

Maybe not long from now, because the possibility of abrupt breakdown in our vital social and technological systems is rising, and perhaps rising fast. Breakdown is often like an earthquake: it's caused by the slow accumulation of deep and largely unseen pressures beneath the surface of our day-to-day affairs. At some point these pressures release their accumulated energy with catastrophic effect, creating shock waves that pulverize our habitual and often rigid ways of doing things. Events like last century's Great Depression and two World Wars were good examples of this kind of buildup and sudden release of pressure.

Five *tectonic stresses* are accumulating deep underneath the surface of our societies, as I'll show in the next chapters. They are

- population stress arising from differences in the population growth rates between rich and poor societies, and from the spiraling growth of megacities in poor countries;
- energy stress—above all from the increasing scarcity of conventional oil;
- environmental stress from worsening damage to our land, water, forests, and fisheries;
- climate stress from changes in the makeup of our atmosphere;
- and, finally, economic stress resulting from instabilities in the global economic system and ever-widening income gaps between rich and poor people.²

Of the five, energy stress plays a particularly central role. I discovered in investigating the story of ancient Rome that energy is society's critical *master resource*: when it's scarce and costly, everything we try to do, including growing our food, obtaining other resources like fresh water, transmitting and processing information, and defending ourselves, becomes far harder.

Most of the five stresses spring from our troubled relationship with nature. Indeed, one of my most important points in this book is that we can't ignore nature any longer, because it affects every aspect of our well-being and even determines our survival.³ Yet today, despite a growing intuitive public awareness of this fact, most politicians, corporate leaders, social scientists, and commentators in Western societies give nature little attention. They push it to the sidelines of public discussion, focusing instead on the headline issues that regularly hijack social, economic, and political debate. And they tend to dismiss people who concern themselves with nature as, at best, softheaded do-gooders or, at worst, eco-freak fanatics.

Most such opinion leaders imply we don't need to worry because we human beings are biologically exceptional, unlike any other species on Earth, with brains that endow us with immense ingenuity to solve our problems. And they imply that modern Western societies are historically exceptional, because no other societies in the past had our science, markets, and democracy. Today, our science gives us the knowledge, our markets give us the incentives, and our democracy gives us the social resources to solve any demographic, health, energy, or environmental crisis that might come our way.⁴

Yes, we do have exceptional brains, and Western societies are certainly among the most creative and adaptive in human history. But there are times when our problems are too hard for our brains, or when science, markets, and democracy can't generate solutions when and where they're needed.⁵ And such opinion leaders conveniently overlook the fact that every great civilization believes itself to be exceptional—right up to the time it collapses.⁶ Instead, unrealistically optimistic, they promote their Panglossian view almost as if it were a religion—an absolutist creed that leaves no room for uncertainty and that we're supposed to accept as a matter of faith.

Sure enough, this creed now permeates our common language and thought, and many of us truly believe we can free ourselves of the

physical constraints that have otherwise governed human beings throughout history. Our recent experience has also encouraged this complacency. For a few remarkable decades—decades when energy seemed in endless supply, when our antibiotics seemed to have conquered infectious disease, when we traveled to the moon, and when the productivity of capitalist economies appeared to know no bounds—we could fool ourselves that the physical facts of life no longer applied.

But now Earth's glaciers and icecaps are disappearing, while mammoth hurricanes pound the United States, Australia, and Japan—signs that nature is reasserting its authority. The twenty-first century will, in fact, be the Age of Nature. We'll learn, probably the hard way, that nature matters: we're not separate from it, we're dependent on it, and when there's trouble in nature, there's trouble in society.