



Photograph by Vern Evans

## Jared Diamond, The Thought Leader Interview

The innovation historian looks to China, India, and Israel to discover 100,000-year-old lessons in business management.

**Thought Leader**  
by Randall Rothenberg

**N**ear the opening of his Pulitzer Prize-winning book, *Guns, Germs, and Steel: The Fates of Human Societies* (W.W. Norton & Co., 1997), Jared Diamond poses a simple question that informs 480 pages of rich scholarship about the history of human civilization: “Why is it that the Spanish conquistador Francisco Pizarro and 168 other Spaniards could travel across the Atlantic Ocean and conquer the Inca Empire, at that time the most powerful state in the New World — instead of the Inca Emperor Atahualpa coming to Spain to capture its King Charles I?” Dr. Diamond, a professor of physiology at the University of California at Los Angeles School of Medicine, wrote the book to show that ancient global forces, such as continental geography and the local availability of domesticable plants and animals, rather than genetic differences among people themselves, account for the successes and failures of civilizations over time. These historic advantages in turn explain why Eurasian civilizations, with their access, for example, to wild horses and wheat, were thriving as farmers and herders for thousands of years,

while California Indians and aboriginal Australians continued to live as hunter-gatherers, unable to domesticate the local wild plants (e.g., oak trees) or animals (e.g., kangaroos). Farming societies also provided their members the time and opportunity to develop weapons and transportation; millennia of proximity to domestic animals additionally gave Eurasians immunity to the animal-derived diseases that felled the non-Eurasian peoples that they visited.

*Guns, Germs, and Steel*, which recently marked two years on the *New York Times* best-seller list, revives an interdisciplinary approach to human history that passed from fashion after Oswald Spengler and Arnold Toynbee. But it's difficult to read this magisterial work, which draws upon ecology, molecular biology, paleobotany, genetics, linguistics, archaeology, and many other fields, without wondering about its specific relevance to contemporary business organizations. For Dr. Diamond's work is, at its root, not just a history of civilization, but a history of innovation and its travels across time, among peoples, and over spatial barriers — subjects near to the heart of any CEO in an organization undergoing change or experiencing competition.

It's a subject Dr. Diamond, 64, is happy to engage. In an academic environment that increasingly values specialization over breadth, he is a rare polymath — a word frequently used to describe him. The author of two other books, *The Third Chimpanzee* and *Why is Sex Fun?*, Jared Diamond was a high-school classics scholar who entered Harvard intent on following his father into medicine, only to discover that his varied interests tugged him in too many directions. Although he earned his Ph.D. in physiology and is a widely taught expert on the gastrointestinal tract, since the early 1960s, the trim, curly-locked Massachusetts native has given almost equal time to traveling through the jungles of the Pacific, pursuing his passion for birds, in which his accomplishments include the observation — the first by a Western scientist — of the mating rituals of the golden-fronted bowerbird.

During his ornithological escapades on the island of New Guinea, which many regarded until recently as one of the world's most backward places technologically, Dr. Diamond says he came to learn that New Guinea tribesmen are at least as intelligent as, if not more so than, Westerners. Why, then, he wondered, did

they not develop so many of the material goods and emblems of progress that have enriched Western lives? Or, as one of his New Guinean friends once asked him, “Why is it that you white people developed so much cargo and brought it to New Guinea, but we black people had little cargo of our own?”

Dr. Diamond's investigation of that query ultimately led him back, not only to the contemporary West, but into the center of the modern corporation. “This question of how best to foster human creativity is one on which human groups of all sizes, from superpowers down to families, need guidance,” he has written. “There are obvious differences in innovation and productivity among companies (compare Microsoft with IBM), industrial belts (Silicon Valley in California versus Route 128 outside Boston), countries (Japan versus Russia), and sectors within the same country (Japan's electronics industry versus its food industry).” The distinctions in innovation and productivity, he says, relate to “differences in the flow of ideas, centralized control, and operation of competition — just as in the contrasting histories of China and Europe.” Over several hours of conversation in his hand-

some home in Los Angeles's Westwood section, *strategy+business* pursued these subjects with him.

**S+B:** Although you style *Guns, Germs, and Steel* as a history of human civilization, one of its primary concerns really is how innovation travels through and among groups of people. Are there lessons one can derive from a study of 13,000 years of human history that can be applied to contemporary organizations?

**DIAMOND:** Yes. At first, the thought that you can extrapolate ideas about modern business from preindustrial societies seems extraordinary. But in synthesizing, one of the challenges is not to throw up your hands when you encounter differences between the systems, but instead to ask yourself, "What can we learn from this system that's applicable to some rather different system?" It's like my work in evolutionary biology, where I deal with birds, but I also deal with mammals. There are similarities and differences. You have to recognize the differences, but you also have to recognize the similarities in order to be able to extract lessons. To extrapolate constructively, you have to steer between two extremes. The one extreme is facile over-generalization, where you ignore the differences. And the opposite extreme is to say that each system is unique and there is nothing that we can learn about how to manage IBM from studying Microsoft.

Management of businesses in essence is about how to organize groups of people to produce particular results, which include profitability and innovation. The fact is, for the last 100,000 years people have been dealing with this very problem. This is nothing new. Every society is an experiment in organizing a human

group, and how you organize it has consequences for the outcome, whether this was in your mind as you organized it or not.

There are some societies that have been highly innovative, some not. Islam is a good example, because it changed with time. Islam in the Middle Ages was at the cutting edge in technology and science. Nowadays, that's no longer true. It's also the case that among contemporary societies, there are highly innovative societies and there are ones that are less innovative. For example today, take Finland and Sweden and Israel. They're small countries, each of them with populations of less than 10 million, yet their output of science and technology is all out of proportion to countries with 20 times their populations — Indonesia, Pakistan, and Brazil. What is it about Sweden, Finland, and Israel that stimulated innovation?

**S+B:** Could it be something in their political organization?

**DIAMOND:** Economists often focus on things such as whether the government is socialist or not, what's the structure of capitalism, what are government incentives. Those things undoubtedly do have consequences for innovation, but there are other things that are also important, such as historical components. It undoubtedly makes a difference that Sweden and Finland — and, by derivation, Israel — have been sitting on the fringes of Europe for thousands of years, and that Europe, which was a backwater civilization until A.D. 1000, was sitting on the fringes of the Fertile Crescent, where everything fundamental in Western civilization arose. So these countries had geographic advantages. But also there are advantages of "corporate ethos,"

in Israel notoriously. You take three Israelis and you've got four political parties, 1,000 different experiments.

### Drawbacks to Unity

**S+B:** If you've got disharmony — smaller units always battling it out — innovation will be the result. Is that conclusion simplistic?

**DIAMOND:** Yes, it is simplistic, but it's nevertheless a perfectly adequate starting point for discussion. There really are drawbacks to unity. China illustrates that dramatically. Medieval China was, in effect, a great experiment in management. China led the world by far in technology around A.D. 1000 to 1400, and it lost that edge, because of deficiencies in large-scale political management. The decline was very rapid. In China's case, the structure was in place for the decline. In a highly unified system, if you have a Bill Gates — or a receptive emperor — at the top, the system, the output, is fine, and you're not getting the latent disadvantage of the system. From the moment, though, where at the top is not Bill Gates or an outward-looking emperor but a closed-minded emperor, then things can go downhill immediately. Because one person making a wrong decision

# “Management is about organizing groups to produce results. People have been dealing with this very problem for 100,000 years.”

affects the whole country.

It's not that Chinese emperors were any more talented or less talented than European princes. There were lots of dumb European princes and there were lots of forward-looking European princes. There were European princes who banned printing, and there were European princes who banned cannons. But because Europe was not politically unified, you can guess what happened to a European prince who banned cannons: Within 30 years he's been conquered by neighbors who still have cannons. Or he realizes how stupid he was, and he adopts cannons again. Whereas in China, when the emperor banned overseas fleets, there wasn't anybody next door with overseas fleets to raid the Chinese coast. And also there weren't 50 different princes within China, some of whom had fleets and some of whom didn't, who could challenge the decision.

**S+B:** Unity minimizes competition minimizes innovation.

**DIAMOND:** People have been conducting experiments in management for thousands of years, only they haven't called it that. Maybe we can learn something from these tens of thousands of past experiments, some

of which were fantastically productive and some of which were not.

**S+B:** Can you apply learnings from these historical “experiments” directly to contemporary business organizations?

**DIAMOND:** Think of the Huguenots being driven out of France. What do they do? They go to England, they go to South Africa, they enrich England and South Africa.

Now look at Silicon Valley, and contrast it with the technology industry around Route 128 near Boston, where I grew up, which is less competitive. In Silicon Valley, it's like Hollywood studios. People leave one company and they go to a competitor. There's no loyalty. It's the opposite of Japanese companies, where at age 22 you enter a company, and God help you if you leave that company before you're 67. With the moving of people back and forth, ideas are moving back and forth. It's fierce competition between the companies. And the fierce competition means that what rises to the top has had to beat out 1,000 other companies.

**S+B:** I would assume that, if you don't have robust external competition, as exists in Silicon Valley, you have to find

a way to organize, to allow internal competition. Would that be one of the extrapolations from China's history?

**DIAMOND:** Right. Internal competition is relevant to the organization of different companies. IBM versus Microsoft. Within IBM, you had (until a new CEO arrived) a Route 128-style system, which doesn't encourage internal movement or innovation or competition. Within Microsoft, that was not the case. In Microsoft, you've got all these groups with a good deal of freedom, and they're not kept on short leashes.

## Meeting Bill Gates

**S+B:** How have you managed to learn about — and apply these historical learnings to — contemporary business?

**DIAMOND:** For various reasons, I developed personal friendships with people in Microsoft. Nathan Myhrvold, who used to be chief technology officer at Microsoft, read *Guns, Germs, and Steel*, and he e-mailed me. I met another top executive, Linda Stone, because I was a McArthur Fellow in the 1980s.

Linda arranged for me to meet Bill Gates, and I talked with him for a couple of hours. That was very

instructive in two respects. Many famous, successful people are at either of two extremes: Either they give nothing of themselves and they just want to know your thinking, or they want to do nothing except talk about themselves and they don't listen.

Bill Gates is unusual. He shares with W.V. Quine, the late Harvard philosopher, the quality of being a profound talker and also a profound listener. Talking with Bill Gates, it was a real conversation. There was nothing about scoring points. He was quite free in sharing his own ideas, and he was also very interested in hearing my own ideas.

There were cases where his point of view was different from mine. For example, I said I saw environmental problems as the most serious problems facing our future. Bill Gates said, "That's not my own perspective; what I'm most concerned about is biological terrorism." But he did not dismiss my environmental concerns. He was willing to say what was on his mind, but he was also willing to listen to me. It was clear that Bill Gates has everything it takes to be a great synthesizer. In industry, in managing business, it really helps to have wide interests and to be able to listen and to take ideas coming in from many different sources.

**S+B:** How does Microsoft — or any company that's promoting internal competition among small groups — manage the potential chaos so that it doesn't spin out of control?

**DIAMOND:** In Microsoft, each group has some critical mass. At the opposite extreme, if you've got so many groups that none has critical mass, chaos can result. That's part of what has dragged down India. India has been hyper-fragmented. My term for appropriate critical mass is the "opti-

mum fragmentation principle." The idea behind optimal fragmentation is that if you're trying to organize some large group, there are perils at both extremes. There are perils of excessive unity — China — and perils of hyper-fragmentation, which would be the Indian subcontinent. There is an optimal intermediate fragmentation, which would be represented by Europe from the Middle Ages on.

But the idea of optimal fragmentation is only a good starting point for thinking about how best to organize groups. Then come the complexities. Is intermediate fragmentation necessarily good? Is competition necessarily good?

Competition in general tends to be good. But does this mean that any country ought to require its businesses to compete with each other and with the outside world? Think of the development of South Korea. After the Second World War, there was a stage where its companies simply could not be exposed to competition from the outside world because they would have gone under, and therefore protectionism made sense. Now, in South Korea, the disadvantages of protectionism outweigh the advantages. Think of Europe in 1914, when competition became destructive and led to the catastrophe of the First World War. That's why I say that these management issues involve some simple principles, but applying them is complicated. Competition can be stimulatory or it can be utterly disastrous.

So within this simple idea of intermediate fragmentation, one has to recognize that there are different forms of competition, which can be stimulatory or non-stimulatory. Critical is the communication between the different entities, and critical also are the relations of the entities to the

leader. So I would say that the idea of intermediate fragmentation is a good first chapter for a whole book.

**S+B:** I can almost envision a matrix where you set up different categories — external threat, size of a company, etc. — allowing you ultimately to come up with the optimal fragmentation for your company in your industry. Can you foresee that?

**DIAMOND:** It would be very complicated. One way to see the complication is to recognize that, as far as human societies are concerned, over the last 13,000 years, there has been a long-term trend toward amalgamation. That is to say, 13,000 years ago, virtually all humans lived in band-level societies of 50 to 100 people each. Nowadays, there are virtually no band-level societies left outside of a few in Papua New Guinea and Amazonia; the rest have been amalgamated. But one couldn't conclude from that long-term trend that big societies always have advantages over small societies. In fact, everywhere in the world there has been a flux between big and small societies. Big political units are constantly being formed, later to fragment. The individual pieces try to pull apart, and then they join together again. One sees that in

Europe: There have been unifications and then dissolutions and reunifications. So in the long run, it's 10,000 steps toward amalgamation offsetting 9,999 steps toward falling apart again. In businesses and industries, I would guess that's also true.

Perhaps one could say the following: That the idea of optimal intermediate fragmentation is a useful starting point, but it is not a magic bullet. It's not the case that you can look for the natural size of a business. The principle is not that simple. Instead, what managers can profitably do is to be aware of the advantages and disadvantages of big units, and then to be aware of a different set of advantages and disadvantages of small units, and to recognize that, at any moment, the challenge for the industry is to find what unit size and organization give you the most advantages with the fewest disadvantages. Where you fall along that spectrum changes with time. For practical purposes, the best one can do is to be aware of both the pros and cons of centralization and the pros and cons of fragmentation, and then to find, for your particular industry or company at that particular stage, the position along that spectrum that makes the most sense.

### Freedom vs. Determinism

**S+B:** You're implying the possibility of continual change, in a society or an organization. Yet it's also possible to read *Guns, Germs, and Steel* as a brief for determinism. The book appears at points to argue that there are facts dating back 13,000 years that are really hard to surmount, such as shapes and areas and axes of the continents. How would you answer the charge of determinism?

**DIAMOND:** I do recognize a form of

determinism in history. It's not at all a genetic determinism; it had nothing whatsoever to do with human genetics. What it did have to do with is the different natural resources that geography made available to different peoples, especially the very unequal distribution of domesticable wild plants and animals around the world. If you went back 13,000 years ago and tried to predict whether Eurasians or aboriginal Australians were going to conquer the world, I would say it was not up for grabs, short of a massive intervention — like a comet collision. There was nothing that individual aboriginal Australians themselves or Eurasians themselves were likely to do that would alter the outcome. Because Eurasia is a bigger continent with far more domesticable plant and animal species, it was essentially determined 13,000 years ago that, in the long run, Eurasians were going to be the ones to expand rather than aboriginal Australians.

But does that mean that determinism applies on a short time scale? Absolutely not. On a large scale — a long time scale and a large spatial scale — the outcome was essentially determined. But on a small scale it's not determined.

An extreme example of the role of chance, which I mention at the end of my book — and it's a very real example for me, because I married into a Polish family — is the placement of that bomb under Hitler's table on July 20, 1944 by Germans opposed to Hitler. If the bomb had been two feet closer to Hitler, he would have been killed instead of just wounded, the war might have ended in 1944, the map of Eastern Europe would have been different, and life would have been different for my wife's family.

**S+B:** Are all countries starting out again now on equal footing? Has technology unified the globe in a way that now makes everything from this point forward utterly different?

**DIAMOND:** Absolutely not. Those who start out with the advantages can profit from them. Yes, the Internet now doesn't just go on an East–West axis; the Internet can also go on a North–South axis. Does this mean that Paraguay and the Congo now have opportunities equal to those of Finland and Israel to become world leaders in sales of phones? No, they don't. Paraguay and the Congo suffer from two sorts of disadvantages. First of all, the historical disadvantages, because they started out further behind as they entered the modern world. Second, they still have big ecological disadvantages. So it's not the case the world has been leveled. One might, in fact, worry that the opposite is true, that the gap between rich and poor will grow even greater, unless the rich realize that it's in their interest to close that gap, because now we're all in the same boat together.

**S+B:** The hottest hot button right now in political economics is globalization. If you were called in to a company that was in the throes of concentrating

**“In business, it helps to take ideas from many different sources. Bill Gates has everything it takes to be a great synthesizer.”**

globally, making acquisitions, trying to find ways to be more effective in global organization and global management, what would you tell it to watch out for?

**DIAMOND:** The potential advantages of globalization include the greatly increased flow of ideas between parts of the world. That’s a great potential advantage for the parts of the world receiving ideas. It can be an advantage for the global company — if the company is capable of learning from the parts of the world to which it expands. Unfortunately, that’s not always the case.

### **Chevron in New Guinea**

**S+B:** Have you seen examples of beneficial impact?

**DIAMOND:** I have seen it at Chevron, which I have had the chance to observe for the last several years. Because I am concerned with environmental problems, I’ve been on the board of directors of the U.S. affiliate of the World Wildlife Fund (WWF), which is the largest international environmental organization. About 10 years ago, oil and natural gas were found in the eastern half of the island of New Guinea. That discovery posed acute environmental problems,

because the oil fields also are the wettest place in the world, with rain up to 800 inches per year. It’s also in an area with unique biology. The CEO of Chevron happened to be someone who realized that it was in Chevron’s interest to solve the environmental issues and not try to sweep them under the rug. So Chevron entered into a partnership with World Wildlife Fund to deal with those issues. The WWF has offices at two of the Chevron camps and monitors the environment and provides input. I’ve gone out there now three times, most recently last January and February, sponsored by WWF but working out of the Chevron camps.

Chevron concluded that it was worth a few million dollars — or even a few tens of millions — a year to keep the environment in good shape, so that there would not be an environmental disaster like Exxon Valdez, so that the local people would not throw out Chevron, and so that the company would not lose \$4 billion as a result of the oil fields being closed down. The result is that today — and this just astonished me when I went out to the oil fields — I discovered that the environment inside the oil fields is actually in much better shape than outside the

fields! In effect, the oil fields are by far the best national park in New Guinea. They’re probably the best protected national park between the Himalayas and probably California.

**S+B:** That’s remarkable.

**DIAMOND:** Globalization here has enriched New Guinea; it has brought to New Guinea lots of stuff from the outside — computers and management skills and petroleum engineers. Conversely, globalization has enriched Chevron. In New Guinea, in Kazakhstan, in other places worldwide, Chevron in effect has dozens of companies which act as dozens of experiments. Chevron has the New Guinea model for running an experiment, and they can then learn from that experiment.

**S+B:** The company’s success globally will in part be determined by whether it has feedback loops and communications structures in place that allow one part to learn from others.

**DIAMOND:** They already have structures in place for that. Every Chevron employee in New Guinea has what’s called a “back-to-back,” which means the following: Every position is filled by two people. When one person goes on leave back home to the U.S.

or Australia or Europe, the person who is his or her back-to-back comes in and takes over and turns on the computer and sees what the departing back-to-back has been doing. There are two persons for each position. That's one feedback loop. There is movement between the different Chevron entities.

**S+B:** Jeffrey Garten, dean of the Yale School of Management and the subject of a recent Thought Leader interview in *strategy+business*, argues in his new book, *The Mind of the CEO*, that the individuals actually best placed to address the large political, economic, and social issues for which we used to rely on governments are the CEOs of multinational corporations. He's somewhat pessimistic about their willingness to take on that role. Do you take heart from the Chevron story that there will be more efforts by multinational corporations to close that gap?

**DIAMOND:** I'm a cautious optimist. Before I started working in this collaboration with Chevron in 1998, my experience had been that big companies do have great potential for affecting the environment, and that the way that they usually exercise that potential is to do harm. And now I would say they don't have to exercise their potential in that direction. They can use that potential to do good, and thereby save themselves money like Chevron. If we deal with these environmental problems, then our children could have a decent future. But if we don't deal with them, then our society is going to go the way of Easter Island and ancient Iraq. Why is it that Iraq, which 10,000 years ago led the world in agriculture, no longer leads the world in agriculture? Because Iraq is a fragile environment that its inhabitants hammered away

on. There are plenty of other societies besides Easter Island and Iraq that have collapsed in the past, but we have the choice of learning from the fates of these past societies.

**S+B:** Is that the subject of the next book, the future of societies and the environment?

**DIAMOND:** Yes, it's about past societies that did or did not destroy themselves by destroying their resource base.

### Synthetic Thinking

**S+B:** The range of disciplines you've applied to drawing these conclusions is extraordinarily broad — not just ecology and evolutionary biology, but linguistics, molecular biology, genetics, archaeology, ornithology, and certainly your primary professional field, physiology. Did you start in on the sciences at a young age?

**DIAMOND:** I took six years of Latin, three years of Greek, and loved both of those languages. I then went to Harvard College on a classics scholarship. I entered the Latin poetry translation competition every year. Harvard offered a prize for translating odes and epodes of Horace. I took pride in not just translating them, because all the contestants had to do that, but I translated them into the meter that Horace himself used — and Horace uses complicated meter. I won the prize for three consecutive years. The teacher who influenced me most was my high-school classics teacher, but it was also assumed that I was going to go into science. I remember my classics teacher saying to me, "Jared, someday you will unify the sciences and humanities." Really hubristic, and I cannot claim to have unified the sciences and humanities. But what is the case is that I am work-

ing on the borderline between science and the humanities, in that I bring to it my technical scientific knowledge and my scientific approach to studying human history.

**S+B:** You make an argument at the end of *Guns, Germs, and Steel*, and in many of your columns in *Natural History* magazine, that different disciplines need to be unified. The trend over the decades in academic thought has been more and more toward specialization. In addition, there's been a drive in the academy toward obscurantism. How were you able to swim against that tide?

**DIAMOND:** It is a real issue. Some people, some scientists or academics who write for the public, have taken a lot of flak. A notorious example is Carl Sagan being denied membership in our National Academy of Sciences. Steven Jay Gould has had flak. Richard Dawkins, whom I'm going to visit next week, has also taken flak. I think the reason that I escaped the flak was that I carried on my technical career in physiology, and it's been divorced from my writing for the public. But in addition, I didn't start writing for the public until relatively late. My first book wasn't published until I was 54 years old, and at that

time my colleagues in physiology accepted me as a physiologist who did other stuff that they didn't read. It only came to their attention for the first time, really, when I won the Pulitzer Prize.

**S+B:** How have you managed to make those pieces fit together? How have you managed to synthesize physiology, ecology, ornithology, in addition to the historical interests you had?

**DIAMOND:** For a long time I didn't synthesize. For a long time my physiology was laboratory physiology, unconnected to my other research, so I was like a split brain that did the physiology and then went to New Guinea and came back and wrote papers. And I would spend a couple of weeks writing a New Guinea bird paper, and then I would switch and spend time doing a physiology paper. Two interests with no relation.

**S+B:** In your physiology work, what were you concentrating on over the years?

**DIAMOND:** It still is membrane physiology of the intestine.

**S+B:** When did the two parts of your intellectual inquiries come together?

**DIAMOND:** In the early 1980s, when I was 44 and going through the usual midlife crisis, I was getting increasingly dissatisfied with my work in physiology being divorced from my evolutionary biology. And I was getting less fun out of the laboratory physiology. The whole world is so interesting, so why should you do nothing with your life except study the structure of membrane lipids? So I decided to make a connection and bring my physiology close to my evolutionary work by looking at how physiology evolves and how it adapts to ecology, by comparing the physiol-

ogy of different species of fish, snakes, birds, mammals. Then in the late '80s, after I'd begun writing for *Natural History* magazine and *Discover* magazine, I had to come up with ideas for articles that would appeal to the public. Proteolytic enzyme secretion by the pancreas — there's only so many times you can mine that for the general public, so I began to write about people. Those articles about people ended up in my first book, in 1991, and more of those articles then went into my next two books and my forthcoming book.

**S+B:** Is there a process that you go through, a way you organize your thinking, to be able to synthesize from such a broad array of fields? Are there lessons you could draw from your own life, from your own way of thinking, from your own way of writing, that could help people in business learn to ideate?

**DIAMOND:** A couple things. One is that I found that the more things you're interested in and the more you learn, the richer the framework into which you can fit any new thing. So synthesis, if you do it at all, gets professionally easier with time. It's no surprise that older people can do better at synthesis, because they've been learning their entire lives. It's the opposite of, say, reasoning skills in mathematics. Synthesis increases with age as you learn more.

I'll show you upstairs one of the chapters that I'm working on for my next book. It's about the history of Viking Greenland. When I started reading about Greenland, one of the first things I wondered was: Where did their iron come from? Another thing I wondered was: Could grain grow there? So knowing about other things, there were just more questions I could ask about Viking Greenland.

As for how I actually go about working with some new area, you'll see the piles of books and papers upstairs — I do lots of reading, I talk to people, I find out who has written stuff in an area, and then I call them up and I ask them to recommend more things, which I then read and I come back to them with questions. Then, if possible, I go visit the sites. I'm hoping to go visit Greenland this summer. I read the stuff, I take notes on it, I organize, I type up the notes, my secretary transcribes my dictation, and then I organize notes into topic headings, and the topic headings then get organized into different sections of the chapter.

**S+B:** To drive to a real level of specificity, do you do that on the computer, or do you use three-by-five file cards? Is it all physical on paper? How do you do that?

**DIAMOND:** I do not have a computer. I do not know how to turn on a computer.

**S+B:** Seriously?

**DIAMOND:** I'm serious.

**S+B:** As a scientist, how did you manage to avoid computers?

**DIAMOND:** I get easily frustrated with complicated machines or machines that don't work. Whenever friends have shown me how to use a computer, they turn it on and something goes wrong. I just get frustrated.

**S+B:** Did you tell Bill Gates this when you met him?

**DIAMOND:** I'm not sure. +

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