INNOVATION

It had better be the new strategic priority for the United States.

BY KATHLEEN N. KINGSCOTT

WE DID NOT NEED A PRESIDENTIAL ELECTION to recognize that the health of our economy is a front and center issue now facing the United States. And with today's new economic realities also comes the realization that the United States is at a crossroads.

We are living today at a remarkable historical juncture—the confluence of two fundamental changes: in America's position in the world and in the nature of innovation itself. For the first time in history, America stands alone. We are the world's only economic, military and political superpower.

Innovation—and its application in the public, private and academic sectors—can play a pivotal role in how we proceed. Where we once optimized our organizations for efficiency ➤➤

THE AUTHOR IS DIRECTOR OF INNOVATION POLICY AT IBM.

and quality, we now must optimize our entire society for innovation. Although the American economy is now gaining jobs, we are not seeing growth in our manufacturing sector — and there is particular concern about this loss of jobs.

And, of course, there are more changes on the horizon. We are seeing economic challenges coming from emerging countries —such as China, India and an enlarged European Union. People are deeply concerned about the skills race, as jobs are being performed very effectively in many places around the globe.

Invention is the creation of something that didn't exist before—a new device or process.

Innovation is the application of invention.

Then there's the outsourcing phenomenon, which has been reported and dissected extensively in the press. Many Americans see it as a threat. That is something we must understand how to manage.

Finally, we are seeing that innovation is the common thread being woven into the fabric of more and more nations as they tackle the challenges of an ever-changing world.

So, with this backdrop, this concern about jobs, last fall IBM commissioned an economic consulting firm, Global Insights, to conduct some research. It was asked to look across all the public projections on employment. Here's what they found.

Over the next 10 years, they projected that 91 million jobs will be created on a global basis, with some 5 million being created this year alone. The question Americans are asking is: Where will all these jobs be— here or somewhere else?

It's a provocative question. Historically, after our economy hits the trough of recession, there's a gradual uptick in job creation. But today, even though our economy is coming back, we are still in a job-deficit position. This has people concerned. So the time has come for us to take stock. We should not be disheartened. We must keep in mind that the United States remains the world's economic superpower. We simply cannot lose sight of that. China, India and Eastern Europe are indeed emerging, but the U.S. is a third of the world's economy. Our opportunity as a nation is to harness this in a very positive and responsible way. Still, our future is indeed being challenged.

The job projection by Global Insights reminds us that the time is now to think strategically, to make the right choices across the face of our economy, to ensure that we continue to enjoy the high standard of living Americans deserve.

We should not look at the jobs projection as a glass half empty. In fact, the United States benefits greatly from economic growth in the rest of the world. It creates the prosperity that underlies stability and increases our markets. Rather than complain about global job growth, we need to be organizing ourselves to take advantage of this opportunity.

How can we as a nation complain as other countries strive to raise the standard of living of their people? We can't. We should cheer them on, and we should participate in such a way that we all benefit.

How are we going to do that? We'll do it by making the United States the most fertile place in the world for innovation. We'll do it by making the United States the world's most attractive place for investment.

So it behooves us to understand what innovation is all about. In a speech to the Council on Competitiveness last December, IBM's chairman, Sam Palmisano, offered the idea that innovation begins at the intersection of invention and insight. It is the application of invention —the fusion of new developments and new approaches to solve real problems. Let's not confuse invention with innovation. Innovation goes well beyond invention. Both are of great value, but the difference is important.

Invention is the creation of something that didn't exist before —a new device or process. Today, people invent new things at astonishing rates! More than 850,000 patents were granted in Europe, Japan and the U.S. in 2002. That's an average of 97 patents an hour. Yet how many of these inventions truly make a difference in our lives? How many improve productivity? Create new industries? Or cure a disease? Invention alone does not guarantee value. That's where innovation comes in.

We see the pace of global innovation speeding up dramatically. It took the automobile 100 years to penetrate 50 percent of our population. It took the telephone 75 years. And electricity took 50 years. By comparison, a recent innovation that affects our lives today, the cell phone, has entered the market at nothing less than a meteoric pace

The nature of innovation is changing dramatically as well. The traditional innovation model was a linear one. We did research followed consecutively by development, engineering, manufacturing and marketing. That was fine, when the pace of innovation wasn't as rapid as today. Today's model is dynamic and networked.

We used to build to forecast and demand. Today, we must respond on demand. To do that, we can't be independent workers in silos anymore. We have to think in an interdependent, collaborative way. We have to think across disciplines and collaborate at the intersections between them.

Our thinking used to be: "How can I make my product better?" Today, our focus must be on the value a product brings to the customer. What does the customer value most?

Let's dig a littler deeper. Traditionally, when it came to public policy, we focused on innovation in terms of research investment and in terms of students and their future skills. With

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those resources we asked whether we'd be able to create competitive products and services.

But, frankly, these are only inputs to the market. Today, we need to think about moving beyond those isolated inputs by approaching innovation in terms of customer value. That's what will make the market respond.

As we begin to deliver value, we must then ask ourselves whether we are doing the right things from an infrastructure point of view. Do we have the right methods of bringing partnerships together? Is our research infrastructure organized effectively? Are we investing in the physical sciences, as well as in the life sciences?

Equally important, we need to ask whether we have the right public policy environment to enable continuous delivery of value globally.

WE HAVE THE MOST OPEN MARKET in the world. Are we helping other nations open theirs? Are we encouraging governments around the world to adopt open standards, to enable the interconnections and collaborations we all need? Are we protecting our intellectual property in the global market? Do we have a dynamic tax policy that takes into account the need for capital formation in capital-intensive industries, like semiconductors?

There are many issues to confront if we want to frame an environment that enables innovation to flourish. We no longer can rely solely on U.S. talent. Nor should we want to. We need to benefit from a diversity of talent, a diversity of culture, a diversity of thought and insight. We should draw people from all over the world into our networks. In fact, in IBM—because International is our first name—we reap the benefits of a global talent pool every day.

Another key aspect of the new innovation ecosystem is measurement. If you can't measure something, you can't drive it. A myriad of measurements exist for economic indicators, but there's no single source to give us a look at the economy through a new lens—the lens of innovation. So one of the challenges for the United States is to focus on measurements and define the metrics most appropriate for our new economy and our global innovation quest.

And we must consider the role of public policy—whether we are creating a policy environment enabling the continuous delivery of value. Public policy not only lays the foundation, but affects what we do every day in our nation. Public policy affects how our children afford to go to college, how people get trained and retrained in our continuously changing economy, how much American workers put in their pockets each month after taxes, how long and how well we live, as our lives are extended through improved health care.

All of those policies are the outcome of choices—choices made by elected officials who respond, we hope, to public will. And that's exactly the point. Those choices reflect pressures and needs that are usually viewed in silos.

Instead, we should examine the broad array of policies, across the board from taxes to market access and technology partnerships to, well, the list goes on and on. We need to make that examination from the perspective of driving innovation. And then lay out clear, actionable, strategic policy choices with innovation at the core that will drive prosperity for our nation.

Let me take a snapshot of the key issues in front of us. I mentioned that our services economy is growing, while the manufacturing portion of our economy is declining. When you look at these metrics, nuances emerge. Let me use my own company as an example.

For 2003, IBM's revenue was 64 percent services and software—and 31 per cent hardware. That's a big switch for us, given our nearly 100-year history. Many in the IT industry have a similar revenue mix. Are we training young people to participate in this new kind of business structure? Do we have the correct statistics in place to measure the many changes that go along with this shift?

ANOTHER AREA we should examine as a nation concerns our research investment profile. It appears to be a bit out of skew to me. For example, manufacturing represents just 18 percent of our economy. Yet, we are devoting two-thirds of our federal research to it. About 60 percent of our economy is represented by services, but only a third of our research investment relates. I think we need better alignment.

And what about our other investments? The United States is second only to Sweden in percentage of GDP in knowledge creation. But as we look to the future, we will be required to bring together a range of disciplines to drive the growth of knowledge, using information technology. Unfortunately, we are virtually starving the physical sciences underpinning. The disciplines of math, physics, chemistry, engineering and materials science are the backbone of our nation.

WHAT ABOUT VENTURE CAPITAL? We lead the world in venture investments for innovation. But our market is heavily supported by non-U.S. citizens. What if those global dollars stopped flowing into the U.S.? What would happen to our investment capital leadership, and our innovation?

The American stakeholders—government, industry, academia, labor, mothers and fathers—need to understand how our system works, and understand their roles in driving the economic progress of our nation. If we do this right, if we can focus on what's really important to the market, we will drive economic growth and ensure a tremendously bright future. TC

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Pate says that in recent years "all of us who live in the southwestern U.S. have experienced the growing competition for water, especially in the past six years or so of drought. Since irrigated agriculture is the major water user in our region, science and technology that could impact agricultural water use and productivity could make a significant positive impact. This is also a global issue, with water stress and the interdependency with agriculture and population growth of increasing concern and a source of potential future conflict in many parts of the world. From the standpoint of our national security and global stability, it seems worthwhile for a national lab to be thinking about such looming problems and the role that science and technology might be able to play to help address them." TC

MARGARET LOVELL IS A SENIOR TECHNICAL WRITER AT TECHNICALLY WRITE, ASSIGNED TO SANDIA NATIONAL LABORATORIES.