Q & A: Rediscovering the Edison Nation

N.J. Slabbert is an award-winning writer and scholar, and co-author of the recent book, “Innovation, The Key To Prosperity: Technology & America's Role in the 21st Century Global Economy,” with Aris Melissaratos. The book explains how science and technology drove America’s previous economic prosperity but that America lost its technological momentum in the second half of the 20th century. Slabbert claims programs like the National Association of Manufacturers’ new Nuclear Energy Workforce (NEW) Coalition, created to empower a new generation of skilled workers to assume high-paying jobs in a resurgent nuclear power industry, is a step in the right direction.

Q. *What is the book’s primary thesis?* A. The main thesis can be briefly stated. Historically, American prosperity was created by a can-do spirit of science, invention, and innovative manufacturing. Ben Franklin and Thomas Jefferson were inventors and scientists. Lincoln was a patent-holding inventor and innovation advocate who was instrumental in launching the national railroad system. In the early 20th century this inventive drive turned America into the manufacturing dynamo of the world. But around the mid 20th century, the country began losing its inventive momentum. To leftists, technology became a sinister force associated with the military-industrial complex and environmental destruction. At the same time, many conservatives saw the active encouragement of innovation as irrelevant and unnecessary, since they believed American innovation was automatic and unstoppable and that it was unpatriotic to think otherwise. Both left and right failed to realize that American well-being depended on the active encouragement of a culture of scientific and technological innovation.

This culture was the engine of our prosperity, and far from being unstoppable or automatic it was in fact fragile and needed full-time care. In the second half of the 20th century we failed to nurture it. We betrayed the promise of science-driven invention. We thus ended the century with an economy based on decades old technologies. Our transportation, energy systems, and even our computerization were — and still are — based on technologies going back decades or even generations. The book describes how we’ve deluded ourselves into thinking we are a state-of-the-art civilization when we’re not that at all. America has entered the 21st century as a retro-techno nation — a hostage, for example, to an obsolete energy infrastructure. We need to reverse this trend urgently. We must invent our way into the 21st century. We must become the nation of Thomas Edison again. Q. *What spurred you to cover this topic?* A. My co-author Aris Melissaratos and I are both enormously optimistic about American ingenuity. We wanted to share this optimism and show why there are good grounds to be optimistic. Despite America’s loss of its technological nerve, the fires of American invention can and must be rekindled. Doing so will lift the country out of its economic slump. But for this to

happen we have to launch a national campaign to make America an inventive world leader again. It won't happen automatically.

For example, we must build a new American infrastructure rather than rebuilding the old one. A national smart grid must be developed for our electicity. We must go nuclear on a massive scale while launching a determined national effort to create a new alternative energy industry. We must create a radically new national mass transit system, preferably based on high-speed magnetic levitation that will make it possible for workers to traverse the country with remarkable speed and efficiency. The task of building these systems will itself create new manufacturing demand and employment. When they have been built they will then lead into a sustained new era of economic growth in which manufacturing activity will expand exponentially. Q. *Do you see our techno-centric society as a detriment to the advancement of manufacturing — or at least in the general preconceptions of certain industries as "high tech" vs. manufacturing, which is often perceived as dirty, tedious, and labor-intensive?* A. American culture contains much confusion about what technology is and how we should relate to it. This hasn't been good for the public image of manufacturing. The confusion is illustrated by a statement made by President Obama. In announcing his appointment of Vivek Kundra as the US Government's Chief Information Officer, the president noted that Mr. Kundra would be responsible for setting technology policy across the government. But Mr. Kundra is really concerned with just one kind of technology, namely computer technology. This is a vital field and it's excellent that the federal government recognizes its great importance. But it is a serious policy mistake to think that technological innovation and computers are the same thing. Not every technological challenge, problem or opportunity is a programming issue. Building a new transcontinental train system is a technological challenge involving important non-computer issues and products. So is the renewal of the aerospace industry. Also, much work in laboratories or manufacturing plants of all kinds.

Unfortunately, industry has ceased to be charismatic in America. We see this not only in politics but also in pop culture. Hollywood presents software, stockbroking, investment banking, and corporate law as the exciting places where the action happens. We've lost our sense of the drama and value of the factory, the engineering shop, or the designer's drafting board. Yet it's precisely these places where innovative creativity and methodical management are converted into palpable economic goods that shape markets, creating work and prosperity.

For America to recover, we must regain our traditional respect for that extraordinary combination of craftsmanship and invention that is the heart of innovative manufacturing. Only in this way will we attract our brightest young minds into a new generation of manufacturing brilliance. Only this will supply the tangible economic energies on which America's renewal depends. Q. *How do you think we can "regain our traditional respect" for manufacturing?* A. We need motion pictures, television series and popular books about the power, dignity, and excitement of manufacturing vision, effort, and success. We need a discussion of manufacturing issues that should shift into the center of national conversation and cultural awareness. The cause of manufacturing must be preached and championed with the same energy, sense of urgency, commitment, and political will that has

gone so effectively into championing civil rights issues. Manufacturers must realize they have a philosophical mission to embrace if their sector is to receive the support and respect it deserves. Part of this mission must be to clarify the public's idea of what a knowledge economy is. This phrase and the cluster of fashionable buzzwords that revolve around it have together encouraged the bizarre but sadly common notion that a kind of abstract knowledge product is all that we must concern ourselves about now, and that the manufacture of physical goods has somehow become irrelevant. Philosophically, manufacturing has become a Cinderella sector, something without enough glamour for high-level political or mass media focus. It has rather come to be seen as a kind of footnote to computerization, banking, and investment, as if all our problems can be solved at a desk. Naturally, we need information processing systems and financial structures. But instead of seeing these as a support, we've come to value them as the center of our economy and culture. The tail wags the dog. The conceptual shift we must achieve is considerable. Q. *What is the government's role in this improvement?* A. Like it or not, government has to play a strong role as midwife. Contrary to popular belief, the history of modern technology is not just a story of rugged individuals. Such people form a crucial part of the story, but the burden cannot be placed solely upon their shoulders. Government determination, encouragement, cooperation, and facilitation have been and remain integral to the development of the technologies on which modern manufacturing depends.

Two immense public events that played major roles in launching the modern era of manufacturing were London's Great Exhibition of 1851 and the Chicago World's Fair of 1893. They were not just industrial fairs of the kind we know today. They were gigantic national undertakings intended both to represent and direct national self-image. They changed the courses, respectively, of British and American life. And both were powerful and imaginative expressions of government purpose. Out of the London event came the national energies that shaped Britain's Victorian position as manufacturer to the world. Out of the Chicago event came the confluence of forces that led America to become the global industrial giant of the first half of the 20th century.

The US government must similarly galvanize and reawaken America's will to become the world's industrial leader in the 21st century. Government can take America along this road in several ways, which my co-author and I discuss in our book. These include the launch of a national effort to give America a new infrastructure. This will re-energize the economy in the immediate term and set us on the road to global industrial leadership in the medium and long term. Q. *What is the education system's role?* A. Improving our education system is part of the government's task. Government must use the educational system to restore reverence for scientific and inventive innovation, and to give our young people a sense of how this innovation is related to industry and manufacturing. And it must be accepted that you cannot credibly claim to support improved education if at the same time you allow vital areas of research to go unfunded. Research and education go hand in hand. In 2001, US industry spent more on tort litigation than on scientific and technological research. Federal funding of research in the physical sciences, as a percentage of gross domestic product (GDP), was 45 percent less in fiscal year 2004 than in 1976. In 2008 the combined amount invested annually by

the federal government in research in the physical sciences, mathematics, and engineering equaled the annual increase in US healthcare costs incurred every six weeks. These figures are an alarming reflection of America's loss of a culture of engineering innovation and science-based invention.

Yet this culture is essential for the health of the manufacturing sector, and manufacturing in turn is pivotal for America's future, in regard to not just domestic employment but also the US's position in the world. America's fortunes in the 21st century will be critically determined by what happens to its manufacturers. If politicians and the general public cannot be made to understand this more clearly and urgently, the prospect is poor. But if this truth can be appreciated and acted upon swiftly enough, the first quarter of the 21st century can yet be one of the greatest and proudest that America has known.

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