

The Knowledge Notebook

Believing in Science and Progress

BY LAURENCE PRUSAK



One of the great questions in history is why the Industrial Revolution that started in the eighteenth century and went on to radically change almost every aspect of the way people live developed in the West, and especially the northwest corner of Europe. While it is relatively easy to understand more or less exactly *what* occurred, there are many and varied answers to the question of *why* it happened where it did. The question has become even more interesting with the development of a more global historic perspective than we in the West had a few decades ago. We now know that China and India were as technologically advanced as the West as late as the seventeenth century and that these two countries had many of the ingredients that could have brought about an industrial revolution in those countries. So why the West?

A wonderful new book has recently been published that, to my mind, gives the best and most sensible answer to this question. The answer offers valuable lessons for the present that may be especially relevant to NASA's future.

Joel Mokyr is a distinguished professor of economics and history at Northeastern University. He has written many important works, including *The Gifts of Athena*, the best book available on our knowledge-based economy. His new book, *The Enlightened Economy*, is the culmination of his many years of studying how and why ideas interact with material conditions and culture to produce economic change. It is a long and wonderfully written account of how and why England in particular—that small island—was the first society to actively industrialize and thereby transform the world.

What makes this book so important today

is Mokyr's insistence that ideas have great consequences. He argues that it was the ideas in people's minds in England that made the Industrial Revolution happen there. While this may seem obvious to many of us, it surely isn't obvious to the authors of many economics and even history texts who seem to ignore the very possibility that ideas have the power to shape events.

Mokyr identifies two related English notions that made the advances we sum up as the Industrial Revolution possible. One is a deep and sustained belief in science; the other is the belief that science applied through technologies can bring about material progress. Those beliefs had a long lineage in England dating back at least to the seventeenth century, observable in the writings of Francis Bacon on the scientific method and the founding of the Royal Society in the middle of that century. Why these developments occurred there and then is still a controversial subject, but there is some consensus on the importance of several factors: considerable individual freedom, the lack of a single dominant religion and the growth of religious dissent, high literacy rates, and the relative prosperity that encouraged a belief in progress—perhaps aided and abetted by some Calvinist religious beliefs.

In any case, the early industrial pioneers in England not only had some *knowledge* of various sciences but—even more important—they *believed in* science, progress, and technology. The Enlightenment—often thought to be mainly a French phenomenon—was just as strong a force in England and had the added benefit there of being more strongly supported by English institutions than in any other eighteenth-century country. It

was also far more widespread in terms of classes of people. These factors combined to drive the continuous quest for progress and material experimentation that led to the dramatic changes of the Industrial Revolution.

We can easily see a similar set of beliefs in many of our American enlightenment figures—Franklin and Jefferson come immediately to mind—and it is no coincidence that the United States became the second-strongest industrial power a hundred years or so after England, and then forged ahead to develop great economic and technical strengths.

It is not hard to see why these lessons are of great value today. Widespread belief in science and progress—and the support that follows from that belief—seems to be waning in the West while it remains or (more to the point) has grown increasingly powerful in the East. So many other things dominate our lives and thoughts here, including the remarkable and constant floods of trivia that absorb so much of our attention. If we are ever to have another great leap of material, economic, social, and technical progress similar to those that took place in the eighteenth and nineteenth centuries, we will have to find ways as a culture to once again fall in love with science and renew our faith in the idea of progress. ●

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