

BOB KRONE's QUALITY ESSAYS

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"Productivity: National to Personal"

Increased productivity prevented a global economic depression in the 1990 and 2000 decades. Few outside the Quality Movement fully understand that quality improvements in manufacturing, business, technology and management were the major reasons.

A goal of the Quality Movement from its beginning by Walter A. Shewhart in the 1930s has been *Doing Better with Less*. The title of Dr. W. Edwards Deming's first chapter in his classic book *Out of the Crises (1986)* is "Chain Reaction: Quality, Productivity, Lower Costs, Capture the Market." Productivity is the ratio of output to input where input consists of labor, material, capital and services; and outputs are measurements of results in products or services. Increased productivity has been occurring for fifty years throughout the national to personal level.

At the National Level. Comparisons of international productivity are complex, difficult and have inherent uncertainties. The standard developed to compare national productivities in a common unit has three major sources: 1) Gross Domestic Productive (GDP) Per Worker; 2) Purchase Power Parities (PPPs); and Total Factor Productivity (TFP) (Search for Jeremy Smith, Queen's University). Using those measurement tools in 2009 the United States remained well ahead of the other six OECD G7 countries. And the U.S.

has led the world while increasing its national productivity by 600% from 1950 to 2008. It's not an accidental coincidence that Dr. Deming and Dr. Juran went to Japan in the 1950s to begin the Quality Movement. There is a wide range of national productivities from negative to static to increases across the globe. That fact in 2010 presents a huge challenge for quality professionals. If global productivity stagnates Earth's humanity will suffer much worse than it has to date.

Technology and Moore's Law. Quality Control, Quality Management and Quality Sciences theory and practice has been given a phenomenal vehicle for productivity improvement by technology. Intel co-founder Gordon E. Moore described in a 1965 paper how the number of components in integrated circuits had doubled every year from 1958 to 1965. His prediction that similar advances would continue became known as Moore's Law which reads *"The number of transistors that can be placed inexpensively on an integrated circuit will double at approximately every two years."* His prediction has proved to be accurate to 2010. In 2005 Gordon Moore stated in an interview that *"It can't continue forever."* However, In 1995 the Digital Alpha superconductor had 8.3 million transistors. Current miniaturization theory predicts superconductors with 15 billion transistors in 2015 (Search Google).

The impact of Moore's Law for global-to-personal productivity has been evidence of some exponentially increased productivity over time. Technology is facilitating doing much more with less. Business and government transactions are being revolutionized by occurring at the speed of light.

Personal Productivity. Personal productivity increases when information, communications and events happen faster and more efficiently. When Bill Gates led Microsoft to link global computers in the 1980s it gave personal productivity a paradigm shift boost. Times magazine named Gates *one of the 100 people who most influenced the 20th Century*. He was one major leader in the computer advances that revolutionized societal interactions. Over the past two decades personal cell phone and computers have transformed the capability to personally do more with less. At the Kepler Space University we are applying productivity advances to create accelerated education programs and to personalize education for scholars globally.

I confess that my assertion stated in sentence one of this Essay is based more on long term personal observations than empirical evidence. So I ask the ASQ Community to gather that evidence. Once confirmed It will be a powerful validation for the critical importance to national and global societies of the Quality Sciences. And it will prove correct the prediction by Dr. Joseph Juran *that "The 20th Century will be remembered as the Century of Productivity, while the 21st Century will come to be known as the Century of Quality;"* and continue the mission of quality professionals that Juran assigned to himself: *"To serve society in a positive way, and to make my job of contributing to the welfare of my fellow man the greatest unfinished business."*

* These Essays have the following purposes: 1) To document areas where Quality Sciences and Management are needed; 2) To identify new research subjects for members of the American Society for Quality (ASQ); and 3) To broadly share quality successes, concepts and tools through uncomplicated publications. Dr. Bob Krone is an ASQ Fellow Member and Provost of the Kepler Space University (www.keplerspaceuniversity.org). His *Quality Essays* are copyrighted, published and archived by the American Society for Quality Inland Empire Section 0711, Riverside, California, U.S.A. [Http://www.asq711.org](http://www.asq711.org). Readers may reproduce them, in full, only for educational purposes. Send ideas and comments to: BobKrone@aol.com.