The EVOLUTION of MANUFACTURING

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If it were not for the inventions and discoveries of the humans who invented them, we would be living a life of privation and drudgery, grubbing out a meager existence with *hand tools* and *muscle power*. That's just what our ancestors did for a million years. Then suddenly the Industrial Revolution burst upon the world.

Machine tools replaced *hand tools. Mechanical energy* replaced *muscular energy.* In only 150 years this sweeping change from "hand made" to "machine made" lifted us into a wonderful new life filled with abundant goods and services and the leisure to enjoy them.

Pace of Progress

Since progress was so swift and mystifying many people do not understand how we rose to our present high standard of living. Some take our material abundance for granted, as if the freedom to own and enjoy it always existed. But the Industrial Revolution of the 1700s has not ended; it continues more vigorously than ever, producing a growing abundance of goods, services, comforts and conveniences. But in reality they all fuse into a powerful force that generates wealth and leisure for all.

This force is our economic system. Everything you own, eat, wear or use --your *material welfare--is natural resources* converted into useful products by *tools* and en*ergy*. *Natural resources* do not change in quantity, but *tools* and *energy* do. As long as *natural resources* were worked with *hand tools* and *muscular energy*, progress was slow. But *machine tools* and *mechanical energy* multiplied our muscles and capacity a million-fold. They made more and better products faster and gave us extra time for other activities.

Those who were inventive and creative used this time to find new uses for *natural resources* and more and better ways to make and exchange goods and services. The result was an accelerating rate of progress that led to our present unequaled material welfare.

Nothing contributed more to our present way of life than the invention of the steam engine and the boring mill that made the engine possible. They gave tremendous impetus to the Industrial Revolution, which, in only 150 years, generated far greater gains in material welfare than humans experienced in all previous history.

It took a knowledge of atmospheric pressure and steam, the development of coke-smelted iron and the invention of the boring mill to make the steam engine. In turn the steam engine

pumped water out of mines; blew foundry bellows; turned the machinery in paper, textile and flour mills, and ran boats, trains and farm tractors.

Generally speaking is the key to our era of abundance is **Metal Cutting Machine Tools,** for they make all the other machines needed in an industrial society. Having raised us to our present standard of living, this system has the power to lift us to even higher levels of material welfare, providing the conditions which nourished its healthy growth till now continue to prevail. Since tools make the difference we must continue to develop more and better tools for converting *natural resources* into usable goods in less time and with *less human energy.* These tools can be developed only if business retains enough profit and individuals put aside enough savings in banks, insurance companies and other investments to pay for them.

All Other Tools Originate From Machine Tools

Machine tools alone can make the machinery for farms and factories, mills and power plants. They can make the special machinery for turning out building materials, our office equipment, our printing, our clothing, our medicines, etc. Machine tools also directly make parts for products like household appliances and motor vehicles. Everything we eat, wear and use depends upon the performance efficiency of the nation's stock of machine tools. Their productivity generates the wealth that is the lifeblood of our nation's economy and determines the people's standard of living.

MANUFACTURING MATTERS

Manufacturing is critical to creating economic wealth, providing well-paying quality jobs, helping companies to be more competitive in world markets, sustaining economic growth, and providing for the future prosperity of a country.

- ***Manufacturing Matters*** to the workers, to the companies, to the community, to the **economy** and to the country's future**.**
- ***Manufacturing Matters*** because it drives the country's productivity, economic growth and prosperity.
- ***Manufacturing Workers*** earn higher wages, better benefits, and enjoy a higher standard of living than many other workers in our society.
- ***Manufacturing*** has contributed 30% to the nation's Gross Output year-after-year for over 50 years.

- ***Manufacturing matters*** to every civic, state, or provinces' economy because without it they would lose this tax revenue.

The ***truth of manufacturing*** is evident, *t*he public, the media, elected officials and regulators simply must be reminded again and again as they make choices and make decisions about this, probably the most valuable of all a country's resources - **manufacturing**.