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Gleanings

How Human Society Advanced

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The first man on earth was a farmer. His name was Adam. Adam and his heirs were created to rule God's physical universe (Genesis 1:26–28). This work started in a garden.

Adam's specific assignment was to "work the ground" (Genesis 2:5 NIV). The Hebrew word used in this text is *abad,* which is also translated in other texts *worship* and *serve*. From the beginning, therefore, the idea of work was rooted in the mandate to rule God's creation and was a vehicle to serve and worship God. This is known by many as the "Creation Mandate" and gives work dignity, purpose, and significance.

For most of mankind's known history, as with Adam, farming has been the main work activity. Farming is the seminal work activity, that is, farming is the most basic of all work activities. People must have food. Other than air and water, everything else is optional.

Over the centuries, farming has mostly been performed manually with little help from mechanization. Widely accepted epistemology (the theory of knowledge) is one of the reasons.

Since the time of Aristotle in the fourth century BC, epistemology has been shaped by the assumption that knowledge is solely deduced from ideas. There was no value placed on empirical methodology.

For us living in the twenty-first century AD and who have seen the value of empiricism, it is hard to understand how Aristotle's presupposition could have been so widely accepted, but it was. Through most of human history, the basis for epistemology was limited to deductive reasoning—thought experiments. Starting with concepts, philosophers would deduce conclusions about reality but never submitted their conclusions to empirical testing. This view was widely accepted before and after Christ, and even the Christian community largely embraced it.

Sadly, the Christian community did not understand the implications of Psalm 19:1: "The heavens declare the glory of God; the skies proclaim the work of his hands" (NIV). This text suggests that we can gain knowledge about God by studying the physical universe inductively. Inductive means that we can learn empirically through observation and experimentation.

When the Christian community fails to recognize truth, others will. During the seventeenth century, a new approach to epistemology began to take root. Francis Bacon challenged the conventional theory of epistemology and introduced the idea that knowledge could be gained not only deductively but also inductively. This new approach became known as "the scientific method."

The scientific method is a four-step methodology. First, there is a hypothesis or a theory about reality. Second, an empirical test is developed and applied to validate the theory. Third, the results of the test are compared to the theory. And fourth, the theory is validated or adjustments are made to the theory to better understand the results.

Since the eighteenth century, virtually all scientific training has been based on the scientific method, which led to the technology breakthroughs that fueled the industrial revolution. Metaphorically speaking, the industrial revolution enabled Adam to leave the farm.

Some of the first fruits of the industrial revolution were farm equipment. With the advent of mechanized farm equipment, one farmer could do the work of ten, enabling the other nine to perform other work activities. Hence, the scientific method facilitated the development of technology that greatly enhanced

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man's ability to fulfill the Creation Mandate.

But the scientific method found application beyond the physical sciences. It also reshaped the science of business and management.

In the early part of the twentieth century, the industrial revolution was expanding rapidly in the United States. Automobiles, railroads, telephones, electricity, and department stores were becoming ubiquitous. J. C. Penney and John Wanamaker pioneered the modern department store model. Asa Candler turned Coca Cola into a worldwide beverage. The Mayo Brothers built the most prestigious medical facility in the world. Anthony Rossi turned orange juice into a premium breakfast drink. Henry Parsons Crowell helped make oatmeal a human food, not just horse feed. All of these men were strong Christians committed to living their faith at work and they used the scientific method to help them master and grow their businesses.

The scientific method enabled these men and others to consistently produce quality products. To achieve consistency required controlled reproducible business and manufacturing processes that were developed empirically using the scientific method. The need to develop these controlled processes led to the development of a new field of study known as “statistical quality control” (SQC).

Dr. Walter Shewhart, a physicist who worked for Bell Labs, pioneered SQC. During the 1920s, the nascent nationwide telephone system was expanding rapidly and there was a tremendous need for quality telephone equipment. Dr. Shewhart realized that to produce consistent quality required controlled manufacturing processes. The empirical tools developed by Dr. Shewhart to facilitate the control of manufacturing processes were based on statistical methods.

During World War II, companies taught and utilized SQC, with great success, to produce high quality products to support the war effort. Altruism emboldened companies during the war to focus on quality before profit. After the war, however, the priorities changed.

The economy of post-war America boomed and companies turned their attention from altruism to greed. They saw opportunities to make big profits, so they disregarded SQC techniques. In other words, they chose quantity over quality, thinking that it would produce more profit.

After World War II, one of Dr. Shewhart’s disciples, Dr. W. Edwards Deming, also a physicist, founded his own management consulting practice based on SQC. Soon he became discouraged by the lack of interest in SQC. Companies driven by greed showed little interest.

Dr. Deming found a more interested audience in Japan. Struggling to recover from the war, the Japanese needed help to restart their industrial economy. Though they were skeptical of SQC, they listened and learned. The Japanese tried SQC and soon developed a competitive edge. By the late 1970s, the Japanese had taken a large share of the electronics and automobile markets away from US companies.

The fact that SQC was a key to the success of the Japanese companies went largely unnoticed until 1980. Finally NBC aired a special on Dr. Deming and SQC, which proved to be a turning point. From 1980 to the end of his life in 1993, he worked tirelessly helping American companies learn and apply SQC techniques.

Deming's approach was rooted in the scientific method and in a profound sense that there was a higher purpose to work than just to make money. No doubt he knew that mankind was under the Creation Mandate to rule God's universe though mastery of the physical world utilizing all means including work activities. And for work activities to be efficacious required well-managed organizations following excellent empirically based processes.

So mastery of the physical sciences and business was facilitated by a more accurate epistemology—an epistemology that valued not only deductive reasoning but also inductive reasoning. What a gift to mankind that knowledge of God’s universe can be gained through the scientific method. The heavens do, indeed, declare the glory of God (Psalms 19:1).

For man to fulfill the Creation Mandate, epistemology and motive are important. When a biblically sound epistemology that embraces both deductive and inductive methods is utilizied by people working with the right motivation (obedience to the will of God not money), then amazing advancements can be made. Just look at the advances in technology in the past three hundred years.

Upcoming Training Venues

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Discover Your Life Purpose	*Webinar:* Strategic Life Alignment	October 6 through November 17, 2009
More Help to **Discover Your Life Purpose**	*Webinar:* Strategic Life Alignment Alumni Event	September 8, 15, and 22 2009
Fulfill Your Life Purpose	*Webinar:* Financial Management, Part II	September - November 2009
	Seminar: Kingdom Management II	October 23, 2009 in Texas
	Webinar: Kingdom Management II	December 1, 8, and 15 , 2009